GWICH'IN STEERING COMMITTEE, ALASKA WILDERNESS LEAGUE, ALASKA WILDLIFE ALLIANCE, ARCTIC AUDUBON SOCIETY, CANADIAN PARKS AND WILDERNESS SOCIETY-YUKON, CENTER FOR BIOLOGICAL DIVERSITY, DEFENDERS OF WILDLIFE, ENVIRONMENT AMERICA, THE EPISCOPAL CHURCH, FAIRBANKS CLIMATE ACTION COALITION, FIRST PEOPLES WORLDWIDE, FOOD & WATER WATCH, FRIENDS OF ALASKA NATIONAL WILDLIFE REFUGES, FRIENDS OF THE EARTH, LEAGUE OF CONSERVATION VOTERS, NATIONAL WILDLIFE FEDERATION, NATIONAL WILDLIFE REFUGE ASSOCIATION, NORTHERN ALASKA ENVIRONMENTAL CENTER, SIERRA CLUB, THE WILDERNESS SOCIETY, WILDERNESS WATCH

December 17, 2020

Submitted via email

Chad Padgett
State Director
Alaska State Office
Bureau of Land Management
222 West 7th Ave., Stop #13
Anchorage, Alaska 99513-7504
blm_akso_ak932_cpcomments@blm.gov

Comments re: Call for Nominations and Comments for the Coastal Plain Alaska Oil and Gas Lease Sale, 85 Fed. Reg. 73292 (Nov. 17, 2020).

Dear Mr. Padgett,

On behalf of the above-listed organizations and our many millions of members and supporters nationwide and internationally, we submit the following comments in response to the public notice for the Call for Nominations and Comments for the Coastal Plain Alaska Oil and Gas Lease Sale, 85 Fed. Reg. 73292 (Nov. 17, 2020). We oppose any efforts to hold an oil and gas lease sale on the Coastal Plain of the Arctic National Wildlife Refuge. We stand with the Gwich'in Nation and support their efforts to protect their human rights and food security by protecting the Coastal Plain. Our organizations have dedicated decades to defending the Coastal Plain from oil and gas exploration and development, and we will continue to do so. These unparalleled public lands, and the wildlife that depend on them, are an international treasure that must be conserved for future generations.

While the call for nominations and public comment period was still open, the Bureau of Land Management (BLM) inexplicably issued a public notice of a lease sale. 85 Fed. Reg. 78,865 (Dec. 7, 2020). In its lease sale notice, BLM identified tracts that are available for bid, provided the stipulations each tract will be subject to, and set out the terms for leases. Rather than waiting to receive and carefully consider the comments and concerns of the public to inform the tract selection process as required by law, BLM has instead chosen to offer the entire Coastal Plain to oil and gas leasing — blatantly disregarding science, human rights, and its legal

obligation to protect sensitive areas and resources in the Arctic Refuge, and its required processes. *BLM's actions in noticing a lease sale during an open call for nominations period is wildly inappropriate and legally inconsistent with BLM's regulations, past practices, and representations to the court in the pending litigation. BLM must withdraw the notice of the lease sale and only reissue it after the call for nominations period concludes and the agency has taken the necessary time to consider all of the information submitted by the public.*

While it is unlikely that BLM will meaningfully consider these comments given that it noticed the lease sale, we submit them in a good-faith effort to engage in the agency process and because BLM has an affirmative obligations to consider them under 43 C.F.R. § 3131.2.

We provided detailed comments outlining many legal, policy, and resource issues that BLM failed to adequately address in its draft and final environmental impact statement (EIS) for the Coastal Plain leasing program. Unfortunately, BLM did not sufficiently address the issues we raised or adopt a program that is protective of the exceptional wildlife, wilderness, recreation, subsistence, culture, or spiritual resources of the Coastal Plain and which complied with the law. Instead, in its record of decision (ROD), BLM adopted the most expansive, least protective leasing program considered, opening the entire Coastal Plain to oil and gas activities.

Because of the significant failings in the final EIS and ROD, the Coastal Plain leasing program is now the subject of four separate lawsuits in U.S. District Court in Alaska.[1] These lawsuits set out substantive and procedural violations of the Alaska National Interest Lands Conservation Act, the National Environmental Policy Act, Title II of the Tax and Jobs Act, the National Wildlife Refuge System Administration Act, the Wilderness Act, the National Historic Preservation Act, and the Endangered Species Act. They seek to have the final EIS and ROD and any decisions relying on it — including leases — invalidated. Despite these legal deficiencies, BLM is also currently rushing to authorize a seismic exploration proposal that is likely to cause significant, long-term damage to the Coastal Plain and its resources. Until these lawsuits are resolved, and the legal issues they identify remedied by the agencies, it is imprudent and inappropriate to move forward with a lease sale or any other oil and gas authorizations. Indeed, if the litigation is successful, leases and any authorizations granted will have been improperly issued.

Additionally, the economic reality of oil and gas leasing and production does not support a lease sale. It is highly unlikely that the BLM will generate anything close to the roughly $2 billion in revenue projected for the Tax Cuts and Jobs Act, which would require bids well in excess of anything BLM has received in Alaska, especially in light of the collapse of oil prices as a result of the global pandemic and other factors.

Finally, BLM has a legal duty to conduct additional analysis of the impacts of the lease sale under numerous federal laws before it can move forward with offering leases. Instead of

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[1] *Gwich'in Steering Committee v. Bernhardt*, No. 3:20-cv-00204-SLG (D. AK); *National Audubon Society v. Bernhardt*, No. 3:20-cv-00205-SLG (D. AK); *Native Village of Venetie Tribal Government v. Bernhardt*, No. 3:20-cv-00223-SLG (D. AK); *State of Washington v. Bernhardt,* No 3:20-cv-00224-SLG (D. AK).

rushing to lease the Coastal Plain, BLM should listen to the Gwich'in Nation and millions of Americans who support protection for the Coastal Plain and refrain from holding a hasty, ill-considered lease sale. The Coastal Plain is no place for any oil and gas activities, and reckless decision making is not what the Arctic Refuge — the crown jewel of our National Wildlife Refuge System — deserves.

Sincerely,

Bernadette Demientieff
Gwich'in Steering Committee

Kristen Miller
Alaska Wilderness League

Nicole Schmitt
Alaska Wildlife Alliance

Pamela Miller
Arctic Audubon Society

Malkolm Boothroyd
Canadian Parks and Wilderness Society-Yukon

Kristen Monsell
Center for Biological Diversity

Patrick Lavin
Defenders of Wildlife

Ellen Montgomery,
Environment America

Rebecca Blachly
The Episcopal Church

Jessica Gerard
Fairbanks Climate Action Coalition

Kate R. Finn
First Peoples Worldwide

Adam Carlesco
Food & Water Watch

David Raskin

Friends of Alaska National Wildlife Refuges

Nicole Ghio
Friends of the Earth

Alex Taurel
League of Conservation Voters

Mary Greene
National Wildlife Federation

Geoffrey L. Haskett
National Wildlife Refuge Association

Emily Sullivan
Northern Alaska Environmental Center

Janet MacGillvray
Seeding Sovereignty

Karimah Schoenhut
Sierra Club

Ben Tettlebaum
The Wilderness Society

George Nickas
Wilderness Watch

I. BLM'S NOTICE OF THE LEASE SALE DURING THE COMMENT AND CALL FOR NOMINATIONS PERIOD IS INAPPROPRIATE AND UNLAWFUL.

BLM published its call for nominations for a Coastal Plain Oil and Gas Leases Sale on November 17th. 85 Fed. Reg. 73293 (Nov. 17, 2020). BLM provided the public with thirty days to submit comments and information on the lease sale, until December 17th. In its call for nominations, BLM stated that it was soliciting comments and information on tracts "that may be offered for lease" and specifically requested comments on "tracts which should receive special concern and analysis as well as the size of the tracts."

Instead of waiting for the call for nominations period to conclude, and allowing time for the agency to review all of the information received during the nominations period to inform a lease sale, BLM noticed a lease sale on December 7th. BLM identified tracts that are available for bid, provided the stipulations each tract will be subject to, and set out the terms for leases.[2] Rather than carefully considering the comments and concerns of the public to inform the tract selection process as it is required to do, BLM has instead chosen to offer the entire Coastal Plain to oil and gas leasing — blatantly disregarding science, human rights, and its legal obligation to protect sensitive areas and resources in the Arctic Refuge.

At no point prior to this notice did BLM indicate that it would proceed this way. BLM did not indicate in its call for nominations and public comment notice or in its press release on the call for nominations that it would, in effect, shorten the nominations period, or otherwise notify the public that comments should be received before the given comment deadline to be actually considered by the agency and inform the lease sale. Those members of the public who are submitting comments between the notice of lease sale and the end of the comment period (including these comments) will not have their input meaningfully considered as part of the tract selection process, if at all. BLM's treatment and blatant disregard for public input in this way is appalling.[3]

Noticing a lease sale during an open public comment and call for nominations period is inconsistent with BLM's regulations, which set out a process where the nominations and public comment period concludes, and BLM considers the information received prior to making decisions about tracts to lease and additional terms or stipulations to impose.[4] BLM's current actions are inconsistent with how BLM administers the leasing program in the National

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[2] Notice of 2021 Coastal Plain Alaska Oil and Gas Lease Sale and notice of Availability of the Detailed Statement of Sale, 85 Fed. Reg. 78,865 (Dec. 7, 2020); Department of the Interior, Bureau of Land Management, Coastal Plain Alaska, Oil and Gas Lease Sale 2021, Detailed Statement of Sale, Exh. A & B (Dec. 7, 2020).

[3] BLM's own data shows that for sales in the NPR-A, which are subject to the same regulatory requirements, the agency typically takes a couple of months to prepare the sale notice following completion of the call for nominations period. *See* https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/leasing/regional-lease-sales/alaska. Here, the BLM's actions demonstrate it has made up its mind prior to even considering the information that will be submitted, contrary to 43 C.F.R. § 3131.2.

[4] 43 C.F.R. §§ 3131.1, 3131.2, 3131.3.

Petroleum Reserve-Alaska and contrary to the mandate in the Tax Act.[5] From a regulatory-integrity standpoint, it is entirely unclear how BLM can receive and meaningfully consider information on tracts to offer, tract size, and special terms or stipulations to inform a lease sale having already identified tracts and the stipulations and lease terms. Indeed, the agency cannot legitimately do so.

While BLM attempts to paper over these legal flaws by asserting that it can amend or withdraw tracts from bidding up to the day of the sale,[6] this approach is inconsistent with the regulations and how BLM conducts leasing in the Reserve.[7] Tract selection in the first instance is supposed to be based on public input. But in issuing the notice of lease sale and identifying the tracts, BLM has short-circuited that process, reaching the outcome without completing the necessary analysis. It is also unclear how BLM will notify the public and potential bidders following the 17th if it does modify the tracts (such as to include smaller tracts overall, as suggested below). Additionally, while BLM states that it can modify tracts, it cannot add additional stipulations or protective measures the agency may deem necessary as a result of the public comments, because those provisions are fixed in the detailed statement of sale.[8] BLM has foreclosed that consideration, despite asking the public for specific comments on protective measures now, as required by its regulations.

In short, BLM's action in noticing a lease sale during an open call for nominations period renders the process a sham, eviscerating the intent of calling for public comment. This only exacerbates the already shameful and illegal process that BLM undertook to rush through its environmental analysis for the leasing program, which is the subject of four pending lawsuits. BLM's realization after it opened the public comment period that it could not achieve its apparently politically driven goal of issuing leases prior to a change in administration does not excuse the agency from having to comply with the law or from its obligation to obtain *and consider* input from the public prior to making its tract selections and identifying lease provisions. By proceeding in this way, it is making a mockery of public engagement and undercutting the integrity of the Department and the agency. These actions further cast considerable doubt on the legality of the lease sale, and any leases that may issue as a result.

Instead of proceeding in this seemingly politically motivated and unlawful manner, BLM should withdraw the notice of lease sale, complete the call for nominations period, and consider all information received during that time to inform a lease sale, and allow 30 days between the notice of lease sale and the bid submission.

II. THE ECONOMIC REALITY OF OIL AND GAS DOES NOT SUPPORT A LEASE SALE.

The economic reality of oil and gas leasing and production does not support BLM holding a lease sale in the Coastal Plain. The likelihood that the U.S. government will generate

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[5] *See* Attachment A: Lease Sales in the National Petroleum Reserve-Alaska; Tax Cuts and Jobs Act, Pub. L. 115-97, H.R. 1, title II, § 20001(b)(3).

[6] Detailed Statement of Sale at 1, 3.

[7] 43 C.F.R. § 3131.4-1.

[8] Detailed Statement of Sale at 1–2.

the level of revenue projected is nil, and it is highly questionable whether any companies are even interested in bidding on leases.

During the legislative process leading up to the passage of the Tax Cuts and Jobs Act (Tax Act), the Congressional Budget Office estimated that a lease sale would generate nearly $2 billion, with almost $1 billion going to the federal treasury.[9] While this figure is greatly overestimated,[10] Congress passed the Tax Act with the understanding that that amount of revenue would be recovered from the mandated lease sales. If BLM seeks to offer all of the Coastal Plain for lease, BLM should, therefore, set the minimum bids at amounts that may actually recover the projected revenues: $678 per acre if BLM offers all available acreage in this first lease sale — but even that number is low and assumes BLM would have to lease every acre within the Refuge. Importantly, BLM did not set the minimum bids at this amount; it set the minimum bids $25 per acre.[11] Absent BLM setting a substantially higher minimum bid level for the Refuge, it is highly unlikely that any bids would come close to generating the projected revenues. Historically in the National Petroleum Reserve-Alaska (the Reserve), the average amount per acre for all lease sales since 1999 is $32.34.[12] The most recent lease sale generated bids averaging less than $11 per acre.[13] Quite simply, BLM will not generate the expected revenues from a lease sale.

The global pandemic has made the fraught nature of oil and gas even clearer, as the price of oil has plummeted and production slowed or stopped in many places. Oil is currently hovering around $47 per barrel. BP, a leader in Alaska oil and gas development and investment for decades, recently sold all of its holdings in Alaska and exited the State.[14] Major banks and

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[9] Letter from Keith Hall, Director, Congressional Budget Office, to Kevin Brady, Chairman, Committee on the Ways and Means, U.S. House of Representatives (Dec. 15, 2017).

[10] Henry Fountain and Steve Eder, The White House Saw Riches in the Arctic Refuge, but Reality May Fall Short, The New York Times (Aug. 21, 2019), available at: https://www.nytimes.com/2019/08/21/us/oil-drilling-arctic.html; Center for American Progress, Arctic National Wildlife Refuge 101: Protecting America's Last Great Wilderness from Being Sold Out for a Congressional Tax Scam, Matt Less-Ashely and Jenny Rowland-Shea (Oct. 10, 2017), available at: https://www.americanprogress.org/issues/green/news/2017/10/10/440559/arctic-national-wildlife-refuge-101/.

[11] Detailed Statement of Sale at 2.

[12] NPR-A Sale Statistics 1999 to Present, Bureau of Land Management, available at: https://www.blm.gov/sites/blm.gov/files/documents/files/Oil_Gas_Alaska_NPR-A_LeaseSale_Statistics_1999toPresent.pdf.

[13] U.S. Department of the Interior, Bureau of Land Management, December 11, 2019 NPR-A Lease Sale Summary, available at: https://www.blm.gov/sites/blm.gov/files/uploads/OilandGas_Alaska_2019_NPR-A_Lease-Sale-Bid-Recap.pdf.

[14] Elizabeth Harball, Alaska Public Media, BP moves to exit Alaska, relinquishing role as operator of Prudhoe Bay (Aug. 27, 2019), available at: alaskapublic.org/2019/08/27/bp-moves-to-exit-alaska-relinquishing-role-as-operator-of-prudhoe-bay/.

lending institutions are announcing that they will not fund Arctic oil and gas projects, with many specifically identifying the Arctic Refuge as an area where they will not fund development.[15]

In short, oil and gas activities, especially in undeveloped areas that would require huge and complex investments like the Coastal Plain, do not make sense. It does not make financial or reputational sense for any company to risk such an endeavor. BLM should not hold a lease sale and the Executive Branch should work with Congress to repeal the lease program in the Tax Act.

III. THE LEASE SALE MUST COMPLY WITH LEGAL MANDATES.

BLM's leasing program fails to meet its legal obligations under numerous legal mandates, including the directives of the Tax Act, the National Environmental Policy Act (NEPA), National Wildlife Refuge System Administration Act (Refuge Act), the Endangered Species Act (ESA), and the Alaska National Interest Lands Conservation Act (ANILCA). BLM canont move forward with holding the lease sale prior to fixing these legal deficiencies. Each is addressed in more detail below.

A. BLM MUST COMPLY WITH THE DIRECTIVES IN THE TAX ACT FOR THE LEASE SALE.

As an initial matter, we note that the lease tracts proposed and that BLM identified it will offer are very large, much larger than those offered in the NPRA or required in the NPRPA regulations. With the exception of tract 29 (which is delineated based on a rejected selection claim from the State of Alaska) other tracts are nearly all over 40,000 acres, and many are over 50,000 acres.[16] It is unclear why the tracts are this large. It may provide BLM with greater flexibility in management if there are smaller tracts. We also note that the tracts do not follow the BLM's resource potential estimates, appearing to include various combinations of low, medium, and high potential areas in with each other.[17] BLM also traditionally sets minimum bids by tracts based on resource potential, which the agency did not do here. Because the Tax Act prioritizes the high potential areas, BLM should revise the tracts offered and more closely track the hydrocarbon potential areas it identified in the Leasing Program EIS.

Additionally, BLM must be clear about how it is applying multiple directives in the Tax Act, specifically the "2,000-acre limitation" on surface development and the right-of-way provision. BLM's current positions on both are inconsistent with the mandates in the Tax Act and fail to account for duties to protect Coastal Plain resources and wildlife. These issues are addressed below.

1. *BLM Must Clarify Its Approach to the 2,000-Acre Limitation and Clearly Set Out Lease Terms to Ensure Compliance.*

[1515] BankTrack, Banks and Arctic oil and gas, https://www.banktrack.org/campaign/banks_and_arctic_oil_and_gas (last visited Dec. 17, 2020).

[16] Detailed Statement of Sale, Exh. B.

[17] 2 Final EIS at Appx. B, Map B-1.

The Tax Act sets a limit on surface development of 2,000 acres.[18] This limit was repeatedly discussed during proceedings leading to the passage of the legislation as a way to prevent harm to Coastal Plain resources.[19] While Groups believe that this limitation will not achieve this stated goal, BLM is bound by this statutory limitation. But BLM has indicated that it will allow for far more development than 2,000 acres and announced a new interpretation at every procedural review point to date (draft EIS, final EIS, ROD), injecting considerable confusion into the meaning of the prohibition and how it will be applied and enforced. This is not permitted under the Tax Act.

In interpreting this language in the draft EIS, BLM stated that it will limit to 2,000 acres "the total number of surface acres of all Federal land across the Coastal Plain, regardless of whether such land is leased, which may be covered by production and support facilities at any given time."[20] That is, BLM interpreted the limitation to be a rolling limit, as opposed to a cumulative cap on impacted acreage.[21] BLM also stated that the 2,000-acre limitation would not apply to gravel mines.[22] Groups explained why these interpretations were inconsistent with the Tax Act.[23] In the final EIS, BLM re-stated its interpretation that it would allow acreage to be reclaimed and new acreage to be developed, potentially in excess of 2,000 acres over time, but (properly) included gravel mines within the limitation.[24] Importantly, BLM's interpretation of this provision informed BLM's development scenario and impacts analysis in the final EIS.[25]

But in the ROD, BLM did not adopt its previous interpretations of the 2,000-acre limitation from the final EIS or draft EIS.[26] BLM indicated that it would not apply the "rolling cap" approach from the final EIS that would have allowed additional infrastructure beyond the

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[18] Pub. L. 115-97, Title II, section 20001(c)(3).

[19] Chairman Lisa Murkowski, Opening Statement, Full Committee Reconciliation Markup, U.S. Senate Committee on Energy and Natural Resources (Nov. 15, 2017) ("Alaskans know that we must balance the potential impacts of development. And I will be the first to agree that the environment and local wildlife will always be a concern, and that's why we have not avoided environmental review. . . . And that's why we have limited surface development to a total of just 2,000 federal acres."), *available at*: https://www.energy.senate.gov/public/index.cfm/files/serve?File_id=5B08FB7E-B82C-488F-9627-D78DEAF2EBC1.

[20] 1 U.S. Dep't of the Interior, Bureau of Land Mgmt., Coastal Plain Oil and Gas Leasing Program Final Environmental Impact Statement at 1-6 (emphasis in original) [hereinafter DEIS].

[21] 1 DEIS at 1-6.

[22] 1 DEIS at 1-6.

[23] Letter from Alaska Wilderness League et al. to Nicole Hayes, Project Manager, BLM at 12–13 (Mar. 13, 2019) [hereinafter Draft EIS Comments].

[24] 2 U.S. Dep't of the Interior, Bureau of Land Mgmt., Coastal Plain Oil and Gas Leasing Program Final Environmental Impact Statement at app. S at S-5 to -6 (2019) [hereinafter FEIS]; 1 *id.* at 2-44.

[25] *Id.* at 1-7, 2 *id.* at app. S at S-4; *id.* app. B at B-10, B-22 to -26.

[26] U.S. Dep't of the Interior & BLM, Coastal Plain Oil and Gas Leasing Program Record of Decision at 2, 4, 5 (2020) [hereinafter ROD].

initial 2,000 acres once the previously impacted areas had been "reclaimed."[27] The ROD instead contained a new interpretation of the 2,000-acre limit that identified and defined what facilities could be included within that limitation.[28] The ROD explained that many facilities that were assumed to be within the 2,000-acre limitation in the final EIS may not actually be counted toward that limitation, including airstrips, barge landings, roads, and gravel mines.[29] BLM based this new interpretation on its conclusion that the facilities counting toward the 2,000-acre limitation needed to be both "production *and* support facilities."[30] The ROD explained that "support" facilities that could be attributed to any other phase of oil and gas activities, such as transportation, exploration, or development, would not be limited by the 2,000-acre cap. In other words, the agency indicated that under this new interpretation it could authorize far more than 2,000 acres of infrastructure to be present on the Coastal Plain at any given point in time. However, the ROD also stated that the agency would not make specific determinations about which facilities would count toward the 2,000 acres until later in time.[31] This new interpretation is inconsistent with the Tax Act for the reasons set forth in the lawsuits challenging the Leasing Program.[32] BLM's significant revision of its interpretation in the ROD also means that BLM's prior analysis is insufficient and a supplemental EIS is required (as explained in greater detail below).[33]

Additionally, the agency is still not clear on how it will regulate surface development and what enforcement mechanisms it will include in the leases to ensure compliance with the 2,000-acre provision.[34] BLM appears to say that it will not have the authority to prohibit development and BLM does not include any clear lease terms or stipulations to allow it ensure compliance with the 2,000-are limitation. BLM's lease terms also contain a sweeping provision granting access rights via rights-of-way and easements as part of the lease terms. It is unclear how that provision fits with the 2,000 acre limitation under the terms of the lease, despite the fact that infrastructure related to access is and should be subject to the 2,000 acre limitation. BLM should remove the language granting a right of access from the lease template. BLM must ensure that it retains the authority to actually keep any development below this acreage cap, as well as the enforcement authority available to the agency to ensure compliance if development begins. This is particularly important given BLM's position to date is that under the terms of the leases granted in the Reserve, BLM does not retain the authority to deny permits for development once

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[27] *Id.* at 12–13.
[28] *Id.* at 11–13.
[29] *Id.* at 13.
[30] *Id.*
[31] *Id.* at 12–13.
[32] *See supra*, footnote 1 (listing lawsuits).
[33] See *infra* (explaining why a supplemental EIS is necessary to evaluate BLM's new interpretation). The agency's interpretation set out in the Detailed Statement of Sale is not taken directly from the ROD. Detailed Statement of Sale at 6. To the extent that the BLM is adopting yet another improper interpretation of this limitation, the agency must subject that interpretation to NEPA analysis.
[34] Detailed Statement of Sale at 6.

leases are issued,[35] and BLM is including more expansive lease terms for the Coastal Plain than it does in the NPRA.[36] None of the lease stipulations or notices in the EIS or ROD expressly retain BLM's authority to prohibit activities on leases if the 2,000-acre cap is otherwise reached.[37] BLM's sample lease noticed for the lease sale does not contain such a reservation.[38] These types of stipulations must be included in every lease and permit issued in the Refuge to make it clear that BLM and any leaseholders or permittees are subject to the 2,000-acre limit, making it clear even lessee's have a validly-issued leases, development can still be precluded if total disturbance across the Coastal Plain exceeds 2,000 acres at that time, as required by the Tax Act. This includes any off-lease activities that involve surface development. But BLM still has not identify any enforcement mechanism nor clearly retain the authority to prohibit activities on any leases it may grant. As a result, BLM cannot ensure that it will comply with the 2,000-acre limitation, in violation of the Tax Act. BLM must revise the lease stipulations and lease terms correct this by clearly setting out a 2,000-acre enforcement provision, and can only do so by withdrawing the Lease Sale Notice and Detailed Statement of Sale.

2. *BLM Must Explain Its Approach to Implementing the Right-of-Way Directives in the Tax Act Consistent with Existing Legal Mandates.*

The Tax Act also states that the "Secretary shall issue any rights-of-way or easements across the Coastal Plain for the exploration, development, production, or transportation necessary to carry out this section."[39] In the ROD, BLM stated that it cannot refuse to issue a right-of-way grant or other authorizations necessary for the oil and gas program, stating that any discretion is limited by the Tax Act.[40] As Groups explained, the Tax Act did not waive any substantive requirements of any environmental laws; any right-of-way or easement applications must first comply with these statutory mandates, including ANILCA Title XI.[41] BLM acknowledged in the final EIS that Title XI continues to apply to right-of-way applications,[42] but also repeatedly stated that it lacked the authority to preclude activities that are "necessary" for "access" to carry out the leasing program.[43] The statements in the final EIS and ROD regarding BLM's inability to

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[35] *See, e.g.*, BUREAU OF LAND MGMT., PROPOSED GREATER MOOSES TOOTH TWO DEVELOPMENT PROJECT: JOINT RECORD OF DECISION AND PERMIT EVALUATION WITH THE U.S. ARMY CORPS OF ENGINEERS (2018) ("BLM cannot select [the no action] alternative as its decision for GMT2. Once issued, oil and gas leases provide a right of development, subject to reasonable regulation." And "Alternative D is not a practicable alternative in the JROD, due to the fact that the BLM cannot select this alternative as its decision for GMT2. Once issued, oil and gas leases provide a right of development, subject to reasonable regulation."), *available at* https://eplanning.blm.gov/epl-front-office/projects/nepa/65817/160123/195768/Record_of_Decision_with_cover_page.pdf .

[36] Detailed Statement of Sale at Exh. H.

[37] Detailed Statement of Sale at Exh. C.

[38] Detailed Statement of Sale at Exh. H.

[39] Pub. L. 115-97, Title II, section 20001(c)(2).

[40] ROD at 9–10.

[41] Draft EIS Comments at 15–17.

[42] 2 FEIS at app. D at D-2, app. S at S-1214.

[43] 2 *id*. at app. 2 at 2-223.

preclude activities related to access, which are repeated in the Detailed Statement of Sale, sow confusion regarding BLM's anticipated compliance with Title XI. BLM must clarify that Title XI applies and will be followed. BLM repeats this statement in its Detailed Statement of Sale. The lease terms grants extensive rights of access via rights-of-way and easements under the lease terms, while at the same time not clearly retaining the agency's authority to independently review and deny any such proposals — despite the applicability of other laws like Title XI.[44] Additionally, BLM must clarify that the Tax Act's right-of-way provision is subject to the 2,000-acre provision; any surface development related to rights-of-way or easements is encompassed within that limitation and counts toward the 2,000-acre limit. An additional lease stipulations or lease notices should be included to clearly incorporate this requirement and BLM needs to update the lease terms to make it clear that access is not absolute.

Relatedly, BLM must be clear that for all rights-of-way, the permittee must still comply with the ESA and that the agency cannot approve any activities absent Marine Mammal Protection Act (MMPA) compliance.[45] Again, BLM's ESA section 7(a)(2) compliance is eviscerated by BLM including lease terms that repudiate or undermine its ability to enforce the conditions upon which the "no jeopardy" and "no adverse modification" conclusions of the Biological Opinion turned.

B. BLM MUST COMPLY WITH NEPA FOR THE LEASE SALE.

BLM acknowledges that the issuance of a lease is an irretrievable commitment of resources.[46] But BLM also says that lease issuance does not cause any direct impacts in and of itself because it does not authorize any activities.[47] As a result, BLM defers a site-specific analysis until later.[48] BLM can no longer defer that analysis; BLM must either conduct a site-specific analysis now or ensure it retains the authority to completely deny future activities in any leases.

1. The Leasing Program EIS Did Not Contain Sufficient Site-Specific NEPA Analysis for BLM to Issue Leases.

NEPA requires that agencies evaluate the environmental consequences of a project at an early stage of the planning process. While agencies can "defer detailed analysis until a concrete development proposal crystallizes the dimensions of a project's probable environmental consequences,"[49] agencies are required to undertake site-specific analysis prior to making an irretrievable commitment of resources. As the Ninth Circuit explained, the key inquiry is not

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[44] Detailed State of Sale at 6, Exh. H.

[45] *See* Letter from Trustees for Alaska and Sierra Club to David Bernhardt, Secretary of the Interior, et al, U.S. Department of the Interior at 10–15, 21–2 (Aug. 24, 2020).

[46] 2 FEIS at app. F. at F-1.

[47] 2 FEIS at app. F. at F-1.

[48] *See, e.g.*, 1 DEIS at ES-4 ("Direct and indirect impacts cannot be analyzed on a site-specific basis within this EIS, but they are analyzed for the program area generally, based on the hypothetical development scenario.").

[49] *Id.*

"*whether* the project's site-specific impact should be evaluated in detail, but *when* such detailed evaluation should occur."[50] An agency is required to fully evaluate site-specific impacts once it reaches the point of making "a critical decision . . . to act on site development."[51] An agency reaches the threshold triggering site-specific review when it proposes to make an irreversible and irretrievable commitment of resources.[52] In the oil and gas context, this occurs when an agency decides to issue a lease that does not contain an express provision retaining the agency's authority to fully prohibit later activities on those leases.[53] Once this critical decision-point is reached, "any vague prior programmatic statements are no longer enough" to satisfy NEPA.[54]

The Ninth Circuit recently reaffirmed the requirement for a site-specific analysis in *Northern Alaska Environmental Center v. U.S. Department of the Interior*.[55] The court stated that a lease sale is "an irretrievable commitment of resources necessitating site-specific analysis in an EIS."[56] The court also reaffirmed that a "lease sale require[s] some form of site-specific analysis."[57]

BLM has acknowledged that in issuing leases it will make an irretrievable commitment of resources, and the Secretary has stated that the "rights conferred under these leases are extraordinary" and that they "guarantee [] right of way."[58] Similarly, in the Reserve, BLM has issued leases constituting an irretrievable commitment of resources, without first conducting a site-specific NEPA analysis; once development projects are proposed, BLM claims that it no longer retains the right to deny development proposals by adopting the no action alternative because "oil and gas leases provide a right of development."[59]

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[50] *Id.* (emphasis added).

[51] *Friends of Yosemite Valley*, 348 F.3d at 800 (quoting *N. Alaska Envtl. Ctr. v. Lujan*, 961 F.2d 886, 890–91 (9th Cir. 1992)); *see also Cal. v. Block*, 690 F.2d 753, 761 (9th Cir. 1982) ("The standards normally applied to assess an EIS require further refinement when a largely programmatic EIS is reviewed.").

[52] *Block*, 690 F.2d at 761.

[53] *Conner v. Burford*, 848 F.2d 1441, 1448 (9th Cir. 1988).

[54] *Pit River Tribe v. U.S. Forest Serv.*, 469 F.3d 768, 784 (9th Cir. 2006).

[55] 965 F.3d 705 (9th Cir. 2020).

[56] *Id.* at 714.

[57] *Id.*; *see also id.* at 715 ("There is no question' that NPRPA oil and gas leases constitute 'an irretrievable commitment of resources,' and thus require 'site specific analysis in [an] EIS.'" (quoting *N. Alaska Envtl. Ctr. v. Kempthorne*, 457 F.3d 969, 975–76 (9th Cir. 2006))).

[58] House Committee on Appropriations, Department of the Interior Budget Request for FY2021, (1:53:40) (Mar. 11, 2020), video available at https://appropriations.house.gov/events/hearings/department-of-the-interior-budget-request-for-fy2021.

[59] *See, e.g.*, BUREAU OF LAND MGMT., GREATER MOOSES TOOTH 2 OIL AND GAS DEVELOPMENT PROJECT: JOINT RECORD OF DECISION AND PERMIT EVALUATION 8 (2018) ("Alternative D is not a practicable alternative in the JROD, due to the fact that the BLM cannot select this alternative as its decision for GMT2. Once issued, oil and gas leases provide a right of development, subject to reasonable regulation.").

This is improper under NEPA. Because BLM is going to make an irretrievable commitment of resources by issuing a lease, the agency cannot defer its site-specific analysis and cannot rely on vague programmatic statements about impacts in its Leasing Program EIS. The Leasing Program EIS is clear that it does not include a site-specific analysis.[60] BLM needs to conduct a site-specific analysis prior to issuing any leases.

BLM must also include a site-specific analysis of how the impacts of leasing will interact with the impacts from the seismic exploration proposal BLM is currently rushing to authorize on the Coastal Plain.[61] The leasing EIS did not contain an adequate analysis of seismic exploration in general, let alone a site-specific analysis of the proposal currently before the agency. BLM needs to update its analysis to account for the foreseeable impacts of both the leasing program and those seismic activities.

Relatedly, BLM cannot defer the analysis of foreseeable impacts by asserting that the consequences are unclear or that the agency will analyze the impacts at a later point in time when there is a development proposal because it is making an irretrievable commitment of resources.[62] In the EIS, BLM claimed that until it "receives and evaluates an application for an exploration permit, permit to drill, or other authorization that includes site-specific information about a particular project, impacts of actual exploration and development that might follow lease issuance are speculative, as so much is unknown as to location, scope, scale, and timing of that exploration and development."[63] That is, BLM admitted at the Leasing Program adoption stage that it does not have sufficient information to conduct a site-specific NEPA analysis. Given that no site-specific analysis was done in the Leasing Program EIS, BLM must do that analysis now, prior to issuing leases and making an irretrievable commitment of resources.

2. BLM's Changes in the ROD Require Additional NEPA Analysis Prior to Leasing.

As explained above, in the ROD, BLM partially repudiated its prior interpretations of the 2,000-acre limitation and adopted a new approach that could result in far more than 2,000 acres of surface development. BLM based its reasonably foreseeable development scenario and impact analyses in the EIS on its interpretation of the 2,000-acre provision.[64] BLM also stated that the EIS analyzed "the maximum level of development that could occur in the program area."[65] BLM's new interpretation significantly undercuts this conclusion because it allows for far greater than 2,000 acres of surface development at any one time. Importantly, the Ninth Circuit recently explained that while an agency can rely on a hypothetical development scenario to meet its NEPA obligations to consider site-specific impacts for a large lease area, it recognized that the

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[60] 1 FEIS at 1-2, 3-17, 2 FEIS app. B. at B-3, B-12, app. F at F-12, app. S at S-734, S-809, S-835, S-1177, S-1328.

[61] Bureau of Land Mgmt., Marsh Creek East Seismic Exploration, NEPA No. DOI-BLM-AK-R000-2021-0001-EA, https://eplanning.blm.gov/eplanning-ui/project/2003258/510 (last visited Nov. 20, 2020).

[62] *Kern*, 284 F.3d at 1072.

[63] 1 FEIS at 3-1.

[64] 2 FEIS app. B at B-10.

[65] 1 FEIS at ES-4

hypothetical development scenario had to represent "the spectrum of foreseeable results."[66] BLM's EIS no longer represents the spectrum of results because far greater impacts could occur under its new interpretation. Because BLM's new interpretation could result in more development than previously analyzed, BLM cannot rely on its hypothetical development scenario and Leasing Program EIS analysis to satisfy its NEPA obligations to consider site-specific impacts for the lease sale. BLM must complete additional NEPA analysis prior to a lease sale to account for the more expansive development that could be allowed and its changed 2,000-acre limitation.

3. The Leasing Program EIS Is Inadequate and Cannot Be Tiered To.

BLM cannot rely on, or otherwise tier to, the EIS for the Leasing Program to satisfy its NEPA obligations for the lease sale. First, Groups identified multiple resources for which BLM's analysis in the EIS was insufficient.[67] BLM did not remedy these failings in the final EIS.[68] BLM's failure to analyze the impacts of an oil and gas program on the Coastal Plain and its resources deprives BLM of the ability to solely rely on the Leasing Program EIS to satisfy its NEPA obligations for the lease sale. It also means that the agency failed to adopt sufficient mitigation measures to protect Coastal Plain resources and unique areas within the Coastal Plain. Second, BLM cannot rely on the Leasing Program EIS to meet its obligation under NEPA to evaluate alternatives because reasonable alternatives were excluded from consideration.[69] Prior to holding the lease sale, BLM should consider an alternative that only makes available for leasing 400,000 acres, and includes more extensive NSO lease offerings than adopted in the ROD. In short, the agency must conduct additional NEPA analysis to remedy the hard-look failures in the Leasing Program EIS and consider alternatives before it can hold a lease sale.

C. A COMPATIBILITY DETERMINATION IS REQUIRED PRIOR TO THE LEASE SALE.

A compatibility determination from U.S. Fish and Wildlife Service (FWS) is required before BLM can hold a lease sale. Compatibility is a cornerstone of refuge management. The compatibility requirement obliges the Secretary to determine whether proposed "uses are compatible with the major purposes for which such areas were established."[70] The Refuge Act is clear that a new use cannot be permitted until a compatibility determination is made, which requires a public comment opportunity.[71] Section 304(b) of ANILCA adopted the compatibility standard for refuges in Alaska.

BLM continues to dispute the application of these clear compatibility requirements. The Secretary states in the ROD that FWS cannot participate in any way in regulating an oil and gas

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[66] *Northern Alaska Environmental Center*, 965 F.3d at 718.

[67] DEIS Comment Letter at 86–396 (incorporated here by reference).

[68] *See supra*, note 1 (listing pending lawsuits, all of which raises claims under NEPA for BLM's insufficient analysis) (incorporated here by reference).

[69] DEIS Comment Letter at 22–28.

[70] 16 U.S.C. § 668dd(d)(1)(A).

[71] *Id.* § 668dd(d)(1)(A), (d)(3)(B); 50 C.F.R. § 26.41.

program.[72] This is incorrect. Congress was clear when it passed the Tax Act that no laws were being waived.[73] This includes ANILCA and the Refuge Act. BLM's position also ignores FWS's role as administrator of the Refuge[74] and the fact that FWS often does compatibility determinations for activities that are also refuge purposes.[75] A lease sale cannot proceed prior to completion of a compatibility determination by FWS to ensure that all Coastal Plain purposes are protected.

The Secretary, through FWS, must complete a compatibility determination. In doing so, FWS must consider and protect all seven conservation purposes of the Coastal Plain, which include: (1) preserving wildlife values, (2) preserving wilderness values, (3) preserving recreation values, (4) conserving fish and wildlife and habitat, (5) meeting international treaty obligations regarding fish, wildlife, and habitat, (6) continuing to provide for subsistence, and (7) protecting water quantity and quality needed to meet fish, wildlife, and habitat needs.[76]

It is also particularly troubling that BLM's lease terms do not retain adequate authority to ensure the protection of the Refuge's purposes. The broad grant of rights for oil and gas development and access to leases needs to be revised to ensure BLM and FWS retain adequate authority to impose mitigation measures that are necessary to protect the Refuge's other purposes. BLM should remove the access provisions from the lease terms, as it is highly irregular, inappropriate, and contrary to how BLM administers leasing in the NPRA for BLM to include such a grant as part of the lease itself.

D. BLM MUST REINITIATE ESA CONSULTATION PRIOR TO THE LEASE SALE.

As noted above, BLM's program for the Coastal Plain is currently subject to legal challenges based on violations of numerous laws, including the Endangered Species Act (ESA). In authorizing the leasing program, BLM consulted with the FWS on the effects of the Coastal Plain leasing program on threatened polar bears. This consultation resulted in FWS issuing a Biological Opinion (BiOp).[77] As the agency authorizing oil and gas leasing on the Coastal Plain, BLM has an ongoing, substantive duty under Section 7(a)(2) of the ESA to ensure that its actions — including this lease sale — are not likely to jeopardize the continued existence of listed species or result in destruction or adverse modification of critical habitat.[78]

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[72] ROD at 7.

[73] *See, e.g.*, Senator Lisa Murkowski, Floor Speech on Reconciliation Legislation (November 30, 2017), www.murkowski.senate.gov/press/speech/floor-speech-reconciliation-legislation-tax-reform.

[74] DEIS Comment Letter at 63–64.

[75] *See, e.g.*, 2 U.S Fish and Wildlife Service, Arctic National Wildlife Refuge, Revised Comprehensive Conservation Plan Final Environmental Impact Statement at app. G at G-122 to G-128 (compatibility determination for subsistence activities).

[76] PLO 2214 at 1; ANILCA § 303(2)(B); *see also* DEIS Comment Letter at 64–66.

[77] Fairbanks Fish and Wildlife Field Office, U. S. Fish and Wildlife Service, Biological Opinion for Coastal Plain Oil and Gas Leasing Program Arctic National Wildlife Refuge (Mar. 13, 2020) ["Biological Opinion" or "BiOp].

[78] 16 U.S.C. § 1536(a)(2).

As set out in the 60-day notice and lawsuits, the BiOp is flawed in a variety of ways in its analysis of polar bears: it relies on uncertain mitigation measures to avoid jeopardy; it fails to consider the best available scientific data; it fails to analyze the total impacts of the whole oil and gas program on critical habitat; and it fails to consider impacts from increased greenhouse gas emissions in making its "no jeopardy" determination. Because an action agency's reliance on a legally flawed BiOp to authorize an action violates its substantive duty to ensure against jeopardy, BLM will violate the ESA by relying on the legally flawed BiOp to support its proposed lease sale.

In particular, BLM cannot reasonably or lawfully rely on the BiOp because BLM has repudiated its authority to enforce conditions on which FWS premised the BiOp's "no jeopardy" conclusions. These no jeopardy conclusions required two key conditions: (1) BLM must not approve any on-the-ground activity until after the lessee/operator obtains MMPA authorization from FWS for any incidental take, or a letter from FWS indicating such take will not occur; and (2) BLM must also complete additional "step-down" ESA consultations with FWS prior to authorizing any on the ground activity that may affect a listed species.[79]

As described above, under BLM's interpretation of the Tax Act, practice in the Reserve, and the sample lease terms, its decision about which lands to make available for leasing is likely the last point at which BLM has authority to fully preclude activities or infrastructure from occurring that would harm polar bears. Even though subsequent authorizations are required for on-lease activities, BLM has taken the position that it cannot deny such authorization for any activity or infrastructure that is "necessary" for "access" to leased oil and gas for the Lease Program and in other permitting process, BLM has stated that it cannot completely prohibit activities. As a result, it is not clear how BLM will enforce the conditions supporting the BiOp in its leases to ensure that activities on the Coastal Plain comply with the MMPA and ESA. In order to comply with these laws, BLM must retain full authority in its leases to preclude any activities that could violate these laws. As discussed above, the sample lease terms grant extensive rights of access via rights-of-way and easements, while at the same time not clearly retaining the agency's authority to deny any such proposals. BLM's failure to retain adequate authority to deny proposals eviscerates its ESA section 7(a)(2) compliance by undercutting its ability to enforce or implement the conditions on which the Biological Opinion's "no jeopardy" and "no adverse modification or destruction" conclusions expressly relied. The inclusion of lease terms that undermine the implementation of Lease Notice 2 perpetuates the errors in the Record of Decision that render BLM's reliance on the Biological Opinion to satisfy its ESA section 7(a)(2) obligations unreasonable and unlawful.

Finally, BLM cannot ensure this lease sale will not result in destruction or adverse modification of polar bear critical habitat. Even if BLM enforces the MMPA and conducts step-down ESA consultations described above, this would not necessarily limit impacts to polar bear critical habitat to ensure against destruction or adverse modification. The BiOp's conclusions fail to consider the impact of the whole agency action on critical habitat because MMPA compliance would not prevent destruction or adverse modification of critical habitat; "step-down"

[79] BiOp at 25.

consultations will each reflect only a piecemeal analysis; and the BiOp's consideration of impacts to polar bear critical habitat is deficient. Moreover, BLM's ROD opens the entirety of the critical habitat within the program areas to surface impacts while simultaneously stripping away the 2,000 acre limit relied upon in the BiOp. The BiOp indicated that the limitation of impacts to a direct footprint of no more than 2,000 acres was a factor on which FWS relied to reach its determination that there would be no destruction or adverse modification of critical habitat.[80] But as explained above, BLM's current interpretation of that provision could allow far greater than 2,000 acres of surface development. As a result, BLM cannot rely on the BiOp's conclusion that there would be no destruction or adverse modification of critical habitat resulting from the lease sale.

E. BLM MUST CONSULT WITH TRIBES AND COMPLY WITH ANILCA SECTION 810 SUBSISTENCE PROTECTIONS FOR THE LEASE SALE.

1. BLM Must Consult Prior to a Lease Sale.

The Gwich'in people live in fourteen small villages across a vast area extending from northeast Alaska to the northern Yukon and Northwest Territories in Canada. It is unclear which communities have been contacted by BLM for consultation. Although the Iñupiat community of Kaktovik is the only community located on the Coastal Plain, other villages such as Arctic Village, Fort Yukon, Venetie, Chalkyitsik, Beaver, and Canadian villages such as Old Crow and Fort McPherson, are located within the range for the Porcupine Caribou Herd and will be impacted by any oil and gas activities on the Coastal Plain.[81] BLM also recognizes that many other communities, such Wiseman, Birch Creek, and Stevens Village, have reported geographic, historic/prehistoric, or cultural ties to the Arctic Refuge as a whole.[82] BLM further acknowledges that subsistence harvesting and sharing patterns for "22 Alaskan communities and seven Canadian user groups are relevant if post-lease oil and gas activities change[] caribou resource availability or abundance for those users."[83] However, BLM has not meaningfully engaged with all of these potentially affected communities. Tribal governments for every affected community within Alaska and Canada must be contacted for government-to-government consultation prior to a lease sale. BLM's consultation efforts on the leasing program to date are not sufficient to excuse BLM from needing to engage in government-to-government consultation at this stage.

2. BLM Must Conduct Additional ANILCA 810 Analysis.

BLM must assess the potential impacts to subsistence from the lease sale and consider alternatives that would reduce impacts to subsistence. Section 810 of ANILCA requires BLM to analyze the potential impacts to subsistence and ways to eliminate or reduce those impacts when leasing:

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[80] *Id*. at 123.

[81] Gwich'in Steering Committee, Primary Habitat of the Porcupine Caribou Herd Map, *available at*: http://ourarcticrefuge.org/wp-content/uploads/2012/10/mappch.pdf.

[82] 1 DEIS at 3-160.

[83] 1 DEIS at 3-167.

> In determining whether to withdraw, reserve, *lease*, or otherwise permit the use, occupancy, or disposition of public lands . . . [BLM] shall evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for the purposes sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes.[84]

BLM's policy related to ANILCA Section 810 acknowledges that this evaluation "is required for all land use actions."[85] BLM's policy recognizes that there is no equivalent to a categorical exclusion for 810 analyses and that such an analysis must take place for all land use actions; a Section 810 analysis is required even where BLM proceeds under NEPA via a DNA.[86] BLM is, therefore, required to conduct an 810 analysis prior to the lease sale. The Section 810 analysis BLM conducted for the Lease Program does not exempt BLM from needing to conduct an 810 analysis for this specific lease sale. This is particularly important given that the lease sale stage is the point at which BLM states it ties its hands and can no longer say "no" to future development proposals.[87]

BLM cannot simply rely on its prior Section 810 analysis. Groups, including the Gwich'in Steering Committee and three tribes, explained how the Section 810 analysis for the Leasing Program EIS was insufficient to satisfy BLM's mandates.[88] BLM did not remedy these failings in its final analysis.[89] Additionally, BLM must consider all feasible alternatives that would "minimize the impact of a proposed project on resources which rural village residents of Alaska use for subsistence" (such as leasing only 400,000 acres and permitting less than 2,000

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[84] 16 U.S.C. § 3120(a) (emphasis added).

[85] U.S. Bureau of Land Mgmt., Instruction Memorandum No. AK-2011-008: Compliance with ANILCA Section 810 at 1-1 (2011) [hereinafter Instruction Memorandum] (emphasis added) ("Conducting ANILCA 810 evaluations in Alaska on public lands is mandatory for virtually all Federal land use decisions . . . ."); *id.* at 1–2 (listing actions that Section 810 evaluations are not required for, neither of which includes a lease sale).

[86] Instruction Memorandum at 1–2 ("There are no categorical exclusions for 810 evaluations. Therefore, Section 810 Evaluations are required for all land use actions on public lands. Section 810 Evaluations must be conducted in conjunction with NEPA categorical exclusion documentation (CXs) and with determinations of NEPA adequacy (DNAs).").

[87] *See, e.g.*, BUREAU OF LAND MGMT., PROPOSED GREATER MOOSES TOOTH TWO DEVELOPMENT PROJECT: JOINT RECORD OF DECISION AND PERMIT EVALUATION WITH THE U.S. ARMY CORPS OF ENGINEERS (2018) ("BLM cannot select [the no action] alternative as its decision for GMT2. Once issued, oil and gas leases provide a right of development, subject to reasonable regulation."), *available at* https://eplanning.blm.gov/epl-front-office/projects/nepa/65817/160123/195768/Record_of_Decision_with_cover_page.pdf.

[88] DEIS Comment Letter at 396–412 & Letter from Bernadette Demientieff, Executive Director, Gwich'in Steering Committee, to Nicole Hayes, Project Manager, Bureau of Land Management (Mar. 13, 2019) at 18–30 (incorporated here by reference).

[89] *See* supra, note 1 (listing *Gwich'in Steering Committee* and *Native Village of Venetie* lawsuits, which include ANILCA 810 claims) (incorporated here by reference).

acres of surface development) and steps to minimize the adverse impacts to subsistence uses and resources from leasing.[90]

Enclosures

[90] *City of Tenakee Springs v. Clough*, 915 F.2d 1308, 1310, 1311–12 (9th Cir. 1990); 16 U.S.C. § 3120(a).

Attachment A: Lease Sales in the National Petroleum Reserve-Alaska

Year	Call for Nominations Period	Notice of Lease Sale/ Detailed Statement of Sale Date	Lease Bids Received Date and Time	Lease Bid Opening Date
2019	6/20-7/22	11/5	12/9 4pm	12/11
2018	7/19-8/20	11/9	12/10 4pm	12/12
2017	8/7-9/6	10/26	12/4 4pm	12/6
2016	3/31-5/2	11/9	12/12 4pm	12/14
2015	05/28 – 6/29	9/29	11/16 4pm	11/18
2014	6/3-7/18	9/26	11/17 4pm	11/19
2013	6/3-7/18	9/30	11/4 4pm	11/6
2012	5/15-629	10/5	11/5 4pm	11/7
2011	6/21-7/21	11/4	12/5 4pm	12/7
2010	Occurred in 2003; see note 1.	7/9	8/9 3:45pm	8/11
2008	Occurred in 2003; see notes 1 & 2.	8/15	9/19 3:45pm	9/24
2006	Occurred in 2001; see note 2.	8/23	9/22 3:45pm	9/27
2004	Occurred in 2001 and 2003; see notes 1 & 2.	4/27	5/28 3:45pm	6/2
2002	Occurred in 1997; see note 3.	4/29	5/31 3:45pm	6/3
1999	Occurred in 1997; see note 3.	4/05	5/4 3:45 pm	5/5

Note 1- Northeast: June 23, 2003 FR notice for the NPRA IAP Amendment and Call for Nominations; comments due Sept. 30, 2003 (https://www.govinfo.gov/content/pkg/FR-2003-06-23/pdf/03-15737.pdf). Later extended scoping to Oct. 31, 2003 (https://www.govinfo.gov/content/pkg/FR-2003-09-15/pdf/03-23446.pdf)
Note 2 - Northwest: November 15, 2001 FR notice for the NPRA IAP and Call for Nominations with comments due Dec. 15, 2001 (https://www.govinfo.gov/content/pkg/FR-2001-11-15/pdf/01-28665.pdf)
Note 3 - Feb. 13, 1997 FR notice for the NPRA IAP and Call for Nominations @ 62 Fed. Reg. 6797 with comments through Mar. 31, 1997 (https://www.govinfo.gov/content/pkg/FR-1997-02-13/pdf/96-3614.pdf). Later extended through an April 9, 1997 FR notice with comments due by Apr. 18, 1997 (https://www.govinfo.gov/content/pkg/FR-1997-04-09/pdf/97-9165.pdf)

Brook Brisson (AK Bar No. 0905013)
Suzanne Bostrom (AK Bar No. 1011068)
Bridget Psarianos (AK Bar No. 1705025)
Brian Litmans (AK Bar No. 0111068)
TRUSTEES FOR ALASKA
1026 W. Fourth Avenue, Suite 201
Anchorage, AK 99501
Phone: (907) 276-4244
Fax: (907) 276-7110
bbrisson@trustees.org
sbostrom@trustees.org
bpsarianos@trustees.org
blitmans@trustees.org

Attorneys for Plaintiffs Gwich'in Steering Committee, Alaska Wilderness League, Alaska Wildlife Alliance Canadian Parks & Wilderness Society-Yukon, Defenders of Wildlife, Environment America, Friends of Alaska National Wildlife Refuges, National Wildlife Federation, National Wildlife Refuge Association, Northern Alaska Environmental Center, Sierra Club, The Wilderness Society, and Wilderness Watch

Karimah Schoenhut (*pro hac vice*)
SIERRA CLUB ENVIRONMENTAL LAW PROGRAM
50 F St., NW 8th Floor
Washington, DC 20001
Phone: (202) 548-4584
Fax: (202) 547-6009
karimah.schoenhut@sierraclub.org

Attorney for Plaintiff Sierra Club

THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF ALASKA

GWICH'IN STEERING COMMITTEE, ALASKA WILDERNESS LEAGUE, ALASKA WILDLIFE ALLIANCE, CANADIAN PARKS & WILDERNESS SOCIETY-YUKON, DEFENDERS OF WILDLIFE, ENVIRONMENT AMERICA, INC., FRIENDS OF ALASKA NATIONAL WILDLIFE REFUGES, NATIONAL WILDLIFE FEDERATION, NATIONAL WILDLIFE REFUGE ASSOCIATION, NORTHERN ALASKA ENVIRONMENTAL CENTER, SIERRA CLUB, THE WILDERNESS SOCIETY, and WILDERNESS WATCH, Plaintiffs, v. DAVID BERNHARDT, in his official capacity as Secretary of the Interior, UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT, and U.S. FISH & WILDLIFE SERVICE, Defendants.	Case No. 3:20-cv-00204-SLG

FIRST AMENDED COMPLAINT FOR DECLARATORY AND INJUNCTIVE RELIEF (Alaska National Interest Lands Conservation Act, §§ 303(2)(B), 304(a), Pub. L. No. 96-487, 94 Stat. 2371 (1980) & 16 U.S.C. §§ 3101–3233; National Wildlife Refuge System Administration Act, 16 U.S.C. §§ 668dd–668ee; National Environmental Policy Act, 42 U.S.C. §§ 4321–4370j; Tax Cuts and Jobs Act, Pub. L. 115-97, tit. 2, § 20001; Wilderness Act, 16 U.S.C. §§ 1131–1136; Endangered Species Act, 16 U.S.C. §§ 1531–1544; Administrative Procedure Act, 5 U.S.C. §§ 702–706)

Plaintiffs Gwich'in Steering Committee, Alaska Wilderness League, Alaska Wildlife Alliance, Canadian Parks & Wilderness Society-Yukon, Defenders of Wildlife,

Environment America, Inc., Friends of Alaska National Wildlife Refuges, National Wildlife Federation, National Wildlife Refuge Association, Northern Alaska Environmental Center, Sierra Club, The Wilderness Society, and Wilderness Watch (collectively, Plaintiffs) file this Complaint for Declaratory and Injunctive Relief, alleging:

I. NATURE OF THE CASE

1. The Coastal Plain of the Arctic National Wildlife Refuge (Arctic Refuge) is iconic and sacred. It provides habitat for numerous fish and wildlife species, including caribou, polar bears, birds, and wolves. It offers exceptional recreational experiences, in large part because of its incredible wilderness and wildlife values. Most critically, it is sacred land to the Gwich'in Nation, Indigenous people of Alaska and Canada, because of the importance of the Coastal Plain to the Porcupine Caribou Herd and the deep cultural and spiritual connection between the Gwich'in and the caribou.

2. Because of its exceptional subsistence, wildlife, habitat, and cultural values, the Coastal Plain has been protected under federal law for decades. Those protections prohibited oil and gas leasing and development in the area.

3. This protected status changed in 2017. A rider to tax reform legislation allowed for an oil and gas leasing program on the Coastal Plain. The U.S. Department of the Interior (DOI) and the Bureau of Land Management (BLM) have since rushed to

complete their environmental review and adopt an extensive and harmful leasing program.

4. In issuing the final environmental impact statement (EIS) and signing the record of decision (ROD), BLM failed to comply with numerous federal statutes and regulations that impose important protections for the lands and resources on the Coastal Plain. These laws require thorough, transparent, and careful analysis of the impacts of BLM's decision. The agency's failure threatens the exceptional resources of the Coastal Plain and the subsistence, cultural, and spiritual connection between the Gwich'in People and the Coastal Plain.

5. The U.S. Fish and Wildlife Service (FWS) issued a Biological Opinion (BiOp) in support of the final EIS and ROD. FWS determined the leasing program would not jeopardize polar bears on the Coastal Plain nor adversely modify their critical habitat. In making this determination, FWS relied on mitigation measures that are not reasonably certain to occur, and failed to consider the best available science, the impacts of the entire leasing program on designated critical habitat, and the contribution of the leasing program to climate change. BLM relied on the BiOp to adopt the leasing program. FWS violated the Endangered Species Act (ESA) and the Administrative Procedure Act (APA) because its consultation with BLM was deficient and its determinations in the BiOp are arbitrary and capricious. BLM violated the ESA by unreasonably relying on the BiOp to conclude that the leasing program would not jeopardize the survival and recovery of

polar bears or destroy or adversely modify the species' designated critical habitat, and by failing to reinitiate consultation with FWS.

6. This action arises under, and alleges violations of: the Alaska National Interest Lands Conservation Act (ANILCA), §§ 303(2)(B), 304(a), Pub. L. No. 96-487, 94 Stat. 2371 (1980) and 16 U.S.C. §§ 3101–3233; Title II of the Tax Cuts and Jobs Act, Public Law 115-97, Section 20001 (Tax Act); the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321–4370j, and implementing regulations; the National Wildlife Refuge System Administration Act (Refuge Act), 16 U.S.C. §§ 668dd–668ee, and implementing regulations; the Wilderness Act, 16 U.S.C. §§ 1131–1136; the ESA, 16 U.S.C. §§ 1531–1544, and implementing regulations; and the APA, 5 U.S.C. §§ 701–706.

7. Plaintiffs bring this action to invalidate BLM's unlawful final EIS, ROD, and ANILCA Section 810 Final Evaluation, FWS's deficient BiOp, BLM's reliance on the BiOp, and any related or subsequent decisions based on those documents.

8. Plaintiffs seek vacatur and declaratory and injunctive relief against the Secretary of the Interior, DOI, BLM, and FWS. The agencies' actions and decisions fail to comply with applicable law, are arbitrary, capricious, an abuse of discretion, and not in accordance with the law, in excess of statutory authority, and without observance of the procedure required by law. 5 U.S.C. § 706(2).

II. JURISDICTION AND VENUE

9. This Court has jurisdiction over the parties and subject matter of this action under 28 U.S.C. § 1331 (federal question), 28 U.S.C. § 1361 (action to compel mandatory duty), 28 U.S.C. § 2201 (declaratory relief), 28 U.S.C. § 2202 (injunctive relief), and 16 U.S.C. § 1540(g) (ESA citizen suit provision).

10. Pursuant to 16 U.S.C. § 1540(g)(2)(A), on August 24, 2020, Plaintiffs provided 60 days' notice of intent to sue to DOI, BLM, and FWS regarding BLM's unreasonable and unlawful reliance on the BiOp, in violation of the ESA to ensure against jeopardy and destruction or adverse modification of critical habitat for the polar bear. Plaintiffs urged DOI and BLM to reinitiate consultation. A copy of the notice letter is attached as Exhibit A. Defendants have not remedied the violations to date.

11. The BLM's final EIS, ROD, and ANILCA Section 810 Final Evaluation, and FWS's BiOp are final agency actions for which Plaintiffs have a right to judicial review under the APA. 5 U.S.C. §§ 701–706.

12. Defendants' sovereign immunity is waived pursuant to the APA. 5 U.S.C. § 702.

13. Venue is proper in the District of Alaska under 28 U.S.C. § 1391(a)–(c) and (e), as well as 16 U.S.C. § 1540(g)(3)(A), because a substantial part of the events giving rise to the claims occurred within the BLM Alaska State and Arctic District Offices, and the FWS Alaska Regional Office, because many groups are primarily located in or

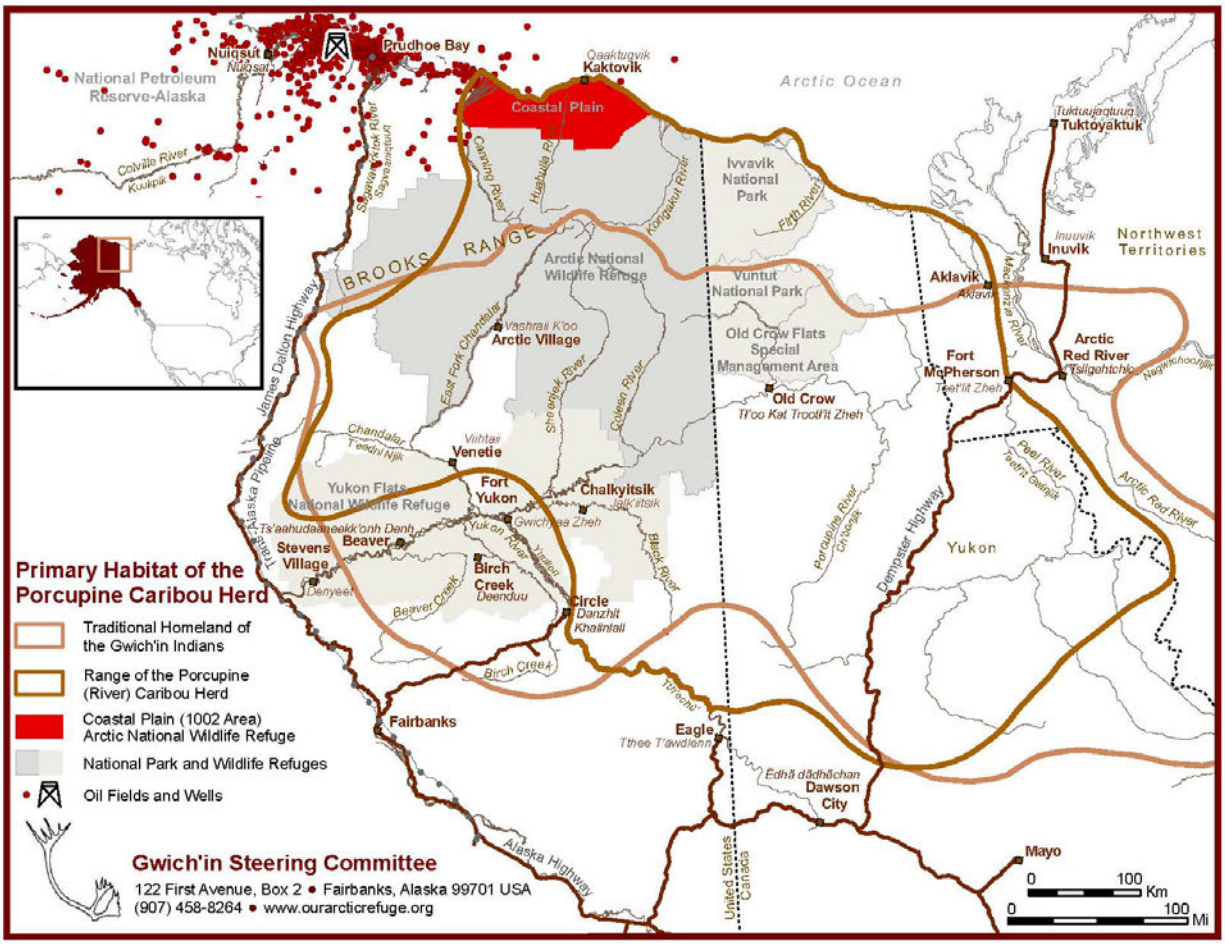
maintain offices in Alaska, and because the lands at issue in the case — the Coastal Plain of the Arctic National Wildlife Refuge — are located in Alaska.

III. PARTIES

Plaintiffs

14. Plaintiff Gwich'in Steering Committee is a 501(c)(3) nonprofit organization based in Fairbanks, Alaska. The Gwich'in Steering Committee is a voice for the 8,000 members of the Gwich'in Nation speaking out to protect the sacred calving and nursery grounds of the Porcupine Caribou Herd — the Coastal Plain. The Gwich'in Steering Committee was formed in 1988 in response to proposals to drill for oil in the Coastal Plain. The Gwich'in Steering Committee represents the communities of Arctic Village, Venetie, Fort Yukon, Beaver, Chalkyitsik, Birch Creek, Canyon Village, Circle, and Eagle Village in Alaska, and Old Crow, Fort McPherson, Tsiigehtchic, Aklavik, and Inuvik in Canada. The mission of the Gwich'in Steering Committee is to ensure the long-term health and viability of the Porcupine Caribou Herd, which sustains the Gwich'in way of life. Protecting the Coastal Plain and the Porcupine Caribou Herd is a human rights issue for the Gwich'in People. The Gwich'in Steering Committee is dedicated to protecting the entire ecosystem that the caribou rely on so that the Gwich'in People will have a future in their homeland. As depicted in the map below, the traditional homelands

of the Gwich'in generally follow the migratory path of the Porcupine Caribou Herd, but because of how sacred the Coastal Plain is to the Gwich'in, the area is not visited:



The Gwich'in Steering Committee's goal is to permanently protect the Coastal Plain of the Arctic Refuge. Gwich'in leaders have advocated for permanent protection of the Coastal Plain of the Refuge for decades, since before the passage of the Alaska National Interest Lands Conservation Act. The Gwich'in Steering Committee engages in numerous activities to advocate for permanent protection of the Refuge, including public

outreach and education, media work, public speaking, and attending conferences and events. The Gwich'in Steering Committee has submitted comments on numerous Refuge decisions and has presented testimony to Congress, the United Nations Special Rapporteur on Indigenous Peoples, and at public hearings on the EIS. The Gwich'in Steering Committee submitted extensive comments on the draft EIS, including raising issues under ANILCA section 810 and subsistence use of the Coastal Plain's resources.

15. Plaintiff Alaska Wilderness League (AWL) is a nonprofit organization founded in 1993 with approximately 100,000 members and supporters, including many members in Alaska. AWL's mission is to galvanize support to secure vital policies that protect and defend America's last great wild public lands and waters. AWL advocates for the protection of Alaska's wild lands and waters and works to prevent environmental degradation on Alaska's public lands and waters, including the Arctic Refuge. AWL actively works on issues related to oil and gas development and the protection of the Arctic Refuge. AWL is committed to honoring the human rights and traditional values of the people of the Arctic.

16. Plaintiff Alaska Wildlife Alliance (AWA) was founded by Alaskans in 1982 to protect intact ecosystems so that our state's wildlife can be managed for biodiversity and the benefit of present and future generations. AWA as over 300 members and supporters. AWA and its members speak out against energy development that unduly threatens vulnerable Alaskan ecosystems and species, including BLM's

leasing program for the Coastal Plain. AWA is particularly concerned about impacts on Coastal Plain ecosystems and wildlife, including but not limited to the endangered Steller's eider and Beaufort Sea Polar bears, as well as millions of migrating and nesting shorebirds, the Porcupine and Central Arctic caribou herds, and muskoxen. In addition to threatening wildlife, the leasing program violates the rights of Alaska Natives to subsist on this vibrant landscape. AWA views the Coastal Plain as one of the last unspoiled wild areas in the world, and seeks to ensure that protections guaranteed in its designation are honored for future generations of Alaskans and wildlife.

17. Plaintiff Canadian Parks and Wilderness Society – Yukon Chapter (CPAWS Yukon) is one of thirteen chapters of the Canadian Parks and Wilderness Society, which has over 40,000 supporters across Canada. CPAWS Yukon has approximately 220 members and over 2,000 supporters. It was founded in 1992 by Yukoners who wanted to bring attention to conservation issues in the Yukon Territory. CPAWS Yukon aims to preserve vast tracts of the Yukon's most beautiful and ecologically important lands and waters. CPAWS Yukon supports fair and democratic land-use planning that respects the rights of Yukon First Nations, engages all Yukoners, and recognizes the importance of protected areas as a means to promote ecological integrity and a sustainable future for the Yukon. CPAWS Yukon works on issues related to oil and gas activities on the Coastal Plain of the Arctic Refuge, which have the potential to harm the Porcupine Caribou Herd, which is critical to the culture and

subsistence ways of life for Indigenous peoples across northern Yukon and into the Northwest Territories.

18. Plaintiff Defenders of Wildlife (Defenders) is a nonprofit conservation organization and one of the nation's leading advocates for endangered species and wildlife. Founded in 1947, Defenders is headquartered in Washington, D.C. and maintains six regional offices throughout the country, including in Anchorage, Alaska. Defenders represents approximately 1.8 million members and supporters nationwide and around the world, including more than 6,000 in Alaska. Defenders uses education, public outreach, science, policy, and litigation, along with legislative and administrative advocacy, to defend the species, ecosystems, and habitats that are central to the organization's mission, including on the Arctic National Wildlife Refuge. Defenders has worked for decades to safeguard the Arctic Refuge from destructive oil and gas development. Protecting this vital unit of the National Wildlife Refuge System is key to implementing Defenders' vision to ensure that diverse wildlife populations are secure and thriving, sustained by a healthy and intact network of lands and waters. Defenders also works to support implementation of the FWS's Polar Bear Conservation and Recovery Plan, and to reduce any conflicts or impacts to polar bears and other wildlife that may arise from current or proposed development activities in the Arctic Refuge and elsewhere in the Arctic.

19. Plaintiff Environment America, Inc. (Environment America) is an advocacy group comprised of twenty-nine affiliate organizations and members and supporters in every state, including Alaska. Environment America works to protect air, water, and open spaces. Environment America engages in independent environmental research and advocates for policies by lobbying and mobilizing the public. Environment America has worked to raise awareness about the harmful impacts of oil and gas on public lands, including the Arctic Refuge, and the need to protect our natural heritage over fossil fuel extraction.

20. Plaintiff Friends of Alaska National Wildlife Refuges (Friends) is a nonprofit organization founded in 2005 and based in Homer, Alaska. It is a volunteer group that works to assist FWS to accomplish its congressionally-mandated mission for the sixteen national wildlife refuges in Alaska. Friends promotes the conservation of all Alaska National Wildlife Refuges by helping to protect and enhance their habitats and wildlife, including the Arctic Refuge, and by assisting the FWS through outreach to decision-makers and testimony before Congress.

21. Plaintiff National Wildlife Federation (NWF), one of America's largest conservation organizations, has worked across the country to unite Americans from all walks of life in giving wildlife a voice for over eighty years. NWF has 51 state and territorial affiliates, including an Alaska affiliate, and more than 6 million members and supporters, including hunters, anglers, gardeners, birders, hikers, campers, paddlers, and

other outdoor enthusiasts. NWF programs work to protect the 600 million acres of public lands owned by all Americans and has a longstanding interest in ensuring these lands are managed properly for fish, wildlife, and communities.

22. Plaintiff National Wildlife Refuge Association is a non-profit organization focused exclusively on protecting and promoting the 850 million-acre National Wildlife Refuge System, the world's largest network of lands and waters set aside for wildlife conservation. Founded in 1975, its mission is to conserve America's wildlife heritage for future generations through strategic programs that enhance the National Wildlife Refuge System and the landscapes beyond its boundaries. With approximately 80% of the land mass of the National Wildlife Refuge System in Alaska, the National Wildlife Refuge Association has throughout its history focused significant resources on protecting and enhancing Refuge System resources in Alaska, including the Arctic Refuge.

23. Plaintiff Northern Alaska Environmental Center (Northern Center) is an Alaska nonprofit environmental organization founded in 1971 with over 900 members, sixty percent of whom are located throughout Alaska. The Northern Center's mission is to promote the conservation of the environment and sustainable resource stewardship in Interior and Arctic Alaska through education and advocacy. One of the Northern Center's major focus areas is its Arctic program. The Northern Center actively works to protect the Arctic, its communities, and vital wildlife habitats and wildlands, including the Arctic Refuge, from the harms associated with oil and gas development. The Northern Center

also works to amplify the voices of local populations impacted by development. The Northern Center participates in agency decision-making processes related to oil and gas development in the Arctic, including the challenged action. The Northern Center provides its members and the public with information about the impacts of oil and gas on the Arctic, enabling members to participate as well.

24. Plaintiff Sierra Club is the nation's oldest and largest grassroots environmental organization. The Sierra Club is a national nonprofit organization of approximately 800,000 members dedicated to exploring, enjoying, and protecting the wild places of Earth; to practicing and promoting the responsible use of the Earth's ecosystems and resources; to educating and enlisting humanity to protect and restore the quality of the natural and human environment, and to using all lawful means to carry out these objectives. The Alaska Chapter of the Sierra Club has approximately 1,800 members. The Sierra Club's concerns encompass a variety of environmental issues in Alaska, and the organization has long been active on issues related to the protection of the Coastal Plain of the Arctic Refuge.

25. Plaintiff The Wilderness Society is a nonprofit organization headquartered in Washington, D.C., with offices throughout the country, including a six-person staff in Alaska. Its overall mission is to protect wilderness and inspire Americans to care for wild places. The Wilderness Society has close to a million members and supporters, many of whom are in Alaska. The goal of its Alaska program is to permanently protect special

places in America's Arctic and sub-Arctic, including in the Arctic Refuge. The Wilderness Society has been engaged in Arctic Refuge conservation efforts for decades, and has consistently participated in public processes associated with Arctic Refuge decisions. Among other areas of focus, staff from The Wilderness Society work to advance scientific understanding and conservation policy for highly migratory caribou and fish resources that utilize much of the landscape to complete their life cycles.

26. Plaintiff Wilderness Watch is a nonprofit organization founded in 1989. Its mission is to defend the nation's 111-million-acre National Wilderness Preservation System. Wilderness Watch advocates for appropriate stewardship according to the requirements of the Wilderness Act of 1964. Wilderness Watch monitors agency stewardship of designated Wilderness in Alaska and organizes its members to participate in public processes in Alaska, including the Arctic Refuge, that impact designated Wilderness.

27. Plaintiffs participated actively in the administrative process related to the oil and gas leasing program by submitting public comments, engaging with experts to review the analysis, giving oral testimony, and engaging their millions of members and supporters to participate in support of Coastal Plain protection to achieve organizational missions and goals. Plaintiffs also have an interest in ensuring that DOI, BLM, and FWS comply with applicable laws.

28. Plaintiffs' members and supporters work, visit, and recreate in and around the Arctic Refuge and on the Coastal Plain, including those lands and waters on the Coastal Plain that are open to oil and gas leasing and activities under BLM's decision, and plan to return to the Coastal Plain. Plaintiffs' members and supporters also live in and around the Arctic Refuge. Plaintiffs' members and supporters use the Coastal Plain and depend on the health of the subsistence resources in the Coastal Plain and its vicinity to support their subsistence way of life, including to maintain cultural and spiritual practices and their identity. Plaintiffs' members and supporters have health, subsistence, cultural, economic, recreational, scientific, environmental, aesthetic, educational, conservation, and other interests in the Coastal Plain of the Arctic Refuge. Plaintiffs' members and supporters enjoy or use wildlife that inhabit these areas, in particular caribou, polar bears, and birds. Plaintiffs' members and supporters recreate on the Coastal Plain in multiple seasons because of its exceptional wilderness values and the exceptional visitor experience.

29. These interests, their members' and supporters' use and enjoyment of the Coastal Plain and adjacent areas, and the resources present in the area and that rely on the area, have been, are being, and will continue to be adversely affected by oil and gas program and activities in the Coastal Plain, including leasing the Coastal Plain. The leasing program, leasing, and oil and gas activities allowed by the lease program — including seismic exploration — will degrade and harm the natural environment and

wildlife and habitat used and enjoyed by the Plaintiffs' members and supporters, thereby harming the interests of Plaintiffs' members and supporters. The oil and gas lease program, and activities enabled by the lease program and lease sale, will also impede Plaintiffs' members' ability to access subsistence resources in the region or to use subsistence resources that rely on the Coastal Plain, and impact cultural and spiritual connections and traditions.

30. BLM's adoption of a leasing program in violation of NEPA, ANILCA, the Refuge Act, the Tax Act, the Wilderness Act, and the ESA threatens imminent irreparable harm to the interests of the Plaintiffs and their members. The agency's failure to adhere to mandated procedures and its reliance on a flawed analysis also harms Plaintiffs' and their members' and supporters' ability to engage in the public process and ensure informed decision making and compliance with statutory protections otherwise mandated for the Coastal Plain.

31. These actual, concrete injuries suffered by Plaintiffs and their members and supporters are fairly traceable to BLM's adoption of the leasing program in violation of the substantive and procedural protections of these laws, and would be redressed by the relief sought in this case.

32. FWS's deficient BiOP in violation of the ESA and APA threatens imminent, irreparable harm to the interests of Plaintiffs and their members and supporters to the Southern Beaufort Sea (SBS) population of polar bears. These actual, concrete

injuries suffered by Plaintiffs and their members and supporters are fairly traceable to the deficient BiOp for the leasing program and would be redressed by the relief sought in this case.

Defendants

33. Defendant David Bernhardt is the Secretary of the Interior and is being sued in his official capacity. Secretary Bernhardt is the official ultimately responsible under federal law for ensuring that the actions and decisions of BLM and FWS comply with all applicable laws and regulations. Secretary Bernhardt is the official who signed the ROD.

34. Defendant DOI is an agency of the United States responsible for oversight of BLM and FWS.

35. Defendant BLM is an agency within DOI. Under the Tax Act, it is responsible for management of a competitive oil and gas program including the leasing, development, production, and transportation of oil and gas in and from the Coastal Plain.

36. Defendant FWS is an agency within DOI and is charged with administering units of the national wildlife refuge system, including the Arctic Refuge, and with administering the ESA for polar bears (in addition to other terrestrial species).

IV. STATEMENT OF FACTS

The Exceptional Values of the Coastal Plain of the Arctic Refuge

37. The Arctic Refuge is iconic among America's wildlife refuges. Many consider it to be the crown jewel of the National Wildlife Refuge System, the largest system of public lands and waters managed for wildlife conservation in the world. At over 19 million acres, the Arctic Refuge is America's largest and wildest national wildlife refuge. It encompasses boreal forests in the south, glaciers in the Brooks Range, the highest peak in Arctic Alaska, numerous braided rivers and natural springs, and the Coastal Plain that borders the Beaufort Sea to the north.

38. Its over 1.5-million-acre Coastal Plain is a vibrant and ecologically rich area that has been referred to as the "Serengeti of the Arctic" and is recognized as the biological heart of the Arctic Refuge. It is rare and important habitat for many animals, including caribou, polar and grizzly bears, birds, ice seals, musk oxen, and wolves.

39. The Porcupine Caribou Herd migrates annually through Alaska and Canada, traveling upwards of 2,700 miles per year — the longest overland migration of any terrestrial mammal. The Porcupine Caribou Herd relies on the Coastal Plain for calving, post-calving, and insect relief habitat, and as a source of high-protein nutrition away from predators.

40. The herd's migratory path brings it to the Coastal Plain in the early summer, as early as May, where, in a frenzy of activity, the tens of thousands of calves are born within a few days of each other. The caribou cows find plentiful and high-protein food on the Coastal Plain to nourish and replenish them after their long journey

and the stress of birth. The insect relief attributes of the Coastal Plain are also critical to the herd. The relentless insects of the Arctic are a major problem for the caribou and can even lead to death. The winds, coastline, and aufeis (areas of ice buildup along rivers) provide critical and potentially life-saving insect relief.

41. The Arctic Refuge lies at the heart of the traditional homelands of the Gwich'in people. As they have since time immemorial, the Gwich'in Nation of Alaska and Canada relies heavily on the Porcupine Caribou Herd for subsistence and as the foundation of their culture. Indeed, Porcupine caribou are so central to the lives of the Gwich'in that they call themselves the "caribou people," and the Gwich'in name for the Coastal Plain is "Iizhik Gwats'an Gwandaii Goodlit" — which translates to "the Sacred Place Where Life Begins."

42. The relationship between the caribou and the Gwich'in is guided by the belief that the caribou have a piece of the Gwich'in in their heart and the Gwich'in have a piece of the caribou in their heart. As a result, the Gwich'in made a pact with the caribou to protect them so the caribou can continue to provide for the Gwich'in. The Gwich'in have maintained their cultural identity and connection to the Arctic Refuge and the Coastal Plain for millennia.

43. Gwich'in traditional knowledge instructs that the caribou will be harmed by the development of the Coastal Plain, the sacred calving and nursery grounds of the Porcupine Caribou Herd.

44. The Coastal Plain also provides denning habitat for polar bears, which are protected as a threatened species under the ESA. Polar bear populations have been reduced to a precarious state due to impacts from climate change, which will only worsen as warming in the Arctic region continues.

45. The Coastal Plain has the highest density of onshore polar bear denning habitat in America's Arctic. This is because the topography of the Coastal Plain, where the rivers and hills of the Coastal Plain create areas of deep snow drifts, is uniquely different from the rest of Alaska's Arctic. These areas where snow accumulates are ideal denning sites for pregnant polar bears. Maternal denning habitat includes corridors between the dens and the coast, as polar bears move along riverine corridors, traveling between their dens and food sources.

46. The abundant plants and insects available in the summer also allow many bird species to nest and forage on the Coastal Plain, which they do as part of their annual migrations through all of North America's flyways and, remarkably, to six continents. Birds begin returning to the Coastal Plain in the spring and remain through late summer and into early fall.

47. The Arctic Refuge is our nation's premiere wilderness Refuge and the wilderness values of the Coastal Plain are incomparable. The untrammeled nature provides unique opportunities to study and understand ecosystems and functions on a landscape scale. The integrity of the ecosystems provides unique habitat to numerous

wildlife species. The undeveloped and undisturbed character of the area offers world-class wilderness recreation opportunities. The Coastal Plain also boarders the 8-million acre Mollie Beattie Wilderness area within the Arctic Refuge.

48. In short, the ecological, cultural, and wilderness values of the Coastal Plain are exceptional.

The Imperiled Southern Beaufort Sea Population of Polar Bears

49. In 2008, FWS published its final rule listing the polar bear as a threatened species under the ESA. FWS, Determination of Threatened Status for the Polar Bear (Ursus maritimus) Throughout Its Range, 73 Fed. Reg. 28,212 (May 15, 2008). FWS also published a Special Rule for the Polar Bear, 73 Fed. Reg. 76,249 (Dec. 16, 2008), which specifies the protective measures that apply to the polar bear because of its threatened status.

50. The Coastal Plain has the highest density of onshore polar bear denning habitat for polar bears in America's Arctic. FWS designated critical habitat for polar bears in Alaska in 2011, including barrier island, sea ice, and terrestrial denning habitat. Designation of Critical Habitat for the Polar Bear (Ursus maritimus) in the United States, 75 Fed. Reg. 76,086, 76,088–91 (Dec. 7, 2010). The vast majority of BLM's oil and gas leasing program area is land designated as terrestrial denning critical habitat.

51. The proportion of females denning on land has increased significantly as sea ice diminishes due to climate change. Polar bears are particularly vulnerable to sea ice melt given their life history and specialized habitat needs.

52. The Southern Beaufort Sea (SBS) population is among the most imperiled polar bear populations in the world, having declined dramatically since the 1990s. In addition to climate change, polar bears in the SBS population face threats from a wide range of industrial activities, including onshore and offshore oil and gas development and increased shipping. They are also subject to subsistence hunting and mortality due to interactions with humans where there is a perceived threat to life and property.

53. The data and information on the population dynamics for the SBS polar bears are outdated and incomplete.

54. Noise and visual disturbance from human activity and operation of equipment, especially aircraft and vehicle traffic, have the potential to disturb polar bears nearby. Disturbance of maternal females during the winter denning period can result in premature den abandonment, or earlier den emergences and departures, adversely affecting polar bear cub survival.

BLM's Coastal Plain Leasing Program Process

55. In April 2018, BLM began the National Environmental Policy Act (NEPA) process for the Coastal Plain leasing program when it published a notice of intent to prepare an environmental impact statement for the Coastal Plain oil and gas program in

the Federal Register. Notice of Intent to Prepare an Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program, Alaska, 83 Fed. Reg. 17,562 (Apr. 20, 2018).

56. Numerous groups, including Plaintiffs, and hundreds of thousands of individuals submitted comments to the agency. Plaintiffs' comments outlined myriad legal, technical, and resource issues that the agency needed to thoroughly explain and review before adopting a leasing program.

57. In spring 2018, working in conjunction with the Arctic Slope Regional Corporation and Kaktovik Inupiat Corporation, SAExploration, Inc. (SAE) applied to BLM for an authorization to conduct three-dimensional (3D) seismic exploration on the Coastal Plain.

58. According to SAE's Plan of Operations, the goal of its proposal was to identify potential targets for future lease sales on the Coastal Plain. SAE proposed to conduct seismic activities across the entire Coastal Plain, including its lagoons, over the course of two winter seasons.

59. Several groups, including Plaintiffs and scientific experts on Coastal Plain resources, submitted comments to BLM on the proposed seismic application. These comments explained that the agency should evaluate seismic exploration as part of the Leasing Program EIS, in addition to other issues.

60. BLM has yet to approve or reject SAE's proposal to conduct seismic exploration on the Coastal Plain. According to BLM statements in a Petroleum News article, as of August 13, 2020, BLM paused its processing of the application, pending BLM's receipt of an updated plan from SAE. To date, BLM has not released a NEPA document analyzing the impacts of SAE's seismic exploration project and application, nor has the agency addressed these comments.

61. In December 2018, BLM released the draft environmental impact statement (EIS) for the Coastal Plain leasing program and the ANILCA Section 810 Preliminary Evaluation.

62. Plaintiffs and over one million individuals submitted comments on BLM's draft EIS. The majority of these comments opposed the oil and gas program.

63. BLM's draft EIS considered a no-action alternative (Alternative A) and three action alternatives — Alternatives B, C, and D, with Alternative D having two subalternatives, Alternatives D1 and D2.

64. In comments on the draft EIS, Plaintiffs criticized BLM's consideration of alternatives, noting that the agency failed to consider a reasonable range of alternatives and failed to consider numerous viable alternatives. Letter from Alaska Wilderness League et al. to Nicole Hayes, Project Manager, BLM (Mar. 13, 2019).

65. Plaintiffs proposed multiple alternatives or components of alternatives that provided more protections for the Coastal Plain's resources. Plaintiffs explained how

each proposed alternative or component would be consistent with applicable statutory mandates, including the Tax Act. *Id.*

66. In their comments, Plaintiffs also explained how BLM's proposed program was inconsistent with ANILCA's and the Refuge Act's conservation purposes for the Coastal Plain and otherwise failed to comply with the Refuge Act and ANILCA. *Id.*

67. Plaintiffs also submitted comments criticizing BLM's interpretation and application of the 2,000-acre limitation on surface development. *Id*.

68. Plaintiffs submitted extensive comments on the faults and errors with BLM's analysis of direct, indirect, and cumulative impacts of the proposed oil and gas leasing program for numerous resources. Plaintiffs commented on BLMs failure to consider any site-specific impacts, transboundary impacts, and impacts from climate change, in addition to other fundamental failings. *Id.*

69. These comments also included criticisms of the lease stipulations and required operating procedures, as well as the analysis of the affected environment and environmental consequences for greenhouse gas emissions and climate change, air quality, water, polar bears, caribou, wilderness and recreation, soils, permafrost, vegetation, and wetlands, and subsistence uses and resources, in addition to many others. *Id.*

70. Plaintiffs also commented extensively on BLM's failures to analyze the impacts to or propose measures for the protection of the wilderness characteristics of the Mollie Beattie Wilderness. *Id.*

71. Plaintiffs, and in particular the Gwich'in Steering Committee, submitted extensive comments criticizing BLM's ANILCA Section 810 Preliminary Evaluation and the related draft EIS analysis, including raising BLM's failure to consider all affected Gwich'in communities in the analysis, its incomplete and faulty conclusions about the impacts of an oil and gas program on the subsistence resources relied on by the Gwich'in, including caribou and birds, and its incorrect conclusion that the oil and gas leasing program would not significantly restrict subsistence uses for the Gwich'in. *Id.*; Letter from Gwich'in Steering Committee to Nicole Hayes, Project Manager, BLM (Mar. 13, 2019).

72. BLM did not analyze either the proposed SAE seismic program or the potentially significant impacts of seismic exploration in general on polar bears, tundra, vegetation, permafrost, and other resources in the draft EIS — issues that Plaintiffs raised in their comments. Letter from Alaska Wilderness League et al. to Nicole Hayes, Project Manager, BLM.

73. Plaintiffs also pointed out that the draft EIS failed to examine impacts to the SBS polar bear population or explain how such impacts could be avoided or mitigated. *Id.* at 273–95.

74. The draft EIS did not adequately consider how current levels of lethal take will adversely affect individual SBS polar bears or the population as a whole, including the cumulative effects to the population when combined with the additional impacts of oil and gas activities on the Coastal Plain. *Id.*

75. BLM did not consider a range of alternatives or enforceable mitigation measures sufficient to offer a meaningful difference in impacts to polar bears and their critical habitat.

76. The draft EIS relied primarily on the use of forward looking infrared (FLIR) camera surveys to detect denning bears in advance of activities as a means to mitigate impacts. Plaintiffs submitted comments, including technical analysis from polar bear expert Dr. Steven Amstrup, explaining why such surveys are not effective given recent research demonstrating their shortcomings. *See id.*; Letter from Sierra Club to Nicole Hayes, Project Manager, BLM (Mar. 13, 2019) (attaching Letter from Dr. Steven Amstrup to Nicole Hayes, Project Manager, BLM (Mar. 8, 2019)). In fact, research suggests that a 50% detection rate is probably close to the highest that could reasonably be expected from FLIR surveys. Letter from Sierra Club to Nicole Hayes, Project Manager, BLM, (Sept. 18, 2019) (attaching Letter from Dr. Steven Amstrup to Nicole Hayes, Project Manager, BLM (Sept. 17, 2019)); *see also* Tom Smith *et al*., *Efficacy of aerial forward-looking infrared surveys for detecting polar bear maternal dens*, 15 PLOS ONE 2 (2020) (finding FLIR detection success rate of only 45% based on empirical data

from a set of industry surveys of northern Alaska). Detection success rates for the Coastal Plain are likely be even lower than the 45% observed in other areas of northern Alaska because of the deeper snow drifts and higher wind speeds prevailing on the Coastal Plain.

77. In September, BLM issued the final EIS and ANILCA Section 810 Final Evaluation for the leasing program, and identified Alternative B as the preferred alternative. EPA, Environmental Impact Statements, Notice of Availability, 84 Fed. Reg. 49,521 (Sept. 20, 2019).

78. In the final EIS, BLM modified the acreage available for lease under Alternative D2 to 800,000 acres. 1 U.S. Dep't of the Interior, Bureau of Land Mgmt., Coastal Plain Oil and Gas Leasing Program Final Environmental Impact Statement at 2-3 (2019) [hereinafter FEIS]. Otherwise, BLM did not analyze any new alternatives, including the other alternatives proposed by Plaintiffs.

79. BLM did not explain its failure to consider an alternative that would not allow seismic exploration on areas not offered for lease in the final EIS. *See* 1 *id.* at 2-44.

80. BLM did not explain its failure to consider a phased-leasing alternative in the final EIS. *See id.*

81. BLM did not adequately consider the purposes of the Coastal Plain or ensure that the oil and gas program would protect these purposes, and failed to consider the three purposes of the public land order setting the Refuge aside in 1960. *Id.* at 3-296 to -297; 2 *id*. at app. D at D-3. BLM stated, summarily, that the action alternatives

"account for all purposes of the Arctic Refuge." 1 *id.* at 1-2. However, the final EIS does not indicate how the purposes will be met and BLM failed to analyze the impacts to all purposes from the proposed program. *Id.* at 3-296 to -297.

82. Despite the concerns identified by Plaintiffs and numerous other commenters, BLM's final EIS still failed to adequately analyze the affected environment, the environmental consequences, or ways to mitigate the impacts to numerous resources, including but not limited to greenhouse gas emissions and climate change, air quality, water, polar bears, caribou, wilderness and recreation, soils, permafrost, vegetation and wetlands, and subsistence uses and resources.

83. In the final EIS, BLM only considered one mitigation measure to protect the wilderness characteristics of the 8-million acre Mollie Beattie Wilderness: a 3-mile buffer around the area that would prohibit surface occupancy and/or not offer those areas for lease, and would also require aircraft to avoid flights below 2,000 feet within the buffer. This measure, however, only applied to Alternative D. *Id.* at 2-18. BLM did not propose, analyze, or adopt other mitigation measures to protect wilderness characteristics of the Mollie Beattie Wilderness and the Coastal Plain. BLM otherwise failed to properly evaluate the impacts of an oil and gas program on the wilderness characteristics of the Mollie Beattie Wilderness and the Coastal Plain. *Id.* at 3-304 to -306.

84. BLM set out its interpretation of the 2,000-acre limit on surface development of production and support facilities. *Id.* at 1-6 to -7; 2 *id.* at app. S at S-3 to -

9. BLM stated that it cannot authorize anything less than 2,000 acres of development for surface facilities under the terms of the Tax Act. 1 *id.* at 2-44. This interpretation set out what components of oil and gas activities would be included in the limitation. *Id.* It also informed BLM's development scenario and impacts analysis for each alternative. *Id*. at 1-7, 2 *id.* at app. S at S-4; *id.* app. B at B-10, B-22 to -26.

85. Additionally, BLM explained that it would allow acreage to be reclaimed and then new acreage to be developed, potentially in excess of 2,000 acres over time (but not more than 2,000 acres could be authorized at any given time). *Id.* at app. S at S-5 to -6. In other words, BLM treated the 2,000-acre limitation as a rolling limitation, not a cumulative cap and applied this interpretation to each action alternative. *Id.*

86. BLM identified the areas of high, medium, and low hydrocarbon potential, including for each action alternative. 1 *id.* 3-46 to -47, 2 *id*. at app. A at Map 3-6, 3-7, 3-8 & 3-9, app. B at B-3 to -5 & Map B-1

87. BLM's ANILCA Section 810 Final Evaluation relied primarily on the information and analysis in the final EIS. 2 *id.* at app. E at E-2. In the ANILCA Section 810 Final Evaluation, BLM evaluated the impact of the oil and gas leasing program on only four communities: Kaktovik, Nuiqsut, Arctic Village, and Venetie — and failed to evaluate the impacts of an oil and gas leasing program on other communities, despite recognizing many additional communities have subsistence-use connections to Coastal Plain resources. *Id.* at E-3 to -4.

88. In evaluating the impacts of each alternative on these four communities, BLM incorrectly determined that the alternatives would not significantly restrict subsistence uses for Arctic Village and Venetie. *Id.* at E-4 to -20.

89. The subsistence resources that BLM evaluated included only fish, marine mammals, and caribou; BLM failed to consider other important food sources that make up the wild foods consumed by the Gwich'in. *Id.* at E-3.

90. BLM also failed to incorporate the extensive traditional knowledge shared by the Gwich'in about the impacts of oil and gas on their subsistence uses and traditional practices of Coastal Plain resources in the ANILCA Section 810 Final Evaluation.

91. BLM did not hold a formal ANILCA section 810 hearing or make formal findings under ANILCA section 810(a)(3) for any Gwich'in village.

92. BLM included Lease Notice 2, which provides that BLM will not approve any exploration or development activity with the potential to "take" marine mammals unless the applicant/operator applies for and provides documentation of compliance with relevant take authorization(s) under the MMPA prior to commencement of oil and gas activities. 1 *id.* at 2-43. Lease Stipulation 5 provides the following requirement/standard: "[c]omply with ESA and [MMPA] requirements." *Id.* at 2-11.

93. In the final EIS, BLM repeatedly stated that it lacks authority to preclude activities on leases that are "necessary" for "access" to carry out the oil and gas program. *See, e.g.*, 2 *id.* at app. S at S-223.

94. FWS released a modeling study in December 2019 that quantitatively evaluated the impacts to denning bears and cubs on the Coastal Plain from an area-wide seismic survey, taking into account the impact of mitigation measures. Ryan Wilson & George Durner, *Seismic Survey Design and Effects on Maternal Polar Bear Dens*, 84 Jour. Wild. Mgmt. 201 (2019). The study found that extensive timing and geographic restrictions on seismic activities would be needed to protect denning bears and ensure compliance with the Marine Mammal Protection Act (MMPA).

95. On March 13, 2020, FWS issued the programmatic BiOp for the leasing program analyzing impacts to polar bears and other protected species under FWS's jurisdiction. FWS, Biological Opinion for Coastal Plain Oil and Gas Leasing Program Arctic National Wildlife Refuge (Mar. 13, 2020) [hereinafter BiOp]. The cover letter transmitting the BiOp to BLM lists the documents upon which FWS relied in preparing the BiOp. That list includes the draft EIS, but not the final EIS.

96. The BiOp concluded that BLM's decision to open the entire Coastal Plain to leasing as described under Alternative B, and subsequent lease sales, will not jeopardize the survival and recovery of polar bears or result in the destruction or adverse modification of the species' designated critical habitat. *Id.* at 128.

97. The BiOp acknowledges that there could be harm to polar bears, but did not attempt to quantify those harms or incidental take, stating that the locations of specific exploration and development activities are unknown at the leasing stage and that

quantifying take is not be possible at this stage. *Id*. at 113. The BiOp did not include an incidental take statement.

98. The BiOp did not acknowledge or discuss the recent FWS study quantitatively estimating the extent of take from area-wide seismic surveys, despite assuming such a survey would occur within two years of the first lease sale. *Id*. at 15.

99. FWS identified four project design criteria (PDC) that it stated would ensure compliance with Section 7(a)(2) of the ESA. *Id*. at 107–08. Most relevant here are PDCs 1 and 2. PDC 1 provides that, through a "lease notice," BLM will require documentation of compliance with the MMPA before BLM will authorize any on-the-ground oil and gas activities. *Id* at 107. PDC 2 provides that BLM will conduct future "step-down" ESA consultation on a project-by-project basis. *Id*. at 107.

100. Throughout the BiOp, FWS relies on future MMPA compliance as the primary mechanism to ensure against jeopardy to the polar bear under the ESA. *Id*. at 114–16. In relying on future mitigation measures put in place via future MMPA authorizations, FWS failed to discuss recent studies finding that traditional den detection methods failed to detect the majority of known polar bear maternal dens. The BiOp also failed to address whether a "lease notice" would provide adequate authority to preclude activities on leases in light of DOI and BLM's interpretations of the Tax Act, the MMPA, and the legal effect of "lease notices."

101. Regarding critical habitat, the BiOp does not attempt to quantify the total extent of impacts from the program. The BiOp assumes that MMPA compliance and future ESA consultations will ensure against any destruction or adverse modification. *Id*. at 123. The BiOp does not explain this assumption in light of the fact that the MMPA does not include an express standard addressing protection or consideration of designated critical habitat; nor does it address FWS's comments stating that MMPA compliance would not prevent habitat loss due to behavioral avoidance of structures after the construction period. Nor does it address that future consultations will not address the totality of the program's impacts. The BiOp also relies on an interpretation of the 2,000-acre limit under the Tax Act that would restrict the total surface footprint of the oil and gas facilities to no more than 2,000 acres at any point in time. *Id*.

102. The BiOp does not consider the impacts of the direct or indirect greenhouse gas emissions from the Coastal Plain oil and gas development or production on exacerbating climate change related impacts on polar bears. It relies on a May 14, 2008 FWS policy memo to say that such analysis of indirect emissions is not required due to the unavailability of scientific information. The BiOp fails to address existing scientific and technical information that has become available in the last decade that demonstrates such an analysis can indeed be conducted for polar bears.

103. On August 17, 2020, Secretary Bernhardt signed the ROD for the leasing program. U.S. Dep't of the Interior & BLM, Coastal Plain Oil and Gas Leasing Program Record of Decision (2020) [hereinafter ROD].

104. The ROD adopted Alternative B as the Coastal Plain Leasing Program, the most extensive alternative considered in the final EIS, opening "the entire program area" to oil and gas leasing, "and consequently for future potential exploration, development, and transportation." *Id.* at 2–3.

105. The ROD adopted the lease stipulations and required operating procedures (ROPs) considered in the final EIS under that alternative (with only minor changes to two ROPs and one lease notice). *Id.* at 3, 5; *id.* at app. A.

106. The ROD stated that the leasing program protects the ANILCA purposes of the Coastal Plain, but acknowledged that there will be "some potential impact on the other four purposes." *Id.* at 7–8. The ROD did not discuss the original purposes of the Arctic National Wildlife Range.

107. The ROD did not adopt the interpretation of the 2,000-acre limitation set forth and applied in the final EIS. *Id.* at 2, 4, 5. The ROD indicated that BLM would not apply the "rolling cap" approach from the final EIS that would have allowed additional infrastructure beyond the initial 2,000 acres once the previously impacted areas had been "reclaimed." *Id.* at 12–13. However, the ROD also contained a new interpretation of the 2,000-acre limit that identified and defined what facilities could be included within that

limitation. *Id.* at 11–13. The ROD explained that many facilities that were assumed to be within the 2,000-acre limitation in the final EIS may not actually be counted toward that limitation, including airstrips, barge landings, roads, and gravel mines. *Id*. at 13. BLM based this new interpretation on its conclusion that the facilities counting toward the 2,000-acre limitation needed to be both "production *and* support facilities." *Id.* at 12. The ROD explained that "support" facilities that could be attributed to any other phase of oil and gas activities, such as transportation, exploration, or development, would not be limited by the 2,000-acre cap. In other words, the agency indicated that under this new interpretation that it could authorize far more than 2,000 acres of infrastructure to be present on the Coastal Plain at any given point in time. However, the ROD also stated that the agency would not make specific determinations about which facilities would count toward the 2,000 acres until later in time. *Id.* at 12–13.

108. BLM stated that making the entire Coastal Plain available for leasing will ensure that it is offering the highest hydrocarbon potential areas for lease, and that the agency cannot know which areas have the highest potential until exploration drilling occurs. *Id*. at 17.

109. BLM stated its position in the ROD that it cannot refuse to issue a right-of-way grant or other authorizations necessary for access and that its discretion is superseded by the Tax Act. *Id.* at 9–10.

110. The ROD stated that BLM consulted with FWS on its leasing program in order to fulfill its obligations under section 7(a)(2) of the ESA. *Id*. at 21. The ROD summarized the ESA consultation and recommendations from FWS's BiOp. *Id*. at 23–24.

111. The ROD summarized the ANILCA Section 810 Final Evaluation from the final EIS. *Id*. at 24–27.

V. LEGAL BACKGROUND

112. Because of its abundant wildlife and ecological importance, efforts to protect the Arctic National Wildlife Refuge began in the mid-1950s. The area was first formally set aside and granted federal protections in 1960 when it was designated as the Arctic National Wildlife Range (Range). Public Land Order 2214, Establishing the Arctic National Wildlife Range at 1 (Dec. 6, 1960). The Range was designated "for the purpose of preserving unique wildlife, wilderness and recreational values." *Id.*

Alaska National Interest Lands Conservation Act

113. Following statehood and various attempts to address Indigenous land claims and federal conservation land designations, the Alaska National Interest Lands Conservation Act (ANILCA) was passed in 1980. 94 Stat. 2371 (Dec. 2, 1980).

114. Congress passed ANILCA "[i]n order to preserve for the benefit, use, education, and inspiration of present and future generations certain lands and waters in the State of Alaska that contain nationally significant natural, scenic, historic,

archeological, geological, scientific, wilderness, cultural, recreational, and wildlife values." ANILCA § 101(a), 16 U.S.C. § 3101(a).

115. ANILCA has a broad purpose focused on conservation and subsistence:

> It is the intent of Congress in this Act to preserve unrivaled scenic and geological values associated with natural landscapes; to provide for the maintenance of sound populations of, and habitat for, wildlife species of inestimable values to the citizens of Alaska and the Nation, including those species dependent on vast relatively undeveloped areas; to preserve in their natural state extensive unaltered arctic tundra, boreal forest, and coastal rainforest ecosystems; to protect the resources related to subsistence needs; to protect and preserve historic and archeological sites, rivers, and lands, and to preserve wilderness resource values and related recreational opportunities, including but not limited to hiking, canoeing, fishing, and sport hunting, within large arctic and subarctic wild lands and on free-flowing rivers; and to maintain opportunities for scientific research and undisturbed ecosystems.

ANILCA § 101(b), 16 U.S.C. § 3101(b).

116. Congress also specifically stated that a purpose of ANILCA was to "provide the opportunity for rural residents engaged in a subsistence way of life to continue to do so." ANILCA § 101(c), 16 U.S.C. § 3101(c).

117. In ANILCA, Congress re-designated the Range as the Arctic National Wildlife Refuge. ANILCA § 303(2)(A). Congress added additional acreage to the south and west of the Range to expand the re-designated Arctic Refuge. *Id.*

118. Congress recognized four specific purposes for the Arctic Refuge, in addition to those recognized in the 1960 Public Land Order and ANILCA more generally. The ANILCA purposes for the Arctic Refuge are:

(i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;

(ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;

(iii) to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents, and

(iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the refuge.

Id. § 303(2)(B).

119. ANILCA section 305 also recognized that existing protective mandates not in conflict with ANILCA would remain in place:

> [a]ll proclamations, Executive orders, public land orders and other administrative actions in effect on the day before the date of the enactment of this Act with respect to units of the National Wildlife Refuge System in the State shall remain in force and effect except to the extent that they are inconsistent with this Act or the Alaska Native Claims Settlement Act, and in such case, the provisions of such Acts shall prevail.

120. The original three purposes of the Range and the four additional ANILCA purposes are all statutory purposes that apply to the Coastal Plain. ANILCA § 305; FWS, Arctic Nat'l Wildlife Refuge Revised Comprehensive Conservation Plan and Envtl. Impact Statement at 1-21 (Jan. 2015).

121. ANILCA section 304(c) also withdrew all National Wildlife Refuges "from all forms of appropriation or disposal under the public land laws, including location, entry and patent under the mining laws."

122. Additionally, Congress designated the majority of the Range (approximately 8 million acres, excluding the Coastal Plain) as Wilderness. ANILCA § 702(3). This Wilderness area was subsequently named the Mollie Beattie Wilderness after the first female director of the U.S. Fish and Wildlife Service.

123. The potential development of the Coastal Plain for oil and gas was also addressed in ANILCA. Other than authorizing a one-time surface exploration program that has now expired, ANILCA § 1002(a)–(h), 16 U.S.C. § 3142(a)–(h), ANILCA section 1003 imposed a prohibition on oil and gas development in the Arctic Refuge, including the Coastal Plain. 16 U.S.C. § 3143. The Coastal Plain was also specifically "withdrawn from all forms of entry or appropriation under the mining laws, and from operation of the mineral lease laws, of the United States." ANILCA § 1002(i), 16 U.S.C. § 3142(i).

124. Title VIII of ANILCA recognizes that subsistence uses are a public interest and provides a framework to consider and protect subsistence uses in agency decision-making processes. 16 U.S.C. §§ 3111–3126. In enacting Title VIII, Congress found that "the continuation of the opportunity for subsistence uses . . . is essential to Native physical, economic, traditional, and cultural existence." ANILCA § 810(1), 16 U.S.C 3111(1).

125. ANILCA broadly defines "subsistence use" as "the customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of nonedible byproducts of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade." ANILCA § 803, 16 U.S.C. § 3113.

126. Under ANILCA section 810, if an agency is going to withdraw, reserve, lease, or otherwise allow the use, occupancy, or disposition of land, the agency conducts what is often referred to as a "tier-1 analysis" to determine the proposed action's impact on subsistence uses. ANILCA § 810(a), 16 U.S.C. § 3120(a). The agency "shall evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for the purposes sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes." *Id.* In doing so, the agency must also consider cumulative impacts.

127. If the agency conducts the tier-1 analysis and determines that the activities will not "significantly restrict subsistence uses," then the agency issues a Finding of No Significant Restriction and section 810's requirements are met. *Id.*

128. ANILCA also mandates that the agency provide public notice and hold hearings in potentially affected communities if it makes a finding that the action may

significantly restrict subsistence uses under section 810. ANILCA § 810(a)(2), 16 U.S.C. § 3120(a)(2).

129. If the agency finds that the proposed action would "significantly restrict subsistence uses," the agency then conducts a "tier-2" analysis. In that analysis, the agency can only move forward if it finds that the restriction on subsistence is necessary and consistent with sound public land management principals; involves the minimum amount of public lands necessary to accomplish the purpose of the proposed action; and the agency takes reasonable steps to minimize the adverse impacts to subsistence uses and resources. ANILCA § 810(a)(1)–(3), 16 U.S.C. § 3120(a)(1)–(3).

130. When an agency prepares an EIS under NEPA, the ANILCA section 810 evaluation is included as part of that process. ANILCA § 810(b), 16 U.S.C. § 3120(b).

131. To guide administration of refuges in Alaska, ANILCA states that "[e]ach refuge shall be administered by the Secretary . . . in accordance with the laws governing the administration of units of the National Wildlife Refuge System, and this Act." ANILCA § 304(a).

132. ANILCA also mandates that for Wilderness, "[e]xcept as otherwise expressly provided for in this Act wilderness designated by this Act shall be administered in accordance with applicable provisions of the Wilderness Act governing areas designated by that Act as wilderness." *Id.* § 707.

National Wildlife Refuge System Administration Act

133. The National Wildlife Refuge System Administration Act (Refuge Act) governs the administration of the entire National Wildlife Refuge System. 16 U.S.C. § 668dd. It mandates that the Secretary, acting solely through FWS, administer and manage the National Wildlife Refuge System, which includes the Arctic Refuge. *Id.* § 668dd(a)(1).

134. The mission of the National Wildlife Refuge System "is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans." *Id.* § 668dd(a)(2); *see also* 50 C.F.R. § 25.11(b).

135. Under the Refuge Act, each refuge "shall be managed to fulfill the mission of the System, as well as the specific purposes for which that refuge was established." 16 U.S.C. § 668dd(a)(3)(A); *see also* 16 U.S.C. § 668ee(10) (defining "purposes of the refuge" to include those "purposes specified in or derived from the law, . . . [or] public land order . . . establishing, authorizing, or expanding a refuge, refuge unit, or refuge subunit").

136. The Refuge Act also identifies multiple purposes for administration of the National Wildlife Refuge System, including "conservation of fish, wildlife, and plants, and their habitats," "ensur[ing] that the biological integrity, diversity, and environmental

health of the System are maintained," and "to contribute to the conservation of the ecosystems of the United States." *Id.* § 668dd(a)(4)(A–C); *see also* 50 C.F.R. § 25.11(b).

The Wilderness Act

137. In passing the Wilderness Act, Congress sought "to secure for the American people of present and future generations the benefits of an enduring resource of wilderness." 16 U.S.C. § 1131(a).

138. To achieve this goal, it established the National Wilderness Preservation System and mandated that areas designated as Wilderness "be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness." 16 U.S.C. § 1131(a).

139. Wilderness is defined in relation to what it is not: is it not areas where man and his own works dominate the landscape. *Id.* § 1131(c). Instead, Wilderness is "an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain." *Id.*

140. Wilderness is defined as an undeveloped area protected and managed to preserve it:

> An area of wilderness is further defined to mean in this chapter an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

Id.

141. The Wilderness Act recognizes the following public purposes for Wilderness: "recreational, scenic, scientific, educational, conservation, and historical use." *Id.* § 1133(b).

142. The Wilderness Act mandates that "each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area and shall so administer such area for such other purposes for which it may have been established as also to preserve its wilderness character." 16 U.S.C. § 1133(b); *see also id*. § 1133(a) (noting that the purposes of the Wilderness Act supplement the purposes that national wildlife refuges "are established and administered").

Tax Cuts and Jobs Act of 2017

143. In late 2017, Congress passed An Act to Provide for Reconciliation Pursuant to Titles II and V of the Concurrent Resolution on the Budget for Fiscal Year

2018, Pub. L. 115-97, H.R. 1, title II (Tax Act), which repealed section 1003 of ANILCA as it applied to the Coastal Plain. *Id.* § 20001(b)(1).

144. That legislation directs the Secretary to "establish and administer a competitive oil and gas program for the leasing, development, production, and transportation of oil and gas in and from the Coastal Plain." *Id.* § 20001(b)(2)(A).

145. The Tax Act also amended ANILCA section 303(2)(B) (the Arctic Refuge purposes section) to include an additional purpose for the Coastal Plain: "to provide for an oil and gas program on the Coastal Plain." *Id.* § 20001(b)(2)(B)(iii). The Tax Act did not otherwise modify the purposes of the Arctic Refuge or waive or alter any other applicable laws.

146. The Tax Act requires the Secretary to hold two lease sales — the first within four years, the second within seven — from the enactment of that legislation. Each lease sale must offer at least 400,000 acres and include "those areas that have the highest potential for the discovery of hydrocarbons." *Id.* § 20001(c).

147. The Tax Act also limited surface development to a maximum of 2,000 acres for production and support facilities by stating that BLM: "shall authorize up to 2,000 surface acres of Federal land on the Coastal Plain to be covered by production and support facilities (including airstrips and any areas covered by gravel berms or piers for support of pipelines) during the term of the leases under the oil and gas program under this section." *Id.* § 20001(c)(3).

National Environmental Policy Act

148. The National Environmental Policy Act (NEPA) is "our basic national charter for protection of the environment." 40 C.F.R. § 1500.1(a).[1] NEPA's twin aims are to ensure that federal agencies take a hard look at the environmental impacts of their proposed actions before taking an action and to ensure that agencies provide relevant information to the public so the public can play a role in both the decision-making process and the implementation of the decision. 42 U.S.C. § 4332(2)(C); 40 C.F.R. §§ 1502.1, 1502.16. By focusing the agency's attention on the environmental consequences of its proposed action, NEPA ensures that important effects will not be overlooked or underestimated only to be discovered after an agency has committed resources. 42 U.S.C. § 4332(2)(C).

149. NEPA requires federal agencies to prepare a detailed environmental impact statement (EIS) for every major federal action that will have a significant impact on the quality of the human environment. 42 U.S.C. § 4332. An EIS is required to "provide full and fair discussion of significant environmental impacts and shall inform decisionmakers

[1] The Council on Environmental Quality (CEQ) recently issued new regulations implementing NEPA, which take effect September 14, 2020. Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act ("Final Rule"), 85 Fed. Reg. 43,304 (July 16, 2020). CEQ's prior regulations govern the EIS and ROD and all references are to those prior regulations.

and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment." 40 C.F.R. § 1502.1.

150. An EIS must consider (1) "the environmental impact of the proposed action," (2) "any adverse environmental impacts that cannot be avoided," (3) "alternatives to the proposed action," (4) "the relationship between local short-term uses . . . and the maintenance and enhancement of long-term productivity," and (5) "any irreversible and irretrievable commitments of resources." 42 U.S.C. § 4332(2)(C); *see also* 40 C.F.R. § 1502.16.

151. The alternatives analysis is the heart of a NEPA document, and NEPA's implementing regulations direct agencies to "[r]igorously explore and objectively evaluate all reasonable alternatives." 40 C.F.R. § 1502.14(a). The alternatives considered should include those "that will avoid or minimize adverse effects of the actions upon the quality of the human environment." *Id.* § 1500.2(e).

152. In its alternatives' analysis, the agency must "present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public." *Id.* § 1502.14; *see also id.* § 1505.1(e). This requires the agency to "[d]evote substantial treatment to each alternative considered in detail . . . so that reviewers may evaluate their comparative merits." *Id.* § 1502.14(b).

153. An EIS must "state how alternatives considered in it and decisions based on it will or will not achieve the requirements of [NEPA] and other environmental laws and policies." *Id*. § 1502.2(d). For alternatives that are excluded from agency analysis, the agency must explain that decision. *Id.*

154. NEPA requires agencies to analyze the direct, indirect, and cumulative environmental effects of the alternatives, including the proposed action, as well as the means to mitigate against those adverse environmental consequences. 42 U.S.C. § 4332(2)(C); 40 C.F.R. §§ 1502.14, 1502.16, 1508.7.

155. An "effect" as used in NEPA and its implementing regulations "includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative." 40 C.F.R. § 1508.8(b); *see also id.* § 1508.14 (defining "[h]uman environment . . . to include the natural and physical environment and the relationship of people with that environment").

156. Direct effects "are caused by the action and occur at the same time and place." *Id.* § 1508.8(a).

157. Indirect effects are "caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable." *Id.* § 1508.8(b). Indirect effects include "induced changes in the pattern of land use" and "related effects on air and water and other natural systems, including ecosystems." *Id.*

158. Cumulative impact is defined as:

> the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency . . . or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Id. § 1508.7.

159. Mitigation includes consideration of how to avoid impacts completely by not taking a certain action or parts of an action; minimize impacts by limiting the degree or magnitude of the action and its implementation; address the impact by repairing, rehabilitating, or restoring the affected environment; reduce the impact over time through preservation and maintenance; and compensate for the impact. *Id.* § 1508.20.

Endangered Species Act

160. Congress enacted the ESA to protect and conserve threatened and endangered species and the ecosystems upon which they depend. 16 U.S.C. § 1531(b), (c)(1).

161. The goal of the ESA is not only to temporarily save endangered and threatened species from extinction, but also to recover these species to the point where they are no longer in danger of extinction, and thus no longer in need of ESA protection. *Id*. §§ 1531(b) (purposes), 1532(3) (definitions).

162. The National Marine Fisheries Service and FWS jointly administer the ESA. As relevant here, FWS has responsibility for administering the ESA and performing

consultations for the polar bear. 50 C.F.R. § 402.01(b). The BLM is the action agency for purposes of the Coastal Plain oil and gas leasing program.

163. Section 7(a)(2) of the ESA obligates federal agencies to ensure "that any action authorized, funded or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species ore result in the destruction or adverse modification of [critical] habitat." 16 U.S.C. § 1536(a)(2).

164. To fulfill this substantive duty, Section 7(a)(2) imposed procedural obligations on federal agencies to consult with FWS. *Id.*

165. The ESA prescribes a multi-step process to ensure compliance with its substantive provisions by federal agencies. A federal agency proposing to take an action must inquire of the Secretary of Interior whether any threatened or endangered species "may be present" in the area of the proposed action. 16 U.S.C. § 1536(c)(1). If the answer is affirmative, the agency shall conduct a biological assessment to determine whether such species "is likely to be affected" by the action. *Id*.

166. If the action agency determines that the action is "likely to adversely affect" the listed species, formal consultation with the Secretary is required. 50 C.F.R. § 402.14(b); *id*. at § 402.02, 402.14(a); 16 U.S.C. § 1536(a)(3). Formal consultation concludes with the FWS's issuance of a biological opinion under Section 7(b)(3) of the ESA. 50 C.F.R. § 402.02. The FWS and the action agency must each utilize the "best

scientific and commercial data available" during the consultation process. 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.14(d).

167. In a biological opinion, the FWS must determine whether the federal action subject to the consultation is likely to jeopardize the listed species or destroy or adversely modify critical habitat. 16 U.S.C. § 1536(b)(4). The biological opinion must include a summary of the information upon which the opinion is based, an evaluation of the current status of the listed species, the effects of the action, and the cumulative effects. 50 C.F.R. § 402.14(g)(2), (g)(3).

168. The "effects of the action" include "all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action." 50 C.F.R. § 402.02. Cumulative effects are "effects of future State or private activities . . . that are reasonably certain to occur within the action area of the Federal action[.]" *Id*.

169. Programmatic consultation is:

> a consultation addressing an agency's multiple actions on a program, region, or other basis . . . such as: (1) Multiple similar, frequently occurring, or routine actions expected to be implemented in particular geographic areas; and (2) A proposed program, plan, policy, or regulation providing a framework for future proposed actions.

50 C.F.R. § 402.02.

170. Where an action is authorized by a statute that allows the agency to take incremental steps toward completing the action, the action agency may only proceed with or authorize the incremental steps if:

> (1) [t]he biological opinion does not conclude that the incremental step would violate section 7(a)(2); (2) [t]he Federal agency continues consultation with respect to the entire action and obtains biological opinions, as required, for each incremental step; (3) [t]he Federal agency fulfills its continuing obligation to obtain sufficient data upon which to base the final biological opinion on the entire action; (4) [t]he incremental step does not violate section 7(d) of the Act concerning irreversible or irretrievable commitment of resources; and (5) [t]here is a reasonable likelihood that the entire action will not violate section 7(a)(2) of the Act.

50 C.F.R. § 402.14(k).

171. A biological opinion cannot limit its review of an agency action in a manner that segments the analysis and thereby allows for a piecemeal approach to the brink of jeopardy or destruction or adverse modification of critical habitat. *See Wild Fish Conservancy v. Salazar*, 628 F.3d 513, 522–23 (9th Cir. 2010).

172. A biological opinion must analyze the entire action before making a decision that may affect listed species or their habitat, including a programmatic decision. *See Conner v. Burford*, 848 F.2d 1441, 1454 (9th Cir. 1988).

173. After FWS adds the direct and indirect effects of the action to the environmental baseline and cumulative effects, it must make its determination of "whether the action is likely to jeopardize the continued existence of a listed species." 16 U.S.C. § 1536(b)(3), (b)(4); 50 C.F.R. § 402.14(h). In evaluating whether an action will

jeopardize the continued existence of a listed species, the biological opinion must evaluate whether the action "reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of" the recovery of a listed species in the wild, even if the Service concludes the action would not reduce the likelihood of survival. *Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, 524 F.3d 917, 931–32 (9th Cir. 2008) (interpreting 50 C.F.R § 402.02).

174. Where an agency relies upon mitigation measures to ensure against jeopardy, such mitigation measures must be reasonably certain to occur. *Id.*, 524 F.3d at 936 n.17.

175. If the biological opinion concludes that an action is likely to result in jeopardy to a listed species, the biological opinion must set forth the reasonable and prudent alternatives that would avoid this ESA violation. 16 U.S.C. § 1536(b)(3)(A); 50 C.F.R. §§ 402.02, 402.14(h)(3).

176. Regardless of the conclusion reached in the biological opinion, the action agency has an independent duty to ensure that its actions are not likely to jeopardize the continued existence of listed species. 16 U.S.C. § 1536(a)(2).

177. An agency cannot satisfy its duty to ensure against jeopardy if it relies on a legally flawed biological opinion. *Center for Biological Diversity v. U.S. Bureau of Land Mgmt.*, 698 F.3d 1101, 1127–28 (9th Cir. 2012). An agency's reliance on a biological opinion also fails to satisfy its duty to ensure against jeopardy where the action agency

fails to discuss information about the action that would undercut the conclusions of the biological opinion. *Id.*

178. To satisfy the obligations of ESA section 7(a)(2), the action agency must reinitiate consultation "where discretionary Federal involvement or control over the action has been retained or is authorized by law," and either "new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered" or "the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion or written concurrence." 50 C.F.R. § 402.16(a)(2), (3).

179. The ESA prohibits any "person" from "taking" individual members of an endangered species, as well as threatened species protected from such take by species-specific regulations or a "special rule." 16 U.S.C. § 1538(a)(1)(B), (G). For polar bears, the species-specific "special rule" prohibits incidental take from an activity "within the current range of the polar" bear unless the taking has been authorized or exempted under the Marine Mammal Protection Act. 50 C.F.R. § 17.40(q); *see also* 16 U.S.C. § 1361 *et seq.* (regulating killing and disturbance of marine mammals.).

180. Under the ESA, "take" means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" or any attempt to do the above actions. 16 U.S.C. § 1532(19). "Harm" means an "act which actually kills or injures wildlife. Such act may

include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering." 50 C.F.R. § 17.3. "Harass" means "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering." *Id*.

181. Incidental take means "takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant." 50 C.F.R. § 402.02.

182. If a biological opinion concludes that the agency action is not likely to jeopardize the continued existence of a listed species, but results in incidental take, the Service provides an Incidental Take Statement (ITS) that must include the amount or extent of anticipated take due to the federal action, reasonable and prudent measures to minimize the take, and terms and conditions that must be observed when implementing those measures. 16 U.S.C. § 1536(b)(4).

183. Framework programmatic action means a Federal action that approves a framework for the development of future action(s) that are authorized, funded, or carried out at a later time, and any take of a listed species would not occur unless and until those future action(s) are authorized, funded, or carried out and subject to further section 7 consultation. 50 C.F.R. § 402.02. An incidental take statement is not required for

framework programmatic actions. *Id.* § 402.14(i)(6). Mixed programmatic action means a Federal action that approves an action that will not be subject to further section 7 consultation, and also approves a framework for the development of future actions. *Id.* § 402.02. For a mixed programmatic action, an incidental take statement is required at the programmatic level only for those program actions that are reasonably certain to cause take and are not subject to further section 7 consultation. *Id.* § 402.14(i)(6).

Administrative Procedure Act

184. Courts review agency actions under the Administrative Procedure Act (APA). 5 U.S.C. §§ 702, 704.

185. Under the APA, Courts "hold unlawful and set aside agency actions, findings, and conclusions" that are "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law," in excess of statutory authority, or made "without observance of procedure required by law." *Id.* § 706(2)(A)–(D).

CLAIMS FOR RELIEF

COUNT I

(Violation of ANILCA and Refuge Act; Failure to Adopt a Leasing Program Consistent with Purposes of the Coastal Plain)

186. Plaintiffs incorporate by reference all preceding paragraphs.

187. Public Land Order 2214 established three purposes of the Range: "preserving unique wildlife, wilderness and recreational values."

188. ANILCA recognized four additional purposes for the Arctic Refuge:

(i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;

(ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;

(iii) to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents, and

(iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and quantity within the refuge.

ANILCA § 303(2)(B).

189. The original three purposes of the Range and the four additional ANILCA purposes all apply to the Coastal Plain and must be given effect. ANILCA § 305; 16 U.S.C § 668ee(10).

190. The Tax Act added an additional purpose for the Coastal Plain: "to provide for an oil and gas program on the Coastal Plain." Pub. L. 115-97, tit. 2, § 20001(b)(2)(B).

191. ANILCA governs the administration of the Arctic Refuge. It mandates that the Arctic Refuge "shall be administered by the Secretary, subject to valid existing rights, in accordance with the laws governing the administration of units of the National Wildlife Refuge system, and this act." ANILCA § 304(a).

192. The Refuge Act also governs the administration of all refuges and the National Wildlife Refuge System. 16 U.S.C. § 668dd. It mandates that each refuge "shall be managed to fulfill the mission of the System, as well as the specific purposes for which that refuge was established." *Id.* § 668dd(a)(3)(A).

193. The Secretary failed to adopt an oil and gas program consistent with and protective of the Coastal Plain's conservation purposes because he: (a) disregarded the original Range purposes; (b) failed to consider and adopt an alternative that was consistent with and protective of the seven conservation purposes, (c) failed to consider and adopt lease stipulations and required operating procedures that were consistent with and protective of the conservation purposes, and (d) failed to accurately or adequately analyze and limit the impacts of an oil and gas leasing program on the conservation purposes, in addition to other reasons.

194. The Secretary also failed to provide an adequate explanation of how the program he adopted complies with and fulfills the seven conservation purposes of the Coastal Plain.

195. The Secretary's failure to consider and adopt an oil and gas program consistent with and protective of all seven of the conservation purposes of the Coastal Plain of the Arctic Refuge or to adequately explain how the program was consistent with protection of the conservation purposes of the Refuge violates ANILCA and the Refuge Act, and was arbitrary, capricious, and not in accordance with the law and was without

observance of the procedure required by ANILCA, the Refuge Act, and the APA. 5 U.S.C. § 706(2).

COUNT II

(Violation of NEPA; Failure to Consider a Reasonable Range of Alternatives)

196. Plaintiffs incorporate by reference all preceding paragraphs.

197. NEPA requires agencies to consider a reasonable range of alternatives. 43 U.S.C. § 4332(2)(C); 40 C.F.R. §§ 1500.2, 1502.2, 1502.14, 1505.1. Agencies must, to the fullest extent possible, include "reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment." 40 C.F.R. § 1500.2(e). The EIS must also state how the alternatives considered will meet both NEPA and other environmental laws and policies, including the Refuge Act and ANILCA, and must discuss the reasons for eliminating any alternatives from detailed study. *See id.* §§ 1502.2(d), 1502.14(a).

198. BLM failed to consider a reasonable range of alternatives in the EIS that would protect the Coastal Plain's exceptional resources and limit oil and gas development consistent with law.

199. BLM failed to consider a reasonable range of alternatives in the Coastal Plain Leasing Program EIS because BLM failed to consider an alternative or alternatives that had the potential to reduce the adverse effects on the Coastal Plain and better protect the purposes of the Arctic Refuge. Viable, unconsidered alternatives or components of

alternatives include, but are not limited to: (a) phased-leasing of only 400,000 acres of the highest hydrocarbon areas; (b) allowing less than 2,000 acres of surface development; (c) prohibiting seismic exploration on areas of the Coastal Plain not offered for lease; and (d) more protective lease stipulations and required operating procedures to protect Coastal Plain resources, uses, and users.

200. Consideration of a more protective alternative or alternative components would be consistent with BLM's and Department of the Interior's statutory mandates, the purpose and need of the Coastal Plain leasing program, and the nature and scope of the proposed program.

201. BLM failed to adequately explain its failure to consider viable alternatives that would reduce the impacts to the Coastal Plain and provide more protections for Coastal Plain resources. To the extent BLM provided any explanation for failing to consider viable alternatives, that explanation was arbitrary and capricious.

202. For each of the above reasons, BLM failed to consider a reasonable range of alternatives, including viable alternatives proposed by the Plaintiffs, rendering the final EIS and ROD arbitrary, capricious, and not in accordance with the law, and its adoption of the final EIS and ROD was done without observance of the procedures required by NEPA, its implementing regulations, and the APA. 5 U.S.C. § 706(2).

COUNT III

(Violation of NEPA; Failure to Assess the Direct, Indirect, and Cumulative Impacts and to Adequately Consider Mitigation Measures)

203. Plaintiffs incorporate by reference all preceding paragraphs.

204. Pursuant to NEPA, agencies must take a "hard look" at the consequences, environmental impacts, and adverse effects of their proposed actions, consider alternatives to the proposed action, and evaluate mitigation measures. 42 U.S.C. § 4332(2)(C); 40 C.F.R. §§ 1502.1, 1502.14, 1502.16. NEPA requires that an EIS include an assessment of the cumulative impacts of the proposed action together with the impacts of past, present, and reasonably foreseeable activities. *Id.* § 1508.7.

205. NEPA's implementing regulations require that an EIS discuss the means to mitigate adverse environmental consequences. *Id.* §§ 1502.14(f), 1502.16(h). Mitigation includes, but is not limited to, avoiding, minimizing, rectifying, or compensating for adverse project impacts to the environment. *Id.* § 1508.20.

206. BLM violated NEPA and its implementing regulations in its evaluation and adoption of an oil and gas leasing program because BLM failed to take a hard look at the potential direct, indirect, and cumulative impacts of the Coastal Plain leasing program. These violations include, but are not limited to, BLM's evaluation of the impacts on greenhouse gas emissions and climate change, air quality, water, polar bears, caribou, wilderness and recreation, soils, permafrost, vegetation and wetlands, and subsistence uses and resources. BLM also failed to adequately analyze the impacts from reasonably foreseeable activities related to the oil and gas program, including but not limited to seismic exploration. BLM also failed to take a hard look at the potential impacts

associated with and resulting from a scenario where infrastructure with a footprint exceeding 2,000 acres would be authorized at any given time.

207. The EIS also fails to provide a reasonably thorough discussion of the effectiveness of mitigation measures to reduce direct, indirect, or cumulative effects from the oil and gas program on Coastal Plain resources. These violations include, but are not limited to, BLM's failure to analyze or prescribe mitigation measures in the form of lease stipulations and/or required operating procedures that will limit the direct, indirect, and cumulative impacts to resources. These resources include, among others: greenhouse gas emissions and climate change, air quality, water, polar bears, caribou, wilderness and recreation, soils, permafrost, vegetation and wetlands, and subsistence uses and resources.

208. BLM's cursory analysis of the implementation and anticipated effectiveness of the proposed mitigation measures is insufficient to show that the agency has properly evaluated the environmental consequences of its action or ways to address those consequences.

209. For each of the above reasons, BLM failed to take a hard look at the direct, indirect, and cumulative impacts of the Coastal Plain leasing program, including failing to analyze the effectiveness of the proposed mitigation measures, rendering the final EIS and ROD arbitrary, capricious, and not in accordance with the law and its adoption of the

final EIS and ROD was done without observance of the procedure required by NEPA, its implementing regulations, and the APA. 5 U.S.C. § 706(2).

COUNT IV

(Violation of ANILCA; Failure to Comply with Section 810)

210. Plaintiffs incorporate by reference all preceding paragraphs.

211. Pursuant to ANILCA section 810, agencies must consider effects and restrictions upon subsistence resources and uses, and actions which would significantly restrict subsistence uses may only be undertaken if BLM finds that such actions are necessary, involve the minimal amount of public lands necessary, and if the adverse effects to subsistence are minimized. 16 U.S.C. § 3120(a).

212. BLM's ANILCA Section 810 Final Evaluation fails to comply with the law for multiple reasons, including, but not limited to: (a) BLM improperly excluded many Gwich'in communities that use the subsistence resources of the Coastal Plain and that would be affected by the proposed action; (b) BLM failed to consider important subsistence resources that would be affected by its proposed action, including but not limited to migratory waterfowl; (c) BLM failed to consider all subsistence uses that would be affected by its proposed action, including but not limited to traditional sharing and bartering practices; (d) BLM's finding that there would not be significant restrictions to subsistence uses for Arctic Village and Venetie from its proposed action is based on flawed analysis and findings and fails to consider traditional knowledge; (e) BLM relied

on the flawed analysis in the final EIS as the basis for its ANILCA Section 810 Final Evaluation; and (f) BLM did not adequately analyze alternatives in the final EIS that would be more protective of lands and resources that are important for key subsistence resources and uses.

213. For the above reasons, BLM's ANILCA Section 810 Final Evaluation was arbitrary, capricious, and not in accordance with the law and was without observance of the procedure required by ANILCA and the APA. 5 U.S.C. § 706(2).

COUNT V

(Violation of the Wilderness Act; Failure to Protect Wilderness)

214. Plaintiffs incorporate by reference all preceding paragraphs.

215. The Wilderness Act mandates that "each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area and shall so administer such area for such other purposes for which it may have been established as also to preserve its wilderness character." 16 U.S.C. § 1133(b).

216. An agency has a duty to preserve Wilderness from activities outside the Wilderness area that degrade the area's wilderness characteristics. *Id.*

217. In adopting the oil and gas program for the Coastal Plain, the Secretary failed to protect the wilderness character of the Mollie Beattie Wilderness.

218. These violations include, but are not limited to: (a) failing to analyze the impacts of an oil and gas program on the Mollie Beattie Wilderness, including mitigation

measures to protect the wilderness characteristics of the area, and (b) adopting an oil and gas program that degrades the wilderness characteristics of the Mollie Beattie Wilderness.

219. The Secretary's decision to adopt a leasing program that does not evaluate the impacts to and that degrades the wilderness character of the Mollie Beattie Wilderness was arbitrary, capricious, and not in accordance with the law, and was without observance of the procedure required by law, in violation of the Wilderness Act, and the APA. 5 U.S.C. § 706(2).

COUNT VI

(Violation of the Tax Act; Failure to Properly Interpret and Implement the 2,000-Acre Provision)

220. Plaintiffs incorporate by reference all preceding paragraphs.

221. The Tax Act mandates that the Secretary "shall authorize up to 2,000 surface acres of Federal land on the Coastal Plain to be covered by production and support facilities (including airstrips and any areas covered by gravel berms or piers for support of pipelines) during the term of the leases under the oil and gas program under this section." Pub. L. 115-97, tit. 2, § 20001(c)(3).

222. The Secretary and BLM interpret the "up to 2,000 surface acres" provision to mean that BLM could not authorize any amount of surface development less than 2,000 acres for purposes of its alternatives analysis.

223. BLM applied this unlawful interpretation to reject proposed alternatives.

224. The Secretary and BLM also interpret the 2,000-acre provision to only apply to facilities that qualify as both "production and support facilities." Based on this interpretation, the Secretary and BLM indicate they will exclude a range of facilities and infrastructure from the 2,000 acre limit, thereby allowing infrastructure to cover more than 2,000 acres at any given time.

225. The Secretary and BLM also indicated that the right-of-way provision is not subject to the 2,000-acre provision.

226. The Secretary's and BLM's adoption of an oil and gas leasing program based on these incorrect interpretations is inconsistent with the Tax Act.

227. For each of the above reasons, the Secretary's and BLM's interpretation of the Tax Act's 2,000-acre provision for the Coastal Plain and adoption of an oil and gas program based on that interpretation was arbitrary, capricious, and not in accordance with the law and in excess of statutory authority, in violation of the Tax Act, and the APA. 5 U.S.C. § 706(2).

COUNT VII

(Violation of ESA Section 7 and the APA; FWS's Failure to Prepare a Legally Sufficient BiOp)

228. Plaintiffs incorporate by reference all preceding paragraphs.

229. The ESA requires FWS to prepare a BiOp that uses the best scientific and commercial data available to evaluate whether BLM's leasing program is likely to jeopardize the continued existence of any endangered or threatened species or destroy or

adversely modify designated critical habitat. 16 U.S.C. § 1536(a)(2). FWS must draw a rational connection between the facts found and the conclusions it draws.

230. FWS failed to consider relevant and available studies in the BiOP, including, but not limited to, its model for estimating quantitative take of polar bears from seismic activities, and recent science on the limitations of den detection technology (i.e., FLIR).

231. In issuing the BiOp for polar bears, FWS relies on a "lease notice" indicating that BLM will require documentation of compliance with the MMPA prior to authorizing any on-the-ground oil and gas activities, but FWS failed to consider whether the lease notice would be enforceable in light of BLM's authority under the Tax Act with regard to "necessary access," DOI's interpretation of the MMPA, and DOI and BLM's interpretation of the legal effect of lease notices. As a result, it is not reasonably certain that BLM could refuse to authorize oil and gas activities that fail to comply with the MMPA.

232. FWS also failed to consider the impact of the whole oil and gas program on critical habitat, including, but not limited to: (1) FWS's unlawful and unreasonable conclusion that MMPA compliance will prevent loss or degradation of critical habitat; (2) FWS's unlawful conclusion that "step-down" consultations and consultations on MMPA authorizations will prevent such loss because those consultations will each reflect only a

piecemeal analysis; and (3) FWS's deficient analysis of polar bear critical habitat impacts from the entire program.

233. Finally, FWS failed to address impacts to polar bears as a result of greenhouse gas emissions produced from oil and gas activities on the Coastal Plain and those emissions' contribution to exacerbating or hastening climate change effects.

234. FWS's failure to consider the best available science, its reliance on uncertain mitigation measures to avoid jeopardy, and its failure to analyze the impacts of the whole oil and gas program on critical habitat and consider impacts from increased greenhouse gas emissions each render the BiOp arbitrary, capricious, an abuse of discretion, and otherwise not in accordance with law, and without observance of the requirements of the ESA and its implementing regulations, and the APA. 16 U.S.C. § 1536(a)(2); 5 U.S.C. § 706.

Count VIII

(Violation of ESA Section 7; BLM's Unreasonable Reliance on BiOp)

235. Plaintiffs incorporate by reference all preceding paragraphs.

236. Under Section 7 of the ESA, BLM must ensure that its actions are not likely to jeopardize the continued existence of listed species or result in destruction or adverse modification of critical habitat. 16 U.S.C. § 1536(a)(2). An agency's reliance on a legally flawed biological opinion to authorize an action violates this duty.

237. The BiOp is legally flawed and inadequate with regard to evaluating the potential impacts of the leasing program on polar bears (as set out in Count VII).

238. BLM violated the ESA by unreasonably relying on this legally deficient BiOp.

239. BLM also violated the ESA because it has repudiated its authority to preclude activities on the Coastal Plain that are "necessary" to "access" leased oil and gas, contrary to the assumptions in the BiOp. BLM asserts throughout the final EIS and ROD that its discretion to preclude activities on the Coastal Plain is constrained by the Tax Act. BLM's position makes it uncertain whether BLM can, as a matter of law, preclude activities that may jeopardize polar bears. But the BiOp's "no jeopardy" conclusion for polar bears is predicated on the understanding that BLM would deny authorizations for activities unless and until the lessees or applicants obtain advance permission for incidental take under the Marine Mammal Protection Act from FWS, or a letter from FWS indicating that no such take will occur.

240. BLM also violated its duty to ensure against destruction or adverse modification of polar bear critical habitat by altering its interpretation of the Tax Act's 2,000 acre limit after completing consultation with FWS. The BiOp relied on BLM's position set out in the final EIS that the total footprint of surface disturbance would be capped at 2,000 acres at any given time. BLM changed its position regarding that

interpretation in the ROD. As a result, BLM cannot ensure that the impacts to critical habitat will be limited as the BiOp assumed.

241. BLM's continued reliance on the BiOp to ensure that its leasing program on the Coastal Plain will not jeopardize the survival of polar bears or adversely modify or destroy polar bear critical habitat is unreasonable, violates its duties under the ESA and its implementing regulations, is arbitrary, capricious, an abuse of discretion, and otherwise not in accordance with law, and is without observance of the requirements of the ESA and its implementing regulations, and the APA. 16 U.S.C. § 1536(a)(2); 5 U.S.C. § 706.

Count IX

(*Violation of ESA Section 7; BLM's Failure to Reinitiate Consultation*)

242. Plaintiffs incorporate by reference all preceding paragraphs.

243. After completing consultation with FWS and obtaining the BiOp that concluded "no jeopardy" and "no adverse modification or destruction of critical habitat" regarding polar bears, BLM issued the ROD that (1) repudiated its authority to enforce the BiOp's conditions regarding MMPA compliance, and (2) changed its position regarding the interpretation of the 2,000-acre limitation, on which the BiOp relied.

244. Each of these changes constitutes "new information [that] reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered" and "modif[ication of the agency action] in a manner that causes

an effect to the listed species or critical habitat that was not considered in the biological opinion or written concurrence." 50 C.F.R. § 402.16(a)(2),(3).

245. BLM violated its duties under the ESA by failing to reinitiate consultation on its leasing program to address interpretations of its authority that were not considered in the BiOp, and which undercut the premises on which FWS based the conclusions in the BiOp.

246. BLM's failure to reinitiate consultation is arbitrary, capricious, an abuse of discretion, and otherwise not in accordance with law, and without observance of the requirements of the ESA and its implementing regulations, and the APA. 16 U.S.C. § 1536(a)(2); 5 U.S.C. § 706.

REQUEST FOR RELIEF

Plaintiffs respectfully request that this Court grant the following relief:

1. Declare that in issuing the final EIS, ROD, and ANILCA Section 810 Final Evaluation, the Secretary, DOI, and BLM violated ANILCA, the Refuge Act, NEPA, the Wilderness Act, the Tax Act, the ESA, and the APA; declare that in issuing the BiOp the Secretary, DOI, and FWS violated the ESA and the APA; declare that the invalid final EIS, ROD, ANILCA Section 810 Final Evaluation, and BiOp cannot serve as the basis for any future actions, including decisions to conduct a lease sale or issue leases; and

declare that the actions as set forth above are arbitrary, capricious, an abuse of discretion or not in accordance with law and without observance of procedure required by law;

2. Vacate and set aside as unlawful any and all agency approvals and underlying analysis documents, including the final EIS, ROD, ANILCA Section 810 Final Evaluation, and BiOp, as well as any decisions and documents based on the unlawful actions, including decisions to lease and leases;

3. Enter appropriate injunctive relief, including prohibiting BLM from authorizing any activities under the Coastal Plain leasing program in reliance on the unlawful final EIS, ROD, ANILCA Section 810 Final Evaluation, or BiOp;

4. Award Plaintiffs all reasonable costs and fees as authorized by law; and

5. Grant such other relief as this Court deems just and proper.

Respectfully submitted this 2nd day of November, 2020,

_s/ Brook Brisson_____
Brook Brisson (AK Bar No. 0905013)
Suzanne Bostrom (AK Bar No. 1011068)
Bridget Psarianos (AK Bar No. 1705025)
Brian Litmans (AK Bar No. 0111068)
TRUSTEES FOR ALASKA
1026 W. Fourth Avenue, Suite 201
Anchorage, AK 99501
Phone: (907) 276-4244
Fax: (907) 276-7110
bbrisson@trustees.org
sbostrom@trustees.org
bpsarianos@trustees.org
blitmans@trsutees.org

Attorneys for Plaintiffs Gwich'in Steering Committee, Alaska Wilderness League, Canadian Parks & Wilderness Society-Yukon, Defenders of Wildlife, Environment America, Friends of Alaska National Wildlife Refuges, National Wildlife Federation, National Wildlife Refuge Association, Northern Alaska Environmental Center, Sierra Club, The Wilderness Society, and Wilderness Watch

s/ Karimah Schoenhut (consent)
Karimah Schoenhut (*pro hac vice*)
SIERRA CLUB ENVIRONMENTAL LAW PROGRAM
50 F St., NW 8th Floor
Washington, DC 20001
Phone: (202) 548-4584
Fax: (202) 547-6009
karimah.schoenhut@sierraclub.org
Attorney for Plaintiff Sierra Club

CERTIFICATE OF SERVICE

I certify that on November 2, 2020, I caused a copy of the FIRST AMENDED COMPLAINT FOR DECLARATORY AND INJUNCTIVE RELIEF to be electronically filed with the Clerk of the Court for the U.S. District Court of Alaska using the CM/ECF system, which will send electronic notification of such filings to the attorneys of record in this case.

s/ Brook Brisson
Brook Brisson

Nathaniel S.W. Lawrence (Wash. Bar No. 30847) (*pro hac vice*)
NATURAL RESOURCES DEFENSE COUNCIL
3723 Holiday Drive, SE
Olympia, WA 98501
360.534.9900; nlawrence@nrdc.org

Garett R. Rose (D.C. Bar No. 1023909) (*pro hac vice*)
Jared E. Knicley (D.C. Bar No. 1027257) (*pro hac vice*)
NATURAL RESOURCES DEFENSE COUNCIL
1152 15th St. NW
Washington DC 20005
202.289.6868; grose@nrdc.org; jknicley@nrdc.org

Erik Grafe (Alaska Bar No. 0804010)
EARTHJUSTICE
441 W 5th Avenue, Suite 301
Anchorage, AK 99501
907.792.7102; egrafe@earthjustice.org

Eric P. Jorgensen (Alaska Bar No. 8904010)
Katharine Glover (Alaska Bar No. 0606033)
EARTHJUSTICE
325 Fourth Street
Juneau, AK 99801
907.586.2751; ejorgensen@earthjustice.org; kglover@earthjustice.org

Attorneys for Plaintiffs National Audubon Society et al.

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF ALASKA

NATIONAL AUDUBON SOCIETY, NATURAL RESOURCES DEFENSE COUNCIL, CENTER FOR BIOLOGICAL DIVERSITY, and FRIENDS OF THE EARTH, Plaintiffs, v. DAVID BERNHARDT, in his official capacity as Secretary of the Interior, BUREAU OF LAND MANAGEMENT, and UNITED STATES FISH AND WILDLIFE SERVICE, Defendants.	)	Case No. 3:20-cv-00205-SLG

FIRST AMENDED COMPLAINT FOR DECLARATORY AND INJUNCTIVE RELIEF
(5 U.S.C. §§ 701-706; 16 U.S.C. § 668dd-ee; 42 U.S.C. § 4332; 16 U.S.C. § 1536)

INTRODUCTION

1. The Secretary of Interior has impermissibly authorized a broad oil and gas leasing program (the Program) in the Coastal Plain of the Arctic National Wildlife Refuge (Plain or Coastal Plain). The Program violates multiple statutes governing management of the Coastal Plain and is arbitrary and capricious. The final environmental impact statement (FEIS), prepared by the Bureau of Land Management (BLM) and the Secretary of the Interior, does not meet foundational requirements of the National Environmental Policy Act. The Program relies on a biological opinion issued by the United States Fish and Wildlife Service (Fish and Wildlife Service) in derogation of its legal obligations under the Endangered Species Act (ESA).

2. The Arctic National Wildlife Refuge (Refuge or Arctic Refuge) is our nation's largest wildlife refuge and the largest preserve of any sort, where the natural environment still exists undisturbed by industrial development.

3. The Coastal Plain is the biological heart of the Refuge: 1.56-million acres of tundra ecosystem that provide essential breeding, birthing, foraging, and/or over-wintering habitat to countless animals, including polar bears, caribou, and birds from all fifty states. The Coastal Plain comprises vast expanses of tundra, braided rivers, slopes, foothills, and shallow lakes and ponds. It is also exceedingly sensitive to change, with a short growing season, soils and waterbodies perched on permafrost and ice, and a thin, protective layer of productive vegetation vulnerable to disturbance and slow to recover.

Increasingly, its ecological processes and species—and even the frozen ground that supports all its surface features—are stressed by climate change.

4. Since its creation, the Refuge has been governed by a highly protective statutory and regulatory scheme. In 2017, while leaving these laws almost entirely in place, Congress instructed BLM to develop and administer a limited program of oil and gas leasing in the Coastal Plain.

5. The Program that Defendants David Bernhardt and BLM adopted or approved opens essentially the entire Coastal Plain to leasing for intensive exploration and industrial development attendant on oil and gas production. Through their Record of Decision (ROD) adopting the Program, Defendant Bernhardt and BLM exceeded Congress's limited authorization, needlessly and unlawfully failing to protect the Refuge from damage within their control. They failed to develop and disclose to the public Program options that would have minimized such damage. They failed, as well, to disclose the actual nature and extent of potentially significant environmental damage associated with choices made in adopting the Program. And Defendants Fish and Wildlife Service and BLM violated the ESA by, respectively, issuing and relying upon an arbitrary biological opinion for the Program. In so relying, BLM thereby failed to ensure that the Program's implementation would protect threatened species and their critical habitat.

6. Plaintiffs ask this Court to enforce the statutory obligations and commands protecting the Coastal Plain environment that the Defendants have ignored and set aside their unlawful ROD, FEIS, and biological opinion, and any actions taken in reliance upon them.

JURISDICTION, RIGHT OF ACTION, AND VENUE

7. This court has jurisdiction under 28 U.S.C. § 1331 and may issue a declaratory judgment and further relief under 28 U.S.C. §§ 2201-02. Judicial review and vacatur of illegal agency actions is available under the Administrative Procedure Act, 5 U.S.C. §§ 701-06 and the ESA, 16 U.S.C. § 1540(g).

8. Venue is proper under 28 U.S.C. § 1391(e) because the Refuge is located within this District and 16 U.S.C § 1540(g) because the violations occurred in the District.

9. On August 24, 2020, plaintiffs provided 60 days' notice of intent to sue to BLM and the Secretary of the Interior regarding BLM's reliance on the unlawful biological opinion and failure to ensure against jeopardy to a threatened or endangered species or adverse modification of its critical habitat, in violation of the ESA. A copy of the notice letter is attached as Exhibit A.

THE PARTIES

The Plaintiffs

10. The National Audubon Society (Audubon) is a national nonprofit conservation organization dedicated to protecting birds and the places they need, now and in the future, throughout the Americas, using science, advocacy, education, and on-the-ground conservation. Founded in 1905, Audubon has approximately 1.9 million members nationwide, including over 4,800 in Alaska. Among its many activities, Audubon operates 41 nature centers, and has 23 state programs, including a state office in Anchorage, Alaska, and over 450 local chapters throughout the country, including five chapters in Alaska. Audubon has long advocated for preserving the Arctic Refuge free from development.

11. The Natural Resources Defense Council (NRDC) is a membership organization that works to protect wildlife and wild places and to ensure a healthy environment for all life on earth. NRDC has more than 3.5 million members and online activists, including 375,000 dues-paying members, nearly 1,000 of them in the State of Alaska. NRDC's advocacy to protect the Refuge and keep it free from development dates back decades.

12. Plaintiff Center for Biological Diversity (the Center) is a national non-profit organization, with offices across the country and in La Paz, Mexico. The Center's mission is to ensure the preservation, protection, and restoration of biodiversity, native

species, ecosystems, public lands, and public health. The Center has more than 81,800 members. The Center is actively involved in species and habitat protection issues throughout the United States, including protection of the Arctic and wildlife threatened by oil and gas leasing, exploration, and development. It has long advocated keeping the Arctic Refuge off limits to oil drilling.

13. Plaintiff Friends of the Earth is a tax-exempt, 501(c)(3) organization and a not-for-profit corporation. Friends of the Earth is a membership organization consisting of nearly 178,000 members and more than 1.7 million activists nationwide, including more than 400 members who live in Alaska. It is also a member of Friends of the Earth-International, which is a network of grassroots groups in 74 countries worldwide. Its mission is to protect our natural environment, including air, water, and land, to create a more healthy and just world, using public education, advocacy, legislative processes, and litigation. Friends of the Earth is concerned about the adverse impacts that fossil fuel exploration and development in the Arctic Refuge have on the climate and people, fish, birds, and other species that depend on this region. Therefore, on behalf of its members and activists, Friends of the Earth actively engages in advocacy to influence U.S. energy and environmental policies affecting the Arctic Refuge.

14. Members of the plaintiff organizations reside near, visit, or otherwise use and enjoy the Arctic Refuge, including the Coastal Plain. Members of the plaintiff organizations use these lands for recreation, research, subsistence practices, wildlife

viewing, photography, education, and aesthetic and spiritual purposes. The plaintiffs and their members derive scientific, recreational, aesthetic, and conservation benefits and enjoyment from their use of the area and from wildlife that use the Coastal Plain. The activities authorized by Defendant Bernhardt's and Defendant BLM's adoption of the Program will directly and irreparably injure these interests.

15. The plaintiff organizations monitor the use of Arctic Refuge ecosystems and compliance with the laws respecting these ecosystems, including the Coastal Plain, educate their members and the public concerning management of the ecosystems, and advocate policies and practices that conserve the natural values of the ecosystems. Plaintiffs cannot achieve these organizational purposes fully without adequate information and public participation in the processes required by law. The interests and organizational purposes of the plaintiffs are directly and irreparably injured by Defendants' violations of the laws as described in this complaint.

16. Plaintiffs participate actively in the administrative processes established for management of the Arctic Refuge and Coastal Plain, and did so for the Program. Plaintiff groups submitted comments on scoping and on the draft environmental impact statement for the Program. Plaintiffs have exhausted administrative remedies for the decision challenged in this complaint.

The Defendants

17. Defendant David Bernhardt is sued in his official capacity as Secretary of the Interior. Secretary of the Interior is the highest position within the Department of the Interior, has ultimate responsibility for overseeing the Department and its agencies and ensuring their compliance with all applicable federal laws, and specific responsibilities related to the administration of the Arctic Refuge. Defendant Bernhardt signed the ROD challenged herein.

18. Defendant BLM is the federal agency within the Department of the Interior that issued the FEIS and ROD challenged in this action.

19. Defendant Fish and Wildlife Service is the federal agency within the Department of the Interior responsible for administration of the ESA as it relates to terrestrial animals and some marine mammals, most relevantly here including polar bears.

FACTUAL BACKGROUND

The Coastal Plain of the Arctic National Wildlife Refuge

20. Bounded on the east by Ivvavik National Park and Vuntut National Park in Canada, and on the west by State of Alaska lands already developed for oil and gas production, the Arctic Refuge is a uniquely undisturbed region of America's Arctic.

21. The Refuge's Coastal Plain is a dynamic and sensitive tundra environment. Its unique biodiversity includes primary calving grounds for the Porcupine caribou herd,

a distinct population that annually undertakes the longest terrestrial migration on Earth. As Defendants Bernhardt and BLM acknowledge in the FEIS, even with low levels of human activity in calving areas, oil and gas development could displace calving caribou, result in decreased calf survival, and lead to a decline in caribou body condition.

22. The Plain is also home to the United States' highest density of onshore dens for maternal polar bears, listed as threatened under the ESA. Polar bears in the Refuge belong to the species' highly imperiled and declining Southern Beaufort Sea population. They are increasingly being driven onto land as climate change reduces their sea ice habitat and are increasingly dependent on onshore denning habitat in the Coastal Plain.

23. The Coastal Plain's gravel bars, lagoons, tussocks, cliffs, and wetlands provide irreplaceable nesting, foraging, and staging grounds for more than 150 bird species, including tundra and trumpeter swans, gyrfalcons and peregrines, cranes, phalaropes, king and common eiders, and snowy owls.

24. The Coastal Plain also serves as essential habitat for many terrestrial and aquatic species (including many with disturbance averse or imperiled populations), such as muskoxen, wolves, brown bears, wolverines, Arctic foxes, salmon, char, grayling, and Dolly Varden.

25. The Coastal Plain is vital to customary and traditional Indigenous practices, including subsistence hunting. Indigenous peoples of the United States and Canadian Arctic depend heavily on the Porcupine caribou herd that uses the Coastal Plain for

calving and post-calving activities, migrates south in the fall, and travels up the Porcupine River in the spring. This 200,000-strong herd is essential to the cultural practices and way of life of the Gwich'in villages along the herd's migration route and provides them a principal food source.

26. The Coastal Plain, like the rest of America's Arctic, is already profoundly stressed by the effects of climate change. During recent decades, the Arctic has warmed more rapidly than any other region on Earth. In Alaska, average Arctic winter temperatures have increased by more than five degrees Fahrenheit during the past 50 years and are predicted to continue rising at a faster rate than elsewhere. Consumption of fossil fuels—encouraged by expanded oil and gas development such as that proposed by Defendants Bernhardt and BLM in the Program—is the main cause of climate change.

27. The Mollie Beattie Wilderness Area, directly adjacent to and overlooking the Coastal Plain, offers vast and undisturbed natural areas rich with opportunities for solitude, self-discovery, self-reliance, remoteness, and unconfined recreation. The Coastal Plain, though not statutorily designated Wilderness, shares many of these characteristics. Poorly mitigated oil development would seriously erode these characteristics across vast areas of the Refuge, including the Mollie Beattie Wilderness Area.

28. The Coastal Plain, due to its unique topography and geomorphology, is ecologically distinct from other parts of America's Arctic. Notably, unlike the flatter

coastal regions of the National Petroleum Reserve-Alaska (NPR-A) further to the west, two-thirds of the Refuge's Coastal Plain is hilly terrain or foothills, fundamentally influencing water flow, vegetation distribution, and habitat. Ice-rich permafrost is the foundation of this ecosystem. This ice is vulnerable to thawing, especially if the overlying—and insulating—vegetation or soil is compacted or stripped off by vehicles. Such thawing causes depressions in the tundra, diverts groundwater, and leads to formation of gullies, ponds, and lakes, permanently changing the topography and hydrological regimes, with cascading effects on surrounding landforms and vegetation.

Congressional Activity Controlling Development of the Coastal Plain

29. Lands that later became the Arctic Refuge, including the Coastal Plain, were set aside almost sixty years ago as the Arctic National Wildlife Range for "the purpose of preserving unique wildlife, wilderness and recreational values." Public Land Order 2214, Alaska - Establishing the Arctic National Wildlife Range, 25 Fed. Reg. 12598, 12598-99 (Dec. 9, 1960). In 1980, Congress gave statutory protection to these and adjacent lands by creating the Arctic Refuge as part of the Alaska National Interest Lands Conservation Act (ANILCA). Pub. L. No. 96-487, § 303(2) (1980) (codified at 16 U.S.C. § 668dd note).

30. ANILCA supplemented the three Public Land Order purposes, mandating that the entire Refuge, including the Coastal Plain, be managed for four additional, specific, protective purposes:

(i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;

(ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;

(iii) to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and

(iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the refuge.

ANILCA § 303(2)(B).

31. In ANILCA, Congress also banned the leasing of oil and gas resources within the Refuge, including the Coastal Plain, and any development leading to oil or gas production there. *See* ANILCA § 1003, 16 U.S.C. § 3143.

32. And, in ANILCA, Congress originally designated as Wilderness the current Mollie Beattie Wilderness. ANILCA § 702(3).

33. In addition to these organic authorities, the Coastal Plain is protected by a highly proscriptive web of federal environmental preservation laws and regulations. As part of a national wildlife refuge, the Secretary of the Interior's management of the Coastal Plain is governed by the National Wildlife Refuge System Administration Act (Refuge Act). The Refuge Act directs that, as a matter of national policy, every refuge "shall be managed to fulfill the mission of the System, as well as the specific purposes for which that refuge was established." 16 U.S.C. § 668dd(a)(3)(A). To that end, the Secretary is directed to:

> (A) provide for the conservation of fish, wildlife, and plants, and their habitats within the System;
>
> (B) ensure that the biological integrity, diversity, and environmental health of the System are maintained for the benefit of present and future generations of Americans;
>
> [and]
>
> (D) ensure that the mission of the System described in paragraph (2) and the purposes of each refuge are carried out, except that if a conflict exists between the purposes of a refuge and the mission of the System, the conflict shall be resolved in a manner that first protects the purposes of the refuge, and, to the extent practicable, that also achieves the mission of the System.

Id. § 668dd(a)(4).

34. Similarly, federal agency action affecting the Coastal Plain is fully subject to the National Environmental Policy Act (NEPA), "our basic national charter for protection of the environment." 40 C.F.R. § 1500.1(a). NEPA establishes comprehensive procedures to ensure that, before irreversibly committing resources to a project or program, federal agencies "encourage productive and enjoyable harmony between man and his environment," "promote efforts which will prevent or eliminate damage to the environment," and "enrich the understanding of the ecological systems and natural resources important to the Nation." 42 U.S.C. § 4321. To those ends, agencies must consider and disclose any potentially significant environmental consequences of their proposals, as well as less-damaging alternatives to them, and solicit input from other agencies, Tribes, and the public, before reaching decisions on major federal actions. *See, e.g.*, 40 C.F.R. §§ 1502.1; 1503.1.

35. Much of the Arctic Refuge is also subject to the stringent provisions of the Wilderness Act, adopted by Congress to preserve certain lands "in their natural condition" and thus "secure for the American people of present and future generations the benefits of and enduring resource of wilderness." 11 U.S.C. § 1131(a). It makes Defendants "responsible for preserving the wilderness character" of the Mollie Beattie Wilderness, directly adjacent to the Coastal Plain, 16 U.S.C. § 1133(b), including from activities on the Coastal Plain.

36. A number of wildlife species found either on or alongshore the Coastal Plain are protected by the ESA. Congress enacted the ESA in part out of recognition that threatened or endangered species are of "esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people," 16 U.S.C. § 1531(a), and deserving of the highest protection. Agencies that authorize, fund, or carry out actions that may affect such species must consult with either the Fish and Wildlife Service or the National Marine Fisheries Service, depending on the affected species, using the best available scientific and commercial data to ensure against likely jeopardizing their continued existence or adversely modifying habitat determined to be critical for them. 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.01(b) (delegating authority for consultations from the Secretaries of Interior and Commerce to the Fish and Wildlife Service and National Marine Fisheries Service).

37. In December 2017, Congress repealed ANILCA section 1003 as to the Coastal Plain and directed BLM to establish and administer a program for the leasing, development, production, and transportation of oil and gas in some portion of the Plain. Tax Cuts and Jobs Act of 2017, Pub. L. No. 115-97, §§ 20001(b)(1) & (b)(2)(A), 131 Stat. 2054, 2236 (2017) (Tax Act).

38. The Tax Act left all other provisions of ANILCA in effect but added for the Refuge an additional purpose: "to provide for an oil and gas program on the Coastal Plain." Tax Act § 20001(b)(2)(B).

39. The Tax Act gave BLM four years from December 2017 to hold an initial lease sale of at least 400,000 acres and seven years to hold a second sale of at least 400,000 acres. *Id.* § 20001(c)(1)(B).

40. The Tax Act did not waive the Refuge Act, NEPA, the Wilderness Act, or any other environmental laws. *See generally id.* § 20001. It also specifically limited surface coverage by production and support facilities on federal land in the Coastal Plain to no more than 2,000 acres during the term of the leases under the Program. *Id.* § 20001(c)(3).

41. During Congressional consideration of the Tax Act, Alaska Senator Murkowski explained that protection of the environment of the Coastal Plain would remain a statutory priority: She agreed that "the environment and local wildlife will always be a concern, always be a priority. That is why we did not waive NEPA or any other environmental laws. That is why the consultation requirements with our Alaska Native people still apply. That is why surface development will cover up to, but no more, than 2,000 Federal acres." 163 Cong. Rec. S7539-40 (daily ed. Nov. 30, 2017) (statement of Sen. Murkowski).

Environmental Documentation and Leasing Program Decision

42. In December 2018, BLM released a draft environmental impact statement analyzing some environmental impacts of and alternatives for the Program. Plaintiffs

timely submitted comments explaining and documenting numerous deficiencies in that draft statement.

43. In September 2019, BLM released an FEIS analyzing some environmental impacts of and alternatives for the Program.

44. In its FEIS, BLM rejected alternatives that would have caused less environmental harm to the Coastal Plain and elsewhere. Instead, BLM designated as its preferred alternative a Program making essentially the entire Plain available for leasing and seismic exploration. This alternative has the most acreage available for construction of oil and gas infrastructure. It includes the fewest protections for biological and ecological resources. It permits, and as described in the FEIS exceeds, the maximum surface infrastructure allowed by the Tax Act. And it has the greatest projected impacts on wilderness values, recreation, permafrost and tundra, water quantity and quality, customary and traditional subsistence practices, wildlife, and climate change of all the alternatives considered in the FEIS. The FEIS acknowledges that implementation of the Program would interfere with and detract from the Refuge's conservation purposes. For example, it concludes that the Program has the potential to harm recreation throughout the entire Coastal Plain and cause the displacement or decline of sensitive species such as polar bears. It also acknowledges that the Program, which would allow surface occupancy and seismic surveying right up to the wilderness boundary, would degrade the wilderness characteristics of the Mollie Beattie Wilderness.

45. The FEIS fails to include accurate and available information about the potential adverse impacts of Program alternatives, in isolation and combination with other industrial activity in northern Alaska. The FEIS ignores or obscures potential harm to tundra, permafrost, and other landscape features, water quantity and quality, air quality, the climate, wilderness characteristics, and wildlife. In numerous instances, the FEIS explicitly fails to disclose potential impacts in favor of study at some later time, or relies on studies of other, significantly different, parts of America's Arctic rather than analyzing potential impacts from development of the Coastal Plain. Throughout, it fails to describe potential cumulative impacts of the Program and its alternatives, together with other past, present, and reasonably foreseeable activities, or describes them so cursorily as to defeat informed public comment and agency decisionmaking.

46. The FEIS also includes a misleadingly narrow range of alternatives, none of which even purports to minimize risk and harms to natural and related values in and beyond the Coastal Plain. No alternative assures leasing would be kept to the minimum required by the Tax Act. None reduces roads, drill pads, and other surface infrastructure below the maximum permitted by the Tax Act. None limits ice roads, pipelines, and other connectors by restricting dispersal of processing facilities. None reduces impacts to wilderness values to the minimum feasible. None eliminates harmful seismic exploration or even significantly restricts where the seismic exploration the FEIS incorporates into the leasing program can occur.

47. On March 13, 2020, the Fish and Wildlife Service issued a biological opinion for the Program, covering ESA-listed species within its area of responsibility and based on its consultation with and receipt of a biological assessment from BLM.

48. On August 17, 2020, BLM released a ROD authorizing the Program, signed by Defendant Bernhardt. In the ROD, BLM and Defendant Bernhardt adopted, with minimal changes, the preferred alternative from the FEIS and formalized their decision to zone essentially the entire Coastal Plain for oil and gas leasing and development.

49. The ROD articulated a different interpretation of Public Law 115-97 sec. 20001(c)(3)—which limits surface development for production and support facilities to 2,000 acres—than the interpretation the Fish and Wildlife Service relied on for its assessment of the Program's impact on polar bears. The interpretation articulated in the ROD could allow for substantially more surface development than the Fish and Wildlife Service assumed in its biological opinion.

50. On October 23, 2020, BLM opened a two-week public comment period for a proposal by Kaktovik Iñupiat Corporation (KIC) to conduct seismic surveying in the Coastal Plain in winter 2020/21, including in areas used for polar bear denning. KIC's proposal relies on mitigation measures adopted in the ROD for seismic exploration pursuant to the Program. BLM has designated this proposal for analysis in an environmental assessment rather than an environmental impact statement, which could

not be completed in time to approve seismic exploration this winter. As proposed, KIC would commence activities under the plan in December 2020.

51. On November 16, 2020, BLM announced that, on November 17, 2020, it will issue a call for nominations and comments on the lease tracts considered for the upcoming Coastal Plain oil and gas lease sale. It will accept comments for 30 days.

52. Subsequent to the close of the comment period for the call for nominations, BLM will publish a public notice announcing a lease sale.

CLAIMS FOR RELIEF

COUNT I
(Violation of the APA and NEPA)

53. Plaintiffs incorporate by reference all preceding paragraphs.

54. The Refuge Act mandates that each national wildlife refuge "shall be managed to fulfill the mission of the [National Wildlife Refuge] System, as well as the specific purposes for which that refuge was established." 16 U.S.C. § 668dd(a)(3)(A). A refuge's purposes include "purposes specified in or derived from the . . . public land order . . . establishing . . . a refuge." 16 U.S.C. § 668ee(10). Similarly, ANILCA requires the national wildlife refuges it created to be managed in accordance with the laws governing the administration of the National Wildlife Refuge System and pursuant to all consistent provisions of previously applicable public land orders. ANILCA §§ 304(a), 305.

55. Public Land Order 2214 established the original management purposes for much of the Arctic Refuge—including all of the Coastal Plain—as preserving the area's unique wildlife, wilderness, and recreational values.

56. ANILCA § 303(2)(B) added four detailed conservation purposes for which the Arctic Refuge "shall be managed," including maintenance of wildlife populations and habitats in their natural diversity, fulfillment of wildlife-related treaties, provision of continued opportunities for subsistence practices, and ensuring water quality and quantity.

57. ANILCA also designated much of the Refuge as Wilderness, including what is now known as the Mollie Beattie Wilderness, which adjoins the Coastal Plain. The Wilderness Act makes Defendants Bernhardt and BLM "responsible for preserving the wilderness character" of congressionally designated Wilderness, including the Mollie Beattie Wilderness. 16 U.S.C. § 1133(b).

58. The Tax Act added a purpose to ANILCA § 303(2)(B) "to provide for an oil and gas program on the Coastal Plain," but did not otherwise alter that section or the Refuge Act, and left in force the Wilderness Act and other laws applicable to management of the Arctic Refuge.

59. The Administrative Procedure Act (APA) bars an agency from arbitrary and capricious decisionmaking, including misinterpreting the agency's legal obligations, failure to consider relevant factors, reliance on factors that Congress did not intend it to

consider, and failure to analyze compliance with governing legal requirements. 5 U.S.C. § 706(2)(A).

60. NEPA regulations require that a federal agency, in an environmental impact statement, "state how alternatives considered in it and decisions based on it will or will not achieve the requirements of . . . environmental laws and policies." 40 C.F.R. § 1502.2(d).

61. In their FEIS for the Program, Defendants Bernhardt and BLM developed alternatives that would bar oil and gas leasing from parts of the Coastal Plain. These alternatives would impose conditions designed to help fulfill the purposes for which the Refuge was created and preserve the wilderness values of the Mollie Beattie Wilderness, beyond those included in these Defendants' preferred and subsequently chosen alternative of offering essentially the entire Coastal Plain for leasing.

62. Defendants Bernhardt and BLM based their ROD in part on their assertion that Congress "mandated that the 1.56 million acre Coastal Plain be managed for an oil and gas program" just as it mandated that other portions of the Refuge be managed as Wilderness. In so doing, they misinterpreted the Tax Act as overriding their other legal obligations, including those under the Refuge Act, ANILCA, and the Wilderness Act, beyond the minimal extent required by the Tax Act.

63. In neither the FEIS nor the ROD did Defendants Bernhardt and BLM consider or analyze their actual legal obligations under the Refuge Act, ANILCA, and the

Wilderness Act or state how they would achieve those requirements. With respect to the Wilderness Act, they expressly found that operations under the Program would adversely affect wilderness characteristics of the Mollie Beattie Wilderness and considered measures to mitigate those impacts, but did not either adopt them or explain in the FEIS or the ROD how and why their decision not to adopt them or other measures to protect the wilderness characteristics of the Mollie Beattie Wilderness will achieve the requirements of the Wilderness Act.

64. By basing their ROD in part on a misinterpretation of their legal obligation to fulfill all the Refuge's purposes and to preserve the wilderness values of the Mollie Beattie Wilderness, and by failing to consider or analyze their actual obligations and decide and state how they would achieve compliance with them, Defendants Bernhardt and BLM violated 5 U.S.C. § 706(2)(A) and 40 C.F.R. § 1502.2(d).

65. Defendants Bernhardt and BLM also acted arbitrarily and not in accordance with law, by neither mitigating adverse impacts they acknowledged the Program would have on the wilderness characteristics of the Mollie Beattie Wilderness nor explaining that failure, in violation of 5 U.S.C. § 706(2)(A) and 40 C.F.R. § 1502.2(d).

COUNT II
(Violation of the Refuge Act)

66. Plaintiffs incorporate by reference all preceding paragraphs.

67. The Refuge Act provides, in part, that "the Secretary shall not initiate or permit a new use of a refuge or expand, renew, or extend an existing use of a refuge, unless the Secretary has determined that the use is a compatible use." 16 U.S.C. § 668dd(d)(3)(A)(i).

68. Uses of a refuge include management economic activities, such as oil and gas leasing activities. ANILCA 304(b); 50 C.F.R. § 25.12.

69. A "compatible use" is a "use of a refuge that, in the sound professional judgment of the Director, will not materially interfere with or detract from the fulfillment of the mission of the System or the purposes of the refuge." 16 U.S.C. 668ee(1). "[S]ound professional judgment," in turn, "means a finding, determination, or decision that is consistent with principles of sound fish and wildlife management and administration, available science and resources, and adherence to the requirements of this Act and other applicable laws." 16 U.S.C. § 668ee(3). A compatibility determination must be made in writing and provide adequate opportunity for public comment. 16 U.S.C. § 668dd(d)(3)(B); 50 C.F.R. § 26.41.

70. Although Defendants Bernhardt and BLM, in adopting the Program, concluded that Congress "included a Coastal Plain oil and gas program as a refuge purpose on equal footing with the other refuge purposes," ROD at 1, they chose to open Refuge lands to oil and gas leasing activities in ways that give dominant effect to the oil and gas purpose across the Coastal Plain. The Program opens to leasing far more of the

Coastal Plain than Congress required, it maximizes the surface area disturbed by permanent development, it contains no provision limiting the location or extent of destructive activities such as seismic testing and ice road construction, it fails to limit the dispersal of drill pads and pipelines across the landscape, and it foregoes numerous lease and operating restrictions that would protect natural values. The FEIS acknowledges that the Program would interfere with or detract from the fulfillment of the Refuge's conservation-oriented purposes.

71. By adopting the Program, Defendant Bernhardt initiated a new use of the Refuge. Because he failed to make a determination that the Program is compatible with the purposes of the Refuge, Defendant Bernhardt's adoption of the Program violates 16 U.S.C. § 668dd(d)(3)(A)(i). Or, if he made such a determination, it is arbitrary and capricious, violating 5 U.S.C. § 706(2)(A), because the Program materially interferes with and detracts from the fulfillment of all other established purposes of the Refuge.

COUNT III
(Failure to Consider a Reasonable Range of Alternatives, NEPA)

72. Plaintiffs incorporate by reference all preceding paragraphs.

73. NEPA establishes a national policy that federal agencies "use all practicable means and measures . . . to create and maintain conditions in which man and nature can exist in productive harmony," 42 U.S.C. § 4331(a), and makes it their responsibility to "attain the widest range of beneficial uses of the environment without

degradation . . . ." *Id.* § 4331(b)(3). NEPA directs that "to the fullest extent possible" all public laws of the United States "be interpreted and administered in accordance" with these policies. *Id*. § 4332(1).

74. In furtherance of these national policies, NEPA directs that federal agencies—including BLM—study alternatives to their proposed actions. *Id.* §§ 4332(2)(C)(iii) & (E); *see also* 40 C.F.R. § 1502.14. For an environmental impact statement, NEPA requires that an agency "[r]igorously explore and objectively evaluate all reasonable alternatives . . . ." 40 C.F.R. § 1502.14(a). These must, to the fullest extent possible, include "reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment." *Id*. § 1500.2(e).

75. The Refuge was created, and by law must be managed, for several stringent conservation-oriented purposes relating to diversity of fish and wildlife and their habitats, preservation of wilderness qualities, unique recreational values, water quality and quantity, and traditional subsistence practices. These purposes remain in effect and binding, notwithstanding congressional adoption through the Tax Act of an eighth purpose related to oil and gas leasing in the Coastal Plain.

76. Because of the full set of purposes for which the Refuge must be managed, and in light of the requirements of NEPA, it was reasonable to include and study in the

FEIS a Program alternative that, among other things and to the extent permitted by the Tax Act, minimized:

(i) the acreage leased;

(ii) the area where surface disturbance is necessary and allowed;

(iii) the number and dispersion of well pads and miles of pipeline;

(iv) the extent or location of gravel mines, ice roads, desalination plants, and other support facilities;

(v) the seismic surveys permitted;

(vi) the seasons during which surface and aerial activity is allowed in and above calving, denning, and other sensitive wildlife habitat;

(vii) the water withdrawn from Refuge rivers and lakes; and

otherwise included measures to reduce damage to the Refuge's natural values and the human activities that depend upon them, to the extent allowed by the Tax Act.

77. In the FEIS, however, Defendants Bernhardt and BLM did not develop or study any alternative that would fulfill, to the extent consistent with Tax Act obligations, the conservation-oriented purposes for which the Refuge must be managed or minimize adverse effects to the environment.

78. By failing to consider any alternative in the FEIS that would implement the Tax Act in a manner that minimizes the risk of damage to the natural values and related

human activities associated with the Coastal Plain, Defendants Bernhardt and BLM violated NEPA, 42 U.S.C. § 4332.

COUNT IV
(Failure to Discuss Potentially Significant Environmental Impacts from the Program, per NEPA)

79. Plaintiffs incorporate by reference all preceding paragraphs.

80. In an environmental impact statement, federal agencies must discuss the potentially significant "environmental impacts of the alternatives, including the proposed action" and "any adverse environmental effects which cannot be avoided should the proposal be implemented." 40 C.F.R. § 1502.16. This includes discussions of "direct effects and their significance," "indirect effects and their significance," and "cumulative" impacts. 40 C.F.R. §§ 1508.8, 1508.25(a)(2). Indirect effects include effects that "are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable." 40 C.F.R. § 1508.8.

81. Defendants Bernhardt and BLM failed, in the FEIS, to discuss the actual magnitude and nature of potential direct, indirect, and cumulative impacts that the Program may have on the Coastal Plain and elsewhere. Specifically, they did not provide important objective data and other scientific information concerning the Program's potential impacts on—among other resources—permafrost, tundra, overall greenhouse gas emissions and their social costs, air quality, wilderness, and multiple wildlife species. Nor did they provide information about the potential extent of surface development and

associated damage under the Program they adopted in the ROD, damage which Congress and numerous scientific studies identified as particularly severe and significant. They thereby obscured from the public, decisionmakers, and other officials both the potential environmental costs of different development alternatives and the need and opportunity for additional programmatic measures to mitigate those consequences.

82. The failure of Defendants Bernhardt and BLM to discuss potentially significant direct, indirect, and cumulative environmental and economic impacts from the Program renders their FEIS and ROD in violation of NEPA, 42 U.S.C. § 4332.

COUNT V
(Violations of the ESA and APA)

83. Plaintiffs incorporate by reference all preceding paragraphs.

84. Under section 7(a)(2) of the ESA, 16 U.S.C. § 1536(a)(2), any agency authorizing an action that may affect formally listed threatened or endangered species or their designated critical habitat must ensure that the action is not likely to jeopardize the continued existence of the species or adversely modify their critical habitat. To accomplish this, the agency must consult with the Secretary of the Interior and/or Commerce—depending on the species involved—using the best scientific and commercial information available. After consultation and before initiation of the agency action, the Secretary must, pursuant to 16 U.S.C. § 1536(b)(3)(A), issue a biological opinion detailing how the action affects the listed species and critical habitat.

85. When the action being authorized has multiple implementing phases, the consultation must ensure against prohibited impacts from all phases of the entire action. The Secretary's biological opinion must be comprehensive, detailing the effects of all implementing phases. And where the specifics of future phases will be determined later, the Secretary and the agency must still use the best available scientific and commercial information to make impact projections during the initial consultation based on potential locations and levels of implementing activities and potential conflicts with protected species and their critical habitat.

86. The Secretary of the Interior is the relevant Secretary for potential impacts to polar bears, which are listed as threatened under the ESA, and their critical habitat, and conducts consultations and issues biological opinions by and through the Fish and Wildlife Service.

87. For the Program described above, Defendant BLM and Defendant Fish and Wildlife Service engaged in ESA consultation in part because they agreed that the Program is an action that may affect polar bears. Defendant Fish and Wildlife Service that this consultation had to demonstrate that the aggregate effect of activities implementing the Program will not jeopardize the continued existence of polar bears or adversely modify their designated critical habitat.

88. The polar bears of the Southern Beaufort Sea (SBS) population are declining and projected to decline even more in the future. As Defendant Fish and

Wildlife Service acknowledges, these declines are due in part to loss of the bears' preferred sea ice habitat. As the sea ice has decreased, SBS bears have concentrated a disproportionate amount of foraging and maternal denning in the Coastal Plain, a trend that Fish and Wildlife Service scientists predict will continue. The area is thus especially important to the continued survival of this population of bears. Accordingly, 77 percent of the Coastal Plain is designated as critical habitat for polar bears.

89. Fish and Wildlife Service biologists predict that, because of the declining and precarious state of the SBS population of polar bears and mortality due to other causes, loss of even a single SBS bear to human disturbance could have population level effects.

90. Polar bears are particularly vulnerable to seismic exploration when they are denning with cubs. Defendant Fish and Wildlife Service acknowledges that disturbance from such activities conducted pursuant to the Program could lead to den abandonment by maternal polar bears and the death of their cubs.

91. Both Defendant Fish and Wildlife Service and Defendant BLM acknowledge that avoiding such adverse impacts on polar bears and their denning habitat from Program activities would require application of mitigation measures. During their ESA consultation, however, they did not agree on what measures would mitigate seismic impacts to polar bears and their habitat from the Program sufficiently to comply with section 7(a)(2) of the ESA or would be required for Program activities. As a result, they

could not accurately analyze how seismic exploration would likely affect polar bears and their critical habitat, and BLM could not ensure against likely jeopardy to polar bears or adverse modification of their critical habitat.

92. Despite these failures, Defendant Fish and Wildlife Service issued a biological opinion for the Program concluding that it is not likely to jeopardize polar bears or adversely modify their critical habitat. In making that conclusion, Defendant Fish and Wildlife Service expressly relied on a promise of future, site-specific consultations under the ESA and the Marine Mammal Protection Act, rather than on a comprehensive analysis of all phases of the Program based on the best scientific and commercial information available at the time of the initial consultation.

93. Compounding these failures, Defendant Fish and Wildlife Service's biological opinion relied on the 2,000-acre limit on surface development for production and support facilities as an important aspect of the Program that reduces impacts on polar bears and their critical habitat. The ROD, however, articulates an interpretation of that limit that differs from the one the Fish and Wildlife Service assumed and could allow substantially more surface development and adverse effects on polar bears and their critical habitat.

94. Defendants BLM and Fish and Wildlife Service violated 16 U.S.C. § 1536(a)(2) by failing to use the best scientific and commercial information available

when consulting to ensure that the Program is not likely to jeopardize the continued existence of polar bears or adversely modify their critical habitat.

95. Defendant BLM violated 16 U.S.C. § 1536(a)(2) by arbitrarily relying on a legally flawed biological opinion and thereby failing to ensure that the program is not likely to jeopardize the continued existence of polar bears or adversely modify their critical habitat.

96. Defendant Fish and Wildlife Service violated 16 U.S.C. § 1536(b)(3)(A) by failing to provide BLM, after consultation, with a biological opinion that included a comprehensive, predictive analysis detailing how all phases of the entire Program could affect, and potentially conflict with, polar bears and their critical habitat.

97. Defendant Fish and Wildlife Service violated 5 U.S.C. § 706(2)(A) by arbitrarily concluding that the Program is not likely to jeopardize the continued existence of any threatened or endangered species or adversely modify its critical habitat, despite not determining what mitigation would accomplish that.

PRAYER FOR RELIEF

Plaintiffs respectfully request that this Court enter judgment providing the following relief:

A. Declare that Defendants have violated NEPA, the Refuge Act, and the ESA, and further declare that the actions set forth above are arbitrary, capricious, and not in accordance with law and procedure required by law;

B. Set aside the ROD and FEIS for the oil and gas leasing program for the Coastal Plain of the Arctic Refuge and any actions taken by Defendants in reliance on either document as void;

C. Set aside the biological opinion for the oil and gas leasing program for the Coastal Plain of the Arctic Refuge and any actions taken by Defendants in reliance on the biological opinion as void;

D. Enter preliminary and permanent injunctive relief as needed to prevent irreparable harm from implementation of the oil and gas leasing program for the Coastal Plain of the Arctic Refuge, including seismic and other exploratory activities, until Defendants comply with NEPA, the Refuge Act, the APA, and the ESA; and

E. Grant such other relief as the Court considers just and proper, including plaintiffs' costs of this action and such reasonable attorneys' fees as they are entitled to.

Respectfully submitted this 16th day of November, 2020,

s/ Nathaniel SW Lawrence

Nathaniel S.W. Lawrence (Wash. Bar No. 30847) (*pro hac vice*)
Garett R. Rose (D.C. Bar No. 1023909) (*pro hac vice*)
Jared E. Knicley (D.C. Bar No. 1027257) (*pro hac vice*)
NATURAL RESOURCES DEFENSE COUNCIL

s/ Erik Grafe

Erik Grafe (Alaska Bar No. 0804010)
Eric P. Jorgensen (Alaska Bar No. 8904010)
Katharine Glover (Alaska Bar No. 0606033)
EARTHJUSTICE

Attorneys for Plaintiffs National Audubon Society, Natural Resources Defense Council, Center for Biological Diversity, and Friends of the Earth

ROBERT W. FERGUSON
Attorney General of Washington

AURORA JANKE (Wash. Bar No. 45862)*
CINDY CHANG (Wash. Bar No. 51020)*
Assistant Attorneys General
Washington Attorney General's Office
Environmental Protection Division
800 5th Ave Ste. 2000 TB-14
Seattle, Washington 98104-3188
(206) 233-3391
Aurora.Janke@atg.wa.gov
Cindy.Chang@atg.wa.gov

Attorneys for Plaintiff State of Washington

MAURA HEALEY
Attorney General of Massachusetts

MATTHEW IRELAND (Mass. Bar No. 554868)*
Assistant Attorney General
Office of the Attorney General
Environmental Protection Division
One Ashburton Place, 18th Floor
Boston, MA 02108
(617) 727-2200
matthew.ireland@state.ma.us

Attorneys for Plaintiff Commonwealth of Massachusetts

[Additional counsel listed on signature page]

THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF ALASKA

STATE OF WASHINGTON, COMMONWEALTH OF MASSACHUSETTS, STATE OF CALIFORNIA, STATE OF CONNECTICUT, STATE OF DELAWARE, STATE OF ILLINOIS, STATE OF MAINE, STATE OF MARYLAND, THE PEOPLE OF	Case No. 3:20-CV-00224-JMK

THE STATE OF MICHIGAN, STATE OF MINNESOTA, STATE OF NEW JERSEY, STATE OF NEW YORK, STATE OF OREGON, STATE OF RHODE ISLAND, and STATE OF VERMONT,

Plaintiffs,

v.

DAVID BERNHARDT, in his official capacity as Secretary of the Interior, UNITED STATES DEPARTMENT OF THE INTERIOR, and BUREAU OF LAND MANAGEMENT,

Defendants.

COMPLAINT FOR DECLARATORY AND INJUNCTIVE RELIEF

(Administrative Procedure Act, 5 U.S.C. §§ 701–06; Alaska National Interest Lands Conservation Act, Pub. L. No. 96-487 §§ 303(2)(B), 304(a), (b), 94 Stat. 2371, 2390, 2393 (1980); National Environmental Policy Act, 42 U.S.C. §§ 4331, 4332; National Wildlife Refuge System Administration Act, 16 U.S.C. §§ 668dd–668ee; and Tax Cuts and Jobs Act of 2017, Pub. L. No. 115-97 tit. 2, § 20001, 131 Stat. 2054, 2235–37)

I. INTRODUCTION

1. The Secretary of the Interior, the Department of the Interior, and the Bureau of Land Management (BLM) (collectively Defendants) unlawfully authorized the Coastal Plain Oil and Gas Leasing Program (Leasing Program), opening the unspoiled Coastal Plain of the Arctic National Wildlife Refuge (Arctic Refuge) to expansive oil and gas exploration and development based on an inadequate environmental review and an unlawful Record of Decision. Defendants' actions violate the National Environmental Policy Act (NEPA), the National Wildlife Refuge System Administration Act (Refuge

Administration Act), the Alaska National Interest Lands Conservation Act (ANILCA), the Administrative Procedure Act (APA), and the Tax Cuts and Jobs Act of 2017 (Tax Act).

2. Our nation's largest and wildest refuge, the Arctic Refuge is often referred to as "America's Serengeti," and the Coastal Plain serves as the Refuge's center of vital wildlife activity.

3. The Coastal Plain is a 1.56 million-acre national treasure, unparalleled in its biological significance for hundreds of species, including caribou, threatened polar bears, and millions of birds that migrate to and from six continents and through all 50 states.

4. With the Arctic Ocean's Beaufort Sea to the north and the Mollie Beattie Wilderness to the south, the Coastal Plain's fragile ecosystem on the northeastern edge of the Arctic Refuge—an area sacred to the Gwich'in people—is particularly vulnerable to environmental stressors, including climate change, which has caused thinning sea ice and thawing of permafrost in the region.

5. In 1960, the Department of the Interior initially protected 8.9 million acres of the current Arctic Refuge, including the Coastal Plain. Twenty years later, recognizing the area's unrivaled and inestimable conservation value and its importance to all Americans including future generations, Congress passed legislation to solidify and expand those protections by creating the 19-million acre Arctic Refuge and prohibiting oil and gas development and production there.

6. In 2017, however, Congress abruptly ended the nearly 40-year ban on oil and gas development on the Coastal Plain through provisions in the Tax Act that direct the Secretary of the Interior, through BLM, to develop and administer an oil and gas leasing program in the Coastal Plain with specific limitations on the scope of the program. Congress did not otherwise waive or alter the framework of laws protecting the Arctic Refuge or exempt Defendants from conducting a complete, careful, and robust environmental review.

7. Defendants' insufficient environmental review and Record of Decision that opens the entire Coastal Plain to oil and gas leasing and development are unlawful. Defendants' actions severely underestimate the avoidable and irreparable damage to vital habitat and pristine waters, imperil wildlife already struggling to thrive in a rapidly changing ecosystem, and increase greenhouse gas emissions at a time when our nation and the world drastically need to reduce emissions to mitigate the most extreme harms of climate change.

8. Specifically, through the Record of Decision and Final Environmental Impact Statement (FEIS), Defendants: (1) failed to determine that the authorized leasing program is compatible with the purposes of the Arctic Refuge and unlawfully prioritized oil and gas development over the Refuge's conservation purposes, in violation of the Refuge Administration Act, ANILCA, and the APA; (2) failed to consider a reasonable range of program alternatives including an alternative that serves the conservation

purposes of the Arctic Refuge, in violation of NEPA and the APA; (3) failed to take a hard look at impacts on greenhouse gas emissions and climate change, in violation of NEPA and the APA; (4) failed to take a hard look at impacts on migratory birds, in violation of NEPA and the APA; and (5) adopted an unlawful interpretation of the Tax Act contrary to Congress's restrictions on development in the Arctic Refuge, in violation of that Act and the APA.

9. Accordingly, Plaintiffs seek a declaration that the Defendants violated the Refuge Administration Act, ANILCA, the APA, NEPA, and the Tax Act; and request that the Court vacate and set aside the Record of Decision and the FEIS and enjoin any further Leasing Program activities.

II. JURISDICTION AND VENUE

10. This Court has jurisdiction over Plaintiffs' claims pursuant to 28 U.S.C. § 1331 (action arising under the laws of the United States).

11. An actual controversy exists between the parties within the meaning of 28 U.S.C. § 2201(a), and the Court may grant declaratory and injunctive relief, including vacatur of illegal agency actions, under 28 U.S.C. §§ 2201–02 and 5 U.S.C. §§ 705–06.

12. The United States has waived sovereign immunity for claims arising under the APA. 5 U.S.C. § 702.

13. Plaintiffs are each a "person" within the meaning of 5 U.S.C. § 551(2), authorized to bring suit under the APA to challenge unlawful final agency action. 5 U.S.C. § 702.

14. Defendants' FEIS and Record of Decision are final agency actions subject to judicial review.

15. Plaintiffs have exhausted all available administrative remedies.

16. Venue is proper in this Court pursuant to 28 U.S.C. § 1391(e) because the Arctic Refuge is located within this judicial district and a substantial part of the events or omissions giving rise to Plaintiffs' claims occurred within this judicial district.

III. PARTIES

A. Plaintiffs

17. Plaintiffs the State of Washington, by and through Attorney General Robert W. Ferguson; the Commonwealth of Massachusetts, by and through Attorney General Maura Healey; the State of California by and through Attorney General Xavier Becerra; the State of Connecticut by and through Attorney General William Tong; the State of Delaware by and through Attorney General Kathleen Jennings; the State of Illinois by and through Attorney General Kwame Raoul; the State of Maine by and through Attorney General Aaron M. Frey; the State of Maryland by and through Attorney General Brian E. Frosh; the People of the State of Michigan by and through Attorney General Dana Nessel; the State of Minnesota by and through Attorney General Keith Ellison; the

State of New Jersey by and through Attorney General Gurbir Grewal; the State of New York by and through Attorney General Letitia James; the State of Oregon by and through Attorney General Ellen Rosenblum; the State of Rhode Island, by and through Attorney General Peter F. Neronha; and the State of Vermont by and through Attorney General Thomas J. Donovan Jr. (collectively "State Plaintiffs") bring this action to challenge Defendants' Record of Decision published on August 17, 2020, and the associated FEIS published on September 25, 2019.

18. Plaintiff STATE OF WASHINGTON is a sovereign entity and brings this action to protect its sovereign and proprietary rights over its natural resources, including approximately three million acres of trust lands, 2.6 million acres of aquatic lands, and thousands of birds. Washington has proprietary rights for wildlife, fish, shellfish, and tidelands. Wash. Const. art. XVII, § 1; Wash. Rev. Code § 77.04.012. Washington also has statutory responsibility to conserve, enhance, and properly utilize the State's natural resources. Wash. Rev. Code §§ 77.110.030, 90.03.010, 90.58.020; *see also* Wash. Const. art. XVI, § 1. The Attorney General is the chief legal advisor to the State of Washington, and his powers and duties include acting in federal court on matters of public concern. This challenge is brought pursuant to the Attorney General's statutory and common law authority to bring suit and obtain relief on behalf of Washington.

19. Washington is a member of the Pacific Flyway Council, an administrative body consisting of public wildlife agencies that, among other things, sets migratory bird

policy and regulations and contributes to migratory bird research for the major migratory route that extends from Alaska to South America. Snow geese, long-tailed ducks, black brant, red-throated loons, Pacific loons, western sandpipers, and golden plovers migrate along the Pacific Flyway from the Coastal Plain to Washington. Washington has designated long-tailed ducks as a Species of Greatest Conservation Need, given its declining population in the state, and has expended efforts and resources to manage its population. Washington also expends efforts and resources to manage its population of snow geese, which are one of the most abundant species on the Coastal Plain.

20. Washington has a significant economic interest in its wildlife. In 2011, bird and other wildlife watchers expended $3.2 billion in Washington and generated an economic impact of about $5.5 billion, with migratory bird watching being an essential component of that economic impact. Washington grows 45% of the nation's clams, oysters, and mussels. The state's shellfish industry contributed $184 million to Washington's economy in 2010 and employed 2,710 workers.

21. Washington's five oil refineries were designed and constructed to refine Alaskan crude oil, which arrives to the state via vessel. Although production from the Alaska North Slope has decreased over the last decade, it continues to be the largest source of crude oil for Washington refineries. Washington reasonably expects to receive oil extracted from the Arctic Refuge and to bear the impact of the oil transiting via Washington waterways and tidelands, emitting pollutants into Washington air during the

refinery process, being distributed throughout and from the state as fuel, and contributing to the potential worker safety hazards associated with refinery operations.

22. By and through its chief legal officer, Attorney General Maura Healey, Plaintiff COMMONWEALTH OF MASSACHUSETTS brings this action on behalf of itself and its residents to protect the Commonwealth's sovereign and proprietary interest in the conservation and protection of its natural resources and the environment. *See* Mass. Const. amend. art. 97; Mass. Gen. Laws ch. 12, §§ 3 and 11D. Massachusetts has an interest in protecting migratory bird species and other wildlife in the Commonwealth from harm both within and outside of Massachusetts.

23. The Commonwealth has enacted and devotes significant resources to implementing numerous laws concerning the management, conservation, protection, restoration, and enhancement of the Commonwealth's wildlife resources, including migratory birds and other avifauna. *See, e.g.*, Mass. Gen. Laws ch. 131. As early as 1818, the Commonwealth recognized the public health, environmental, and economic benefits that certain migratory birds provided to Massachusetts and its citizens and became one of the first states in the country to protect them while they remained in the Commonwealth's territory. An Act to Prevent the Destruction of Certain Useful Birds at Unseasonable Times of the Year, 1817 Mass. Acts ch. 103.

24. Multiple migratory shorebird species stop to feed or rest in Massachusetts as they migrate to or from breeding grounds in the Coastal Plain, including the American

golden-plover, whimbrel, semipalmated sandpiper, and the blackpoll warbler. Massachusetts has substantial economic interest in the protection of wildlife, including birds that migrate from the Coastal Plain through Massachusetts. The Commonwealth is home to world-class birding destinations, including Cape Cod and the Great Meadows National Wildlife Refuge. In 2011 alone, birdwatchers and other wildlife watchers spent nearly $1.3 billion in Massachusetts, generating approximately $2.3 billion in economic impact.

25. Plaintiff STATE OF CALIFORNIA brings this action by and through Attorney General Xavier Becerra. The Attorney General is the chief law enforcement officer of the state and has the authority to file civil actions in order to protect public rights and interests, including actions to protect the natural resources of the state. Cal. Const. art. V, § 13; Cal. Gov't Code §§ 12600–12. This challenge is brought in part pursuant to the Attorney General's independent authority to represent the people's interests in protecting the environment and natural resources of California from pollution, impairment, or destruction. Cal. Const. art. V, § 13; Cal. Gov't Code §§ 12511, 12600–12; *D'Amico v. Bd. of Med. Exam'rs,* 520 P.2d 10, 14–15 (Cal. Sup. Ct. 1974).

26. The State of California has a sovereign interest in its natural resources and is the sovereign and proprietary owner of all the state's fish and wildlife resources, including migratory birds, which are state property held in trust by the state for the benefit of the people of the state. *People v. Truckee Lumber Co.*, 48 P. 374, 374 (Cal.

Sup. Ct. 1897); *Nat'l Audubon Soc'y v. Superior Ct.*, 658 P.2d 709, 727 (Cal. Sup. Ct. 1983); Cal. Water Code § 102; Cal. Fish & Game Code §§ 711.7(a), 1802. California, like other Pacific coastal states, is a member of the Pacific Flyway Council. Migratory birds in particular support a burgeoning birdwatching and hunting industry, which is important to California's people and economy.

27. California thus has a significant interest in preventing harm to migratory birds, including those that breed on the Coastal Plain and winter in California or pass through the state during migration. These species include snow geese, semipalmated plover, ruddy turnstone, long-billed dowitcher, black-bellied plover, sanderling, and dunlin, among others.

28. California also has a sovereign interest in preventing adverse health and environmental impacts from fossil fuel development. In 2019, California refineries processed more than 73 million barrels of Alaska crude oil, accounting for 11.9% of the refineries' total production. Exposure to pollutants produced by these refineries—which include carbon monoxide, benzene, formaldehyde, and arsenic—can cause cancer, birth defects, and asthma, among other health impacts, especially in environmental justice communities that are disproportionately affected by industrial pollution. Refineries also produce high levels of greenhouse gases, thus further contributing to the climate harms caused by oil and gas extraction.

29. Plaintiff STATE OF CONNECTICUT brings this action by and through Attorney General William Tong. The Attorney General of Connecticut is generally authorized to have supervision over all legal matters in which the State of Connecticut is a party. He is also statutorily authorized to appear for the state "in all suits and other civil proceedings, except upon criminal recognizances and bail bonds, in which the state is a party or is interested . . . in any court or other tribunal, as the duties of his office require; and all such suits shall be conducted by him or under his direction." Conn. Gen. Stat. § 3-125.

30. Pursuant to the Connecticut Endangered Species Act, Conn. Gen. Stat. § 26-303 *et seq.*, it is the position of the Connecticut General Assembly that those species of wildlife and plants that are endangered or threatened are of "ecological, scientific, educational, historical, economic, recreational and aesthetic value to the people of the state, and that the conservation, protection, and enhancement of such species and their habitats are of state-wide concern." Conn. Gen. Stat. § 26-303. As a consequence, "the General Assembly [of Connecticut] declares it is a policy of the state to conserve, protect, restore, and enhance any endangered or threatened species and essential habitat." *Id.* A large number of migratory bird species, including a number that are endangered or threatened, stop or overwinter in Connecticut during migration to and from the Coastal Plain. Whimbrels, horned grebes, American golden-plovers, tundra swans, semipalmated sandpipers, snow geese, and greater scaups are among the species that frequent the

Coastal Plain and have been documented to feed and rest in Connecticut while migrating further south.

31. Plaintiff STATE OF DELAWARE is a sovereign entity and brings this action on its own behalf and on behalf of its citizens and residents to protect its sovereign and proprietary rights. The Attorney General is the chief legal officer for the State of Delaware, whose powers include acting in federal court on matters of public concern. This challenge is brought pursuant to the Attorney General's independent constitutional, statutory, and common law authority to bring suit and obtain relief on behalf of Delaware.

32. Migratory bird species present in the Coastal Plain stop or overwinter in Delaware during migration, including tundra swans, snow geese, peregrine falcons, semipalmated sandpipers, American golden-plovers, and blackpoll warblers. Numerous locations in Delaware are key locations for migratory bird species, including Bombay Hook National Wildlife Refuge, Prime Hook National Wildlife Refuge, and an extensive state park system along Delaware's coastline and in the Delaware Bay and other inland water bodies. Horseshoe crab eggs in the Delaware Bay provide vital nutrition for migratory bird species including the semipalmated sandpiper and red knot.

33. Delaware has substantial economic interest in the protection of wildlife, including birds that migrate from the Coastal Plain. Data from 2011 indicates that at least 200,000 Delawareans identify as wildlife watchers and sought birds as part of their

wildlife viewing opportunities. In 2011, bird and other wildlife watching generated approximately $170 million in revenue in Delaware. The fishing, tourism, and recreation sectors and coast-related activities contribute almost $7 billion in economic production to the state, directly or indirectly support more than 60,000 jobs, and generate more than 10% of the state's total employment, taxes, and production value. Delaware has enacted and devotes significant resources to implementing laws concerning the management, conservation, protection, restoration, and enhancement of the state's protected lands and wildlife, including migratory birds. *See, e.g.*, Del. Code Ann. tit. 7 chs. 1, 2, 6, 7, 13, 45, 47, 66, 66A, 73, 75.

34. Plaintiff STATE OF ILLINOIS brings this action by and through Attorney General Kwame Raoul. The Attorney General is the chief legal officer of the State of Illinois, Ill. Const., art V, § 15, and "has the prerogative of conducting legal affairs for the State," *Envt'l Prot. Agency v. Pollution Control Bd.*, 372 N.E.2d 50, 51 (Ill. Sup. Ct. 1977). He has common law authority to represent the People of the State of Illinois and "an obligation to represent the interests of the People so as to ensure a healthful environment for all the citizens of the State." *People v. NL Indus.*, 103 604 N.E.2d 349, 358 (Ill. Sup. Ct. 1992).

35. Illinois has an interest in protecting migratory birds and other wildlife from harm. The state lies on the Mississippi Flyway, where millions of birds migrate every year. Under the Illinois Wildlife Code, Illinois has "ownership of and title to all wild

birds . . . within the jurisdiction of the State." 520 Ill. Comp. Stat. 5/2.1. Illinois protects numerous migratory bird species that nest in or migrate through the state. *Id.* at 5/2.2; *see also United Taxidermists Ass'n v. Ill. Dept. of Nat. Res.*, 436 Fed. Appx. 692, 695 (7th Cir. 2011). Furthermore, Illinois' laws protect endangered species and their habitat. *E.g.*, 520 Ill. Comp. Stat. 10, 20.

36. Plaintiff STATE OF MAINE, a sovereign state, brings this action by and through Attorney General Aaron M. Frey. The Attorney General of Maine is a constitutional officer with the authority to represent the State of Maine in all matters and serves as its chief legal officer with general charge, supervision, and direction of the state's legal business. Me. Const. art. IX, § 11; 5 M.R.S.A. §§ 191–205. The Attorney General's powers and duties include acting on behalf of the state and the people of Maine in the federal courts on matters of public interest. The Attorney General has the authority to file suit to challenge action by the federal government that threatens the public interest and welfare of Maine residents as a matter of constitutional, statutory, and common law authority.

37. Maine has an interest in protecting its natural resources, its wildlife, and its economy from the direct and indirect impacts of the Leasing Program. There is a direct connection between Maine wildlife and the Arctic Refuge, as certain species of birds use both Maine and the Coastal Plain of the Arctic Refuge as habitat. Migratory bird species rest and feed in Maine during their migration to and from the Coastal Plain and some

species spend the winter in Maine. Radio telemetry has confirmed individual whimbrels, least terns, and semi-palmated sandpipers traveling between the Coastal Plain of the Arctic Refuge and Maine in their annual migration. These migratory birds feed in Maine's blueberry barrens and use Maine's tidal flats for feeding, resting, and nesting. Maine's coastline contains over 22,000 acres of tidal marshes, providing rich feeding grounds for migratory and over-wintering birds from the Coastal Plain of the Arctic Refuge. There are between 3,000 and 4,000 islands and ledges off the coast of Maine that also host nesting and feeding migrating birds.

38. Maine has a substantial economic interest in protecting these species, as Maine is a renowned birding destination. Birding by residents and tourists, especially along the scenic coast and on coastal islands, infuses a significant amount of money into Maine's economy. The opportunity to view species that spend a portion of their lives on the Coastal Plain of the Arctic Refuge draws birders to the Maine Coast.

39. Plaintiff STATE OF MARYLAND brings this action by and through its Attorney General, Brian E. Frosh. The Attorney General of Maryland is the state's chief legal officer with general charge, supervision, and direction of the state's legal business. Under the Constitution of Maryland, and as directed by the Maryland General Assembly, the Attorney General has the authority to file suit to challenge action by the federal government that threatens the public interest and welfare of Maryland residents. Md. Const. art. V, § 3(a)(2); Md. Code Ann., State Gov't § 6-106.1.

40. Maryland's Chesapeake Bay provides important wintering habitat for species like tundra swans, semipalmated sandpipers, black-bellied and American golden-plovers, long-tailed ducks, and snow geese that breed along the Coastal Plain. The arrival of these long-distance migrants each winter draws visitors to places like Sandy Point State Park, Deal Island Wildlife Management Area, Jug Bay Wetlands Sanctuary, and Blackwater National Wildlife Refuge. Maryland's portion of the Chesapeake Bay is particularly important to tundra swans as roughly 30% of the entire eastern population winters within the state.

41. By and through Michigan State Attorney General Dana Nessel, Plaintiff PEOPLE OF THE STATE OF MICHIGAN bring this action to defend their sovereign and proprietary interests. Mich. Comp. Laws § 14.28. Conserving Michigan's natural resources is of "paramount public concern." Mich. Const. art. IV, § 52. The People of the State of Michigan seek to defend their interest in migratory birds that spend time in the Coastal Plain and Michigan. The people of the State of Michigan also seek to protect their interest against harm caused by climate change.

42. Michigan is located largely within the Mississippi Flyway and is also on the western edge of the Atlantic Flyway and the eastern edge of the Central Flyway. Because of this, and combined with Michigan's substantial bird habitat along the Great Lakes, inland lakes, and wetlands, many migrating birds stopover in Michigan during different times of the year, including eastern tundra swans and four species of ducks that nest in

the Coastal Plain and make long-distance migrations that include stopovers in Michigan. Tundra swans are of particular interest to recreational birdwatchers in the state, and Michigan regulates hunting for all four duck species.

43. Additional shorebirds that breed in the Coastal Plain and migrate through Michigan include American golden-plover, semipalmated sandpiper, black-bellied plover, pectoral sandpiper, Stilt sandpiper, Baird's sandpiper, long-billed dowitcher, semipalmated plover, dunlin, and red-necked phalarope.

44. Michigan receives significant income from waterfowl hunters and recreational birdwatchers. In 2012, waterfowl hunters spent $22.7 million on hunting trips in Michigan. In 2011, two million people observed birds in Michigan and 41% of those people took birdwatching trips. Wildlife watchers, approximately half a million of which specifically observe waterfowl, spent $1.2 billion on wildlife watching in Michigan in 2011.

45. By and through its chief legal officer, Attorney General Keith Ellison, Plaintiff MINNESOTA brings this action on behalf of itself and its residents to protect Minnesota's interest in its natural resources and the environment. The Minnesota Legislature, "recognizing the profound impact of human activity on the interrelations of all components of the natural environment, . . . [has] declare[d] that it is the continuing policy of the state government . . . to use all practicable means and measures . . . to create and maintain conditions under which human beings and nature can exist in productive

harmony, and fulfill the social, economic, and other requirements of present and future generations of the state's people." Minn. Stat. § 116D.02. Minnesota has enacted and devotes significant resources to implementing numerous laws concerning the management, conservation, protection, restoration, and enhancement of its wildlife resources, including migratory birds and other avifauna. *See, e.g.*, Minn. Stat. ch. 97A.

46. Dozens of migratory bird species fly over Minnesota during migration to and from the Coastal Plain. Greater white-fronted geese, snow geese, tundra swans, American wigeons, northern pintails, and red-breasted mergansers are among the species that use the Coastal Plain as a critical breeding ground and are also found in Minnesota. Plaintiff Minnesota has substantial economic interest in the protection of wildlife, including birds that migrate from the Coastal Plain through Minnesota. In 2006, approximately 52,000 waterfowl hunters spent more than $28 million on trip and equipment expenditures. The industry created 653 jobs and had a total economic impact of $43 million. Healthy waterfowl-breeding grounds, including those in the Coastal Plain area, are critical to support this industry.

47. Plaintiff STATE OF NEW JERSEY is a sovereign state of the United States of America and brings this action on behalf of itself and as a trustee, guardian, and representative of the residents and citizens of New Jersey. The New Jersey Legislature has declared that New Jersey's lands and waters constitute a unique and delicately balanced resource and that these resources should be protected and preserved to promote

the health, safety and welfare of the people of the state. N.J. Stat. Ann. § 58:10-23.11a. New Jersey holds wildlife in trust for the benefit of its people. It is the policy of the state to manage all forms of wildlife to insure continued participation in the ecosystem. N.J. Stat. Ann. § 23:2A-2.

48. New Jersey beaches and wetlands provide vital resting grounds for shorebirds migrating to their summer breeding grounds in the Arctic. The Delaware Bay is a critical stop for at least six arctic-nesting shorebirds. The Nature Conservancy's South Cape May Meadows, Gandy's Beach Preserve, and Sunray Beach Preserve are examples of important habitats in the Delaware Bay ecosystem upon which migratory shorebirds depend to refuel and rest. Migratory shorebirds are an integral part of the state's ecosystem and are a world-renowned bird-watching phenomenon.

49. Plaintiff STATE OF NEW YORK is a sovereign state of the United States of America and brings this action on behalf of itself and as trustee, guardian, and representative of all residents and citizens of New York to protect their interests, and in furtherance of the state's sovereign and proprietary interests in the conservation and protection of the state's natural resources and the environment, and particular, in the protection of migratory bird species and other wildlife in the state from harm both within and outside of its borders.

50. New York owns all wildlife in the state. N.Y. Envtl. Conserv. Law § 11-0105. This wildlife includes multiple bird species associated with the Coastal Plain,

which stop in New York on their migration routes. These include, among others, the semipalmated sandpiper, American golden-plover, whimbrel, and tundra swan. The semipalmated sandpiper, listed as a "Near Threatened Species" by the International Union for Conservation and Nature, has been observed at marshes and coastal areas of Long Island, while tundra swan populations have been observed in central and western parts of New York. From bird banding data, additional bird species such as the canvasback, greater scaup, and lesser scaup have been demonstrated to migrate from Alaska to New York.

51. The birdwatching industry is an important recreational activity and contributor to economic activity in New York, with many residents and visitors interested in catching glimpses of rare birds during their migration. According to the U.S. Fish and Wildlife Service, four million bird and wildlife watchers spent more than $4 billion in New York, ranking New York first among all states for these types of expenditures. Over one million people took trips away from home to view wild birds in New York.

52. Plaintiff STATE OF OREGON brings this suit by and through Attorney General Ellen Rosenblum. The Oregon Attorney General is the chief legal officer of the State of Oregon. The Attorney General's duties include acting in federal court on matters of public concern and upon request by any state officer when, in the discretion of the Attorney General, the action may be necessary or advisable to protect the interests of the state. Ore. Rev. Stat. § 180.060(1). The Oregon Department of Fish and Wildlife,

established as a state agency by the Oregon Legislature pursuant to Oregon Revised Statute section 496.080, has requested that the Attorney General bring this suit to protect Oregon's sovereign interest in preserving wildlife.

53. Plaintiff Oregon's interest in the Leasing Program's environmental impacts emanates in part from its sovereign and proprietary rights over its natural resources. Oregon owns over two million acres of land. In addition, under Oregon law, "Wildlife is the property of the state." Or. Rev. Stat. § 498.002. The Oregon Department of Fish and Wildlife manages wildlife to prevent serious depletion of any indigenous species and to provide recreational and aesthetic benefits for present and future generations of Oregonians. Or. Rev. Stat. § 496.012.

54. As Oregon is a Pacific coast state and part of the Pacific Flyway, migratory birds, many of which migrate between the Coastal Plain and Oregon, are a vital part of Oregon's landscape, history, and economy. For example, the Coastal Plain is one of the most important areas for black brant that winter in the Pacific Flyway. Marking of black brant has demonstrated that individual birds breeding in the Coastal Plain currently winter in Oregon's bays. Any land management which negatively impacts black brant on the Coast Plain is likely to have a negative impact to the overall population and to Oregon's wintering flock.

55. Plaintiff STATE OF RHODE ISLAND is a sovereign entity and brings this action to protect its sovereign and proprietary rights. The Attorney General is the chief

legal advisor to the State of Rhode Island, and his powers and duties include acting in federal court on matters of public concern. This challenge is brought pursuant to the Attorney General's statutory and common law authority to bring suit and obtain relief on behalf of the State of Rhode Island.

56. Rhode Island has sovereign and propriety interests in protecting its state resources through careful environmental review at both the state and federal levels. Rhode Island has a statutory responsibility to conserve, enhance, and properly utilize the State's natural resources. R.I. Gen. Laws § 10-20-1; *see also* R.I. Const. art. I, § 17.

57. Due to its coastal wetlands and woodlands, a high density of migratory bird species stop or overwinter in Rhode Island during migration to and from the Coastal Plain. Whimbrels, horned grebes, American golden-plovers, semipalmated sandpipers, and greater scaups are among the species that frequent the Coastal Plain and have been documented to feed and rest in Rhode Island while migrating further south. With 384 miles of shoreline and five national wildlife refuges in the state, Rhode Island is a popular birding destination. In 2011, 308,000 bird and wildlife watchers spent $200 million in Rhode Island undertaking this activity.

58. Plaintiff STATE OF VERMONT is a sovereign state in the United States of America. The State of Vermont brings this action through Attorney General Thomas J. Donovan, Jr. The Attorney General is authorized to represent the state in civil suits

involving the state's interests, when, in his judgment, the interests of the state so require. Vt. Stat. Ann. tit. 3 ch. 7.

59. Vermont has ownership, jurisdiction and control of all wildlife of the state as trustee for the state's citizens. Vt. Stat. Ann. tit. 10 § 4081(a)(1). Vermont has an interest in protecting wildlife, including birds that migrate through Vermont on their way to or from breeding grounds on the Coastal Plain, from harm both within and outside the state. Such migratory birds include the American golden-plover, snow bunting, and whimbrel. According to data for 2011, Vermont led the nation in the percentage of residents participating in bird watching (39%), and residents and visitors spent $289 million on birdwatching and other wildlife viewing in the state.

B. Defendants

60. Defendant David Bernhardt is Secretary of the Interior (Interior) and is sued in his official capacity. Secretary Bernhardt is responsible for implementing and fulfilling the duties of Interior, including managing all aspects of the Leasing Program; managing implementation of the Refuge Administration Act, relevant portions of ANILCA, and Section 20001 of the Tax Act; and bears responsibility, in whole or in part, for the acts complained of in this Complaint. Secretary Bernhardt signed the challenged Record of Decision.

61. Defendant Interior is a federal agency and oversees BLM and bears responsibility, in whole or in part, for the acts complained of in this Complaint.

62. Defendant BLM is a federal agency within Interior that bears responsibility, in whole or in part, for the acts complained of in this Complaint. Defendant BLM issued the challenged Record of Decision and FEIS.

IV. BACKGROUND

A. Protection of the Arctic National Wildlife Refuge

63. The federal government first protected the area now known as the Arctic National Wildlife Refuge in 1960 when the Secretary of the Interior established the Arctic National Wildlife Range. Public Land Order 2214, at 1 (Dec. 6, 1960) (PLO 2214).

64. Congress solidified and expanded these protections by passing ANILCA in 1980, which created the Arctic Refuge by adding 9.16 million acres of land to the existing 8.9 million-acre Arctic National Wildlife Range. ANILCA § 303(2)(A).

65. The Coastal Plain, which was a part of the original Range, is the most biologically productive part of the Arctic Refuge. The unique terrain of the Coastal Plain is comprised of mostly water or wetland and, due to the area's undisturbed nature, its wetland function and structure remain intact.

66. Along with caribou, polar bears, and other wildlife, more than 156 migratory bird species depend on the Coastal Plain's unique ecosystem. Birds migrate from the Arctic Refuge, particularly from the Coastal Plain, to six continents and through all 50 states.

67. Because of its undisturbed and unique ecosystem, the Arctic Refuge and its Coastal Plain have long-served as an important resource for scientific research, such as the study of migratory birds, within the National Wildlife Refuge System (Refuge System).

68. The Arctic Refuge also plays an important role in the United States' satisfaction of its international treaty obligations, including treaty obligations related to the protection of migratory birds.

69. Management of the Arctic Refuge is governed by ANILCA and the Refuge Administration Act.

70. The Refuge Administration Act applies to all national wildlife refuges and directs the Secretary of the Interior "to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans." 16 U.S.C. § 668dd(a)(2).

71. The Refuge Administration Act directs the Secretary to, among other things:

> (A) provide for the conservation of fish, wildlife, and plants and their habitats within the [Refuge] System;
>
> (B) ensure that the biological integrity, diversity, and environmental health of the [Refuge] System are maintained for the benefit of present and future generations of Americans;
>
> (C) plan and direct the continued growth of the [Refuge] System in a manner that is best designed to accomplish the mission of the [Refuge] System, to contribute to the conservation of the ecosystems of the United States, [and] to complement efforts of States and other Federal agencies to conserve fish and wildlife and their habitats, . . .; [and]
>
> (D) ensure that the mission of the [Refuge] System . . . and the purposes of each refuge are carried out . . . .

16 U.S.C. § 668dd(a)(4); *see also* 50 C.F.R. § 25.11(b).

72. Under the Refuge Administration Act, "each refuge shall be managed to fulfill the mission of the System as well as the specific purpose for which that refuge was established." 16 U.S.C. § 668dd(a)(3)(A).

73. The "purposes of the refuge" include purposes "specified in or derived from" laws or public land orders that established, authorized, or expanded the refuge. 16 U.S.C. § 668ee(10).

74. ANILCA identifies four purposes for establishing the Arctic Refuge and guiding its management:

(i) "to conserve fish and wildlife populations and habitats in their natural diversity," including "snow geese, peregrine falcons, and other migratory birds";

(ii) "to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats";

(iii) to provide opportunities for continued subsistence use by local residents; and

(iv) to ensure water quality and necessary water quantity within the refuge.

ANILCA § 303(2)(B).

75. These four ANILCA purposes add to the three original management purposes of the Arctic National Wildlife Range: to preserve "unique wildlife, wilderness, and recreational values." PLO 2214. These three Range purposes "remain in force and effect" for the Coastal Plain. ANILCA § 305.

76. ANILCA contains special provisions concerning the Coastal Plain. ANILCA § 1002 (codified at 16 U.S.C. § 3142). Recognizing the potential interest in oil and gas exploration and development on the Coastal Plain, Section 1002 requires "a comprehensive and continuing inventory and assessment of the fish and wildlife

resources of the coastal plain," including migratory birds, and directs Interior to study the potential impacts of oil and gas development on wildlife and habitats. ANILCA § 1002(a), (c).

77. By requiring such information, Congress sought to ensure that any oil and gas activity authorized within the Coastal Plain "avoid[] significant adverse effects on the fish and wildlife and other resources" of the region. *Id.* at § 1002(a).

78. Notwithstanding Section 1002, Section 1003 of ANILCA prohibited production of oil and gas from the Arctic Refuge and provided that "no leasing or other development leading to production of oil and gas from the range shall be undertaken until authorized by an Act of Congress." *Id.* at § 1003 (codified at 16 U.S.C. § 3143).

B. Congressional Directive to Develop a Limited Oil and Gas Program on the Coastal Plain

79. In December 2017, President Trump signed into law the Tax Act. A rider to the Tax Act includes several provisions about the management of the Coastal Plain. First, the Tax Act amends ANILCA to include providing for a limited oil and gas program on the Coastal Plain. Tax Act § 20001. Second, the Tax Act excludes the Coastal Plain from ANILCA's prohibition on oil and gas production. *Id*. § 20001(b)(1). Third, the Tax Act directs the Secretary of the Interior, through BLM, to "establish and administer a competitive program for the leasing, development, production, and transportation of oil and gas in and from the Coastal Plain." *Id*. § 20001(b)(2).

80. The Tax Act places parameters on the leasing program, directing BLM to hold two lease sales offering 400,000 acres in each lease sale within four and seven years of the date of enactment and to limit surface development to 2,000 surface acres of federal land on the Coastal Plain. *Id*. § 20001(c).

81. The Tax Act does not otherwise alter the framework of protections for the Arctic Refuge. Rather, the legislative history accompanying the Tax Act demonstrates that Congress intended environmental protection to remain a priority of Coastal Plain management.

C. Fossil Fuels and Climate Change Impacts

82. Oil and gas production from the Coastal Plain, as contemplated by the Leasing Program, will contribute to greenhouse gas emissions that cause climate change.

83. In a 2018 report, the Intergovernmental Panel on Climate Change (IPCC), an international scientific body of the United Nations, emphasized that climate change already is causing devastating impacts, including more frequent and extreme severe weather events, rising sea levels, and diminishing Arctic sea ice. Fossil fuel combustion, including oil and gas emissions, is a key driver of climate change.

84. The 2018 IPCC Report determined with a high degree of scientific confidence that if the current pace of greenhouse gas emissions continues, warming will reach 1.5 degrees Celsius above pre-industrial levels between 2030 and 2052.

85. Defendant Interior and the dozen other federal agencies that comprise the U.S. Global Change Research Program warned in the November 2018, Fourth National Climate Assessment that without substantial and sustained efforts to reduce greenhouse gas emissions, climate change will increasingly disrupt ecosystems; threaten human health, safety, and quality of life; damage infrastructure; and hinder economic growth throughout the United States, including in Plaintiffs' states.

86. Multiple studies repeatedly have demonstrated that a substantial portion of the world's recoverable fossil fuel reserves, such as those located in the Coastal Plain, must remain unburned in order to avert the most catastrophic impacts of climate change.

87. Over the past ten years, these unburnable reserve estimates have steadily increased. The 2018 IPCC report warned that to have only a 50% chance of avoiding the most devastating consequences of climate change resulting from global warming above the 1.5-degree Celsius level, about 80% of recoverable fossil fuel reserves must remain unburned.

88. Heeding these warnings, State Plaintiffs, businesses, and individuals are working to decrease reliance on fossil fuels and transition to cleaner technology. These efforts notwithstanding, State Plaintiffs already are experiencing devastating and increasingly severe climate impacts.

89. Along the coasts of Plaintiffs Washington, Massachusetts, California, Connecticut, Delaware, Maine, Maryland, New York, New Jersey, Oregon, and Rhode

Island, ocean acidification through the ocean's absorption of excess carbon dioxide in the atmosphere and warming water temperatures threaten natural resources and vital fisheries, including oysters, cod, lobster, and other marine life that play vital roles in the states' economy and culture. For example, without greenhouse gas mitigation, ocean acidification along Washington's coast is expected to cause a 34% decline in shellfish survival by 2100.

90. The rise of sea levels from melting ice sheets and glaciers and thermal expansion has impacted coastal and marine waters along over 18,000 shoreline miles of Plaintiffs Washington, Massachusetts, California, Connecticut, Delaware, Maine, Maryland, New Jersey, New York, Oregon, and Rhode Island. Sea level rise has led to more frequent tidal inundation, and when combined with more intense coastal storms, storm surges and severe flooding that cause significant damage to state properties, tourism, public infrastructure, private homes, businesses, and wildlife habitat, and increasing demands for emergency services. Impacted areas include a diverse array of coastal ecosystems (*e.g.*, sandy beaches, islands, estuaries, and salt marshes) that offer immense recreational, cultural, and aesthetic value to the residents of and visitors to coastal State Plaintiffs, while also serving important ecological functions.

91. Rising sea levels, coupled with intensifying weather events, also threaten State Plaintiffs' migratory birds and their habitat. Coastal wetlands provide an important stopover for millions of migratory birds. With intensifying storms and rising sea levels,

tidal flats and marshes could become open water, jeopardizing the survival of the migratory birds that depend on the tidal flats and marshes to feed and nest.

92. Specific impacts from sea level rise to State Plaintiffs' resources include:

92.1 Boston, the largest city in Massachusetts, could experience cumulative damage to buildings, building contents, and associated emergency costs as high as $94 billion between 2000 and 2100, depending on the sea level rise scenario and the extent of adaptive and preventative actions in place.

92.2 Sea level rise in Delaware threatens property assessed at approximately $1.5 billion and will harm coastal ecosystems that offer recreational, cultural, ecological, and aesthetic value to the residents of and visitors to the state. Delaware's 2012 Sea Level Rise Vulnerability Assessment determined that 8 to 11% of the state's land area could be inundated by sea level rise of 0.5 to 1.5 meters.

92.3 Maryland is projected to experience between 2.1 and 5.7 feet of sea level rise over the next century, leading to shoreline erosion, coastal flooding, storm surges, inundation, and saltwater intrusion into groundwater supplies and adversely impacting tourism and the Port of Baltimore.

92.4 Sea level rise in New York will not only directly increase the risks to lives and property in the state from future storms, but also threaten coastal wetlands, which provide important species habitat and protect adjacent communities. Swiss Re, a reinsurance and insurance company, has estimated that expected annual economic losses

in New York City alone from rising sea levels and more intense storms may increase to $4.4 billion by the 2050s.

92.5 Rhode Island has experienced over ten inches of sea level rise since 1930, averaging over an inch per decade. The mean annual rate of sea level rise has increased in recent decades and will continue to rise significantly. According to the National Oceanic and Atmospheric Administration, Rhode Island could experience nine feet of seal level rise by 2100, along with substantial increase in the frequency of tidal flooding. Further, Rhode Island's topography, geography, and land use patterns make it particularly susceptible to injuries from seal level rise. Particularly, Rhode Island has substantial public assets in 21 coastal municipalities along its nearly 400 miles of coastline and 20 Rhode Island municipalities have acreage lying below the floodplain.

93. The rise in extreme weather events have caused drought, flooding, wildfires, and other catastrophic natural disasters leading to significant losses for State Plaintiffs, including:

93.1 Extreme weather on the East Coast includes hurricanes, coastal storms, heavy downpours, and extreme heat that are increasing in frequency and intensity. In Connecticut, where the annual mean temperature rose by approximately three degrees Fahrenheit since 1895, warmer weather is contributing to a rise in average annual precipitation that will increase the frequency of heavy downpours. In New York, Hurricane Sandy caused an estimated $32 billion in losses and over 50 deaths in the state.

Lake Ontario reached record high-water levels in 2017 and 2019 causing significant damage to properties in New York's lakefront communities. In New Jersey, Sandy's severe winds and coastal flooding cost the state an estimated $11.7 billion in lost domestic product, including $950 million in tourism losses. Hurricane Irene caused estimated damages of up to $1 billion in New York and then dumped approximately 11 inches of rain on Vermont, temporarily or permanently displacing more than 1,400 households and causing $733 million in damage, including damage to more than 500 miles of state highway and 480 bridges. Since 1960, average annual precipitation in Vermont has increased by 5.9 inches and increasingly frequent heavy rainstorms threaten to flood communities in Vermont's many narrow river valleys. Over the past 80 years, Rhode Island has experienced a doubling of the frequency of flooding, an increase in the magnitude of flood events and has had more extreme precipitation events between 2005 and 2014 than any prior decade in the state's history. In just Providence, Rhode Island, average annual precipitation has increased by 0.4 inches per decade since 1895 and intense rainfall events have increased 71% between 1958 and 2000.

93.2 Extreme weather in the Midwest includes flooding, drought, and whipsawing water levels on the Great Lakes. In 2011, 15 inches of rain fell in northwestern Illinois over just 12 hours, killing one person and damaging infrastructure. In spring 2019, flooding in Illinois delayed crop planting, causing the U.S. Department of Agriculture to declare an agricultural disaster in every county in Illinois. Predictions

indicate that warmer weather and altered rain patterns will reduce crop yield by 15% within two decades and up to 73% by the end of the century, making farming particularly vulnerable to extreme precipitation caused by climate change. Since 2004, Minnesota has experienced three 1,000-year floods and an increase in intense weather events including hailstorms, tornadoes and droughts. In 2007, several Minnesota counties received drought designation, while others experienced flood disasters—an occurrence that repeated itself in 2012 when 11 counties declared flood emergencies while 55 received drought designations. In 2019, Lake Michigan broke its 33-year-old high-water record; in 2013, it reached an all-time low. Rapidly swinging water levels harm commercial shipping, recreational boaters, and beach-goers—low water forces freighters to forgo cargo and high water erodes beaches.

93.3 In the West, extreme weather in Plaintiffs' states threaten to devastate wildlife populations and agricultural industries. For example, rising stream temperatures and lower summer stream flows from reduced snow pack continue to reduce the quality and quantity of salmon habitat in western states, particularly California, Oregon, and Washington. In 2015, Oregon experienced the warmest year since recordkeeping began in 1895. The heat resulted in record low snowpack across the state, a two-third reduction of normal irrigation water for farmers in eastern Oregon's Treasure Valley, and the loss of more than half of spring spawning salmon in the Columbia River.

94. Warmer temperatures also contribute to increased risks of disease and health impacts. Changes in vegetation and the rise in deer populations have contributed to an increased risk of West Nile Virus in Connecticut and the spread and prevalence of Lyme disease in Massachusetts, Connecticut, Minnesota, Rhode Island, and Vermont. Heat-related deaths in New York City have been projected to increase if actions are not taken to reduce greenhouse gas emissions and lessen temperature increases. In Michigan, heat-related illnesses, waterborne diseases, and vector-borne diseases are on the rise. In California, increased hospitalizations for multiple diseases, including cardiovascular disease, ischemic stroke, pneumonia, and heat stroke, are associated with increases in same-day temperature. California bears a substantial portion of the costs of these medical conditions as a result of its financial responsibility for Medi-Cal and Medicare payments. Increased forest fire activity in western states like California, Oregon, and Washington, leads to an increase in unhealthy air days, impacting public health.

95. Like State Plaintiffs, the Arctic ecosystem, including the Coastal Plain, is rapidly changing due to climate change. Accelerated melting of multiyear sea ice, increased boreal wildfires, reduction of terrestrial snow cover, and permafrost degradation are stark examples of the rapid Arctic-wide response to global warming.

96. Annual average near-surface air temperatures across Alaska and the Arctic have increased over the last 50 years at a rate more than twice as fast as the global

average temperature. Increased temperatures on Alaska's North Slope contribute to thawing permafrost that releases carbon dioxide and methane that amplifies warming.

97. Yet, despite the overwhelming and increasingly harmful impacts of climate change in the United States and around the world, Defendants asserted in the FEIS that "[T]here is not a climate crisis." FEIS S-686.

98. The 2018 IPCC Report gravely warns that an increase in global temperatures of 1.5 degrees Celsius above preindustrial levels will significantly increase risks for human health, food security, biodiversity, national security, and global economies. Yet, the Defendants summarily dismissed this conclusion as "rel[ying] on global climate models that have grossly overestimated the amount of warming (based on actual observations) from a given amount of GHG emissions . . . ." FEIS S-569.

99. Defendants further trivialized the importance of reducing U.S. emissions, stating, "Restricting GHG emissions, especially in just the [United States], which now represents a small and shrinking portion of global emissions, would not have a measurable effect on climate change globally or regionally in Alaska." FEIS S-581.

100. In fact, the United States remains the second-largest contributor of carbon emissions in the world. Recent reports affirm that immediate and substantial global greenhouse gas emission reductions are essential to limiting the most harmful impacts of climate change in the United States and across the globe.

D. The Leasing Program FEIS and Record of Decision

1. NEPA's Requirements

101. Before authorizing the Leasing Program, Defendants must comply with NEPA's environmental review requirements.

102. NEPA declares a national policy to "use all practicable means and measures" to "create and maintain conditions in which man and nature can exist in productive harmony." 42 U.S.C. § 4331(a).

103. The objectives of NEPA are realized through a set of "action-forcing" procedures that require that agencies take a "'hard look' at environmental consequences." *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989).

104. A federal agency must ensure that its impacts analysis "inform[s] the public that it has indeed considered environmental concerns in its decisionmaking process." *Pit River Tribe v. U.S. Forest Serv.*, 469 F.3d 768, 781 (9th Cir. 2006) (quoting *Earth Island Inst. v. U.S. Forest Serv.,* 442 F.3d 1147, 1153–54 (9th Cir. 2006)).

105. The Council on Environmental Quality (CEQ) promulgated rules implementing NEPA, which apply to all federal agencies. 40 C.F.R. pt. 1500.[1] Interior also promulgated rules governing its NEPA implementation. 43 C.F.R. pt. 46.

[1] CEQ recently issued new regulations implementing NEPA that take effect September 14, 2020. Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act, 85 Fed. Reg. 43,304 (July 16, 2020) (to be codified at 40 C.F.R. pt. 1500). CEQ's prior regulations, promulgated in 1978 with minor amendments in 1986 and 2005, govern Defendants' Record of Decision and FEIS. All regulatory references in this complaint are to the 1978 regulations, as amended.

106. NEPA requires federal agencies to prepare an environmental impact statement (EIS) for all "major federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332.

107. "Major federal actions" include "new and continuing activities" with "effects that may be major and which are potentially subject to Federal control and responsibility." 40 C.F.R. § 1508.18.

108. An EIS must "provide full and fair discussion of significant environmental impacts and shall inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment." *Id.* § 1502.1.

109. An EIS must discuss, among other things: the environmental impact of the proposed federal action, any adverse and unavoidable environmental effects, alternatives to the proposed action, and any irreversible and irretrievable commitments of resources involved in the proposed action. 42 U.S.C. § 4332.

110. An EIS's analysis of reasonable alternatives "is the heart of the environmental impact statement." 40 C.F.R. § 1502.14.

111. Agencies must rigorously explore and objectively evaluate all reasonable alternatives, including the alternative of taking no action, and must discuss the reasons for eliminating any alternatives rejected from detailed study. *Id*.

112. An EIS must state how alternatives considered will achieve the requirements of NEPA and "other environmental laws and policies." *Id*. § 1502.2.

113. NEPA's regulations require agencies to analyze both the direct impacts that an action will have on the environment, as well as the action's "reasonably foreseeable" indirect and cumulative impacts. *Id.* § 1508.8.

114. Direct impacts are caused by the action and occur at the same time and place as the action. *Id*. § 1508.8(a).

115. Indirect impacts are "caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable." *Id*. § 1508.8(b).

116. Cumulative impacts are those impacts that result "from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions." *Id*. § 1508.7.

117. A legally adequate impact analysis requires the establishment of accurate baseline conditions to determine the effect the action will have on the environment. *Half Moon Bay Fisherman's Mktg. Ass'n v. Carlucci*, 857 F.2d 505, 510 (9th Cir. 1988).

118. If information that is essential for making a reasoned choice among alternatives is not available, an agency must obtain that information unless the costs of doing so would be exorbitant. 40 C.F.R. § 1502.22(a).

119. Agencies also have an obligation to consider in the EIS mitigation measures to avoid, minimize, rectify, reduce, eliminate, or compensate for environmental harms of agency action. *Id*. §§ 1502.16(h), 1508.20.

2. Defendants' FEIS and Record of Decision

120. On December 28, 2018, Defendants published a Notice of Availability of the Draft Environmental Impact Statement (DEIS). Interior, BLM, Notice of Availability of the Draft Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program and Announcement of Public Subsistence-Related Hearings, 83 Fed. Reg. 67,337 (Dec. 28, 2018).

121. Nearly all State Plaintiffs submitted detailed comments on the DEIS, highlighting numerous inadequacies in Defendants' environmental review, including a deficient range of alternatives, a deficient analysis of greenhouse gas emissions and associated climate change impacts, and a deficient analysis of migratory bird impacts.

122. The vast majority of the more than one million public comments on the DEIS, including comments submitted by nearly all State Plaintiffs, opposed expansive leasing and development in the Coastal Plain.

123. Just six months after the comment period closed on the DEIS, Defendants noticed the availability of the FEIS in the Federal Register on September 25, 2019. Interior, BLM, Notice of Availability of the FEIS for the Coastal Plain Oil and Gas Leasing Program, Alaska, 84 Fed. Reg. 50,472 (Sept. 25, 2019).

124. Defendants issued the Record of Decision approving the Leasing Program on August 17, 2020.

125. The Record of Decision authorizes Alternative B, which will allow oil and gas leasing on the entire program area encompassing 1,563,500 acres of the Coastal Plain. As the Record of Decision notes, this expansive area will also be available for "future exploration, development, and transportation" resulting from the Leasing Program. Interior, BLM, Coastal Plain Oil and Gas Leasing Program Record of Decision 3 (August 2020) (ROD).

126. Alternative B has the most severe environmental impacts of all considered alternatives. It maximizes the acreage available for leasing, seismic exploration, development, and transportation and includes the fewest environmental protections. Alternative B has the greatest anticipated impacts on the delicate Coastal Plain ecosystem, including impacts to the area's wildlife (including migratory birds), habitat, subsistence values, and water resources.

127. The Record of Decision adopts the lease stipulations and required operating procedures considered in the FEIS. BLM may waive, exempt, or modify the lease stipulations and required operating procedures. Among other things, the lease stipulations and required operations procedures do not adequately protect the conservation purposes of the Arctic Refuge, including migratory birds.

128. Although the Record of Decision recognizes that the Tax Act "included a Coastal Plain oil and gas program as a refuge purpose on *equal footing* with the other refuge purposes," ROD 1 (emphasis added), the Record of Decision elevates the oil and gas program over the other refuge purposes stated in ANILCA.

129. The Record of Decision does not acknowledge the purposes identified in Public Land Order 2214.

130. The Record of Decision does not contain a determination that the Leasing Program authorized by Defendants is a compatible use of the Arctic Refuge or that the Leasing Program fulfills the eight refuge purposes. Instead, the Record of Decision states only that it took the ANILCA refuge purposes into account and that there will be some "potential impact" on those purposes. ROD 7–8.

131. The Record of Decision adopts an interpretation of the Tax Act's 2,000-acre surface development limit that is different than the FEIS's and allows for even greater disturbance of the Coastal Plain. Although the Record of Decision continues to interpret the surface acre limit as requiring Defendants to authorize 2,000 acres of surface development, Defendants assert for the first time in the Record of Decision that the surface development provision applies only to a narrow subset of facilities that are both "production and support" facilities. ROD 11–13. Under this new interpretation, many facilities (*e.g.*, airstrips, roads, and gravel mines) that BLM previously considered in the

FEIS to count toward the 2,000-acre surface disturbance limit may not count toward that limit under the authorized Leasing Program.

132. The Record of Decision further adopts an interpretation of the rights-of-way provision of the Tax Act that overrides the 2,000-acre surface development limit, stating that BLM must issue a right-of-way grant or necessary access authorizations.

133. The Record of Decision relies on the deficient FEIS, which, among other things, fails to consider an adequate range of alternatives, fails to assess adequately the greenhouse gas emissions and climate impacts of the Leasing Program, and fails to assess adequately migratory bird impacts of the Leasing Program.

a. Defendants' Deficient Range of Alternatives

134. The FEIS does not consider a reasonable range of alternatives.

135. The FEIS considers three action alternatives and a no-action alternative. Alternatives B and C authorize leases in the entire program area, covering 1,563,500 acres. Alternative D contains two sub-alternatives, D-1 and D-2. Alternative D-1 authorizes lease sales on 1,037,200 acres and Alternative D-2 authorizes lease sales on 800,000 acres.

136. In the purpose and need statement, Defendants stated that "[a]ll action alternatives were designed to meet Section 2001 of [the Tax Act] and to account for all purposes of the Arctic Refuge." FEIS ES-1. Defendants further stated that "[t]he alternatives analyze various terms and conditions (i.e., lease stipulations and required

operating procedures) to be applied to leases and associated oil and gas activities, to properly balance oil and gas development with protection of surface resources." *Id*.

137. Yet, instead of balancing development with surface resource protection, each action alternative unlawfully prioritizes oil and gas production above the conservation purposes of the Arctic Refuge.

138. Among other things, all of the action alternatives considered would allow 174 or more miles of gravel road construction *plus* extensive and harmful ice road construction, 212 or more miles of pipeline, nearly 300 acres of gravel pits and stockpiles, and seismic activity across much of the Coastal Plain. These action alternatives permit, and in fact exceed, the maximum surface infrastructure limits Congress set in the Tax Act.

139. Each action alternative threatens significant and long-lasting harm to the unique ecology, wildlife, wilderness, and recreational values of the Arctic Refuge, including to the migratory bird populations of great importance to State Plaintiffs and to the Arctic Refuge itself.

140. In addition, each action alternative threatens to worsen greenhouse gas emissions and associated climate impacts and to alter forever the hydrology and habitat of the Coastal Plain.

141. None of the action alternatives considered in the FEIS would restrict surface acre disturbance, limit ice road construction, delay or phase leasing, limit seismic

activity, mitigate greenhouse gas emissions, effectively protect migratory bird habitat, effectively minimize or mitigate adverse environmental impacts, or otherwise fulfill the conservation purposes of the Arctic Refuge to the extent consistent with the Tax Act.

142. An alternative that includes some or all of these components to better protect the Coastal Plain from significant environmental harm and advance the conservation purposes of the Arctic Refuge, to the extent consistent with the Tax Act, is a reasonable alternative consistent with the purpose and need of the proposed Leasing Program that Defendants should have considered in the FEIS.

143. Because Defendants did not consider this reasonable alternative, Defendants' lacked critical information about which areas within the Coastal Plain to make available for oil and gas leasing, which lease stipulations and required operating procedures to adopt, and how to avoid, minimize, and mitigate adverse impacts from the Leasing Program.

b. Defendants' Deficient Analysis of Greenhouse Gas Emissions and Climate Impacts

144. The FEIS analysis of greenhouse gas emissions and climate impacts from the Leasing Program violates NEPA's "hard look" mandate and undermines Defendants' ability to make reasoned decisions by both underestimating the potential greenhouse gas emissions from Coastal Plain development and failing to meaningfully analyze the climate impacts associated with such development.

(1) Defendants' Deficient Analysis of Greenhouse Gas Emissions

145. Although the FEIS acknowledges that Coastal Plain production will cause both direct and indirect greenhouse gas emissions, it drastically underestimates the Leasing Program's indirect greenhouse gas emissions.

146. The FEIS assumes that production from the Coastal Plain will be between 1.5 billion barrels of oil and zero cubic feet of natural gas at the low end and 10.6 billion barrels of oil plus 2.5 trillion cubic feet of natural gas at the high end.

147. The FEIS uses these production levels to evaluate indirect greenhouse gas emissions from the Leasing Program.

148. The FEIS also assumes that approximately 96% of Coastal Plain production will replace other domestic oil and gas production that would be developed in the absence of the Leasing Program, and, thus, the FEIS calculates that Coastal Plain production will increase U.S. demand by just 3.4 to 3.9%.

149. The FEIS recognizes that oil is a global commodity, but does not model energy source substitutions that would globally occur in the absence of Coastal Plain development. Instead, the FEIS models only domestic substitutions to determine the increase in demand resulting from Coastal Plain development.

150. Based on this limited analysis, and without considering oil and gas consumption globally, the FEIS projects that Coastal Plain development and production

will increase net annual U.S. greenhouse gas emissions by less than 0.10% and will increase net annual global emissions by a fraction of that amount.

151. The FEIS relies on these projected low percentage increases in U.S. and global emissions to dismiss concerns about potential climate change impacts from Coastal Plain production.

152. This analysis underestimates potential greenhouse gas emissions by not fully incorporating global effects from Coastal Plain production and unreasonably assuming that 96% of Coastal Plain oil and gas production will replace other U.S. fuels—mostly oil, natural gas, and coal—that would otherwise be developed.

153. Development of Coastal Plain oil and gas is particularly expensive because of its remote location, environmental conditions, and lack of existing pipelines, processing centers, and other infrastructure.

154. Even assuming that Defendants account for this, Defendants do not justify their assumption that Coastal Plain oil and gas once produced will compete with and ultimately displace oil and gas from cheaper domestic projects, let alone analyze how it will interact with global markets.

155. Given the high cost of Coastal Plain production, the FEIS likely overstates the potential for Coastal Plain oil and gas to displace production from more economical projects elsewhere within the United States. If Coastal Plain oil and gas production, even accounting for its relative high cost, significantly displaces U.S. consumption, it is

reasonable that such Coastal Plain production would also be consumed by global energy markets, thereby increasing greenhouse gas emissions beyond BLM's projections. However, BLM does not consider these impacts, even assuming that its other projections are reasonable, which they are not.

156. If Coastal Plain oil and gas is produced but does not displace production from these other domestic projects, then Coastal Plain production will contribute to greater supply and demand and greater greenhouse gas emissions in the U.S. and globally. As a result, contrary to the Record of Decision's assertions that the FEIS overstates environmental impacts, the FEIS likely understates the greenhouse gas emissions and climate change impacts of the Leasing Program in violation of NEPA.

157. The FEIS also does not reconcile or rationally justify its conflicting assumptions that Coastal Plain development will displace other domestic oil and gas production but also only add jobs (and not displace) in the United States. In other words, the FEIS assumes, without justification, that the jobs created by Coastal Plain development and production would not be offset by jobs lost through the displacement of development elsewhere in the United States.

(2) Defendants' Deficient Analysis of Emission Costs

158. The FEIS greenhouse gas emission analysis further violates NEPA because it quantifies the economic benefits of Coastal Plain development without quantifying the

costs of development, particularly costs from greenhouse gas emissions and associated climate change.

159. NEPA requires that where an agency quantifies the benefits of a proposed action, the agency must also quantify the costs, including the social costs associated with greenhouse gas emissions, to ensure that the agency accurately analyzes the environmental consequences of its proposed action.

160. The social cost of carbon is a federally developed tool to assist agencies in evaluating the social benefits of reducing carbon dioxide emissions when analyzing the costs and benefits of agency action.

161. Defendants could have applied the social cost of carbon or another available metric to calculate the cost of development in the FEIS but they failed to do so. As a result, their analysis is deficient under NEPA.

(3) Defendants' Deficient Methane Emissions Analysis

162. The FEIS also fails to meaningfully analyze climate change impacts from methane emissions.

163. Methane is a potent greenhouse gas that is over 30 times more powerful than carbon dioxide in its ability to trap heat in the atmosphere over a 100-year time frame, and 86 times more potent over a 20-year time frame.

164. Methane, thus, has significant short-term climate change impacts.

165. Yet, in the FEIS, Defendants improperly analyzed methane emissions and their climate impacts, further contributing to the deficient analysis of greenhouse gas emissions and climate impacts in the FEIS.

(4) Defendants' Deficient Cumulative Impacts Analysis

166. NEPA obligates Defendants to meaningfully consider in the FEIS the cumulative impacts of greenhouse gas emissions associated with the leases on climate change. *See* 42 U.S.C. § 4332; 40 C.F.R. § 1508.7.

167. Defendants failed to meet this NEPA obligation, devoting a mere paragraph to its analysis of the cumulative climate impacts of the proposed Leasing Program.

c. Defendants' Inadequate Analysis of Migratory Bird Impacts

168. The FEIS analysis of the Leasing Program's impact on migratory birds in the Coastal Plain violates NEPA's "hard look" mandate and undermines Defendants' ability to make reasoned decisions about programmatic measures, including but not limited to lease stipulations, required operating procedures, and pre-leasing seismic activities.

169. The FEIS analysis is incomplete, unsupported by current data or evidence, and cursory, thereby significantly impairing Defendants' ability to make reasoned decisions.

170. Following Congress' authorization of the Leasing Program, lead experts from BLM, FWS, and other agencies identified actions that would be necessary to implement successfully the Leasing Program, including conducting studies to obtain the

best available science and gathering baseline data necessary to assess potential impacts of development.

171. The FEIS irrationally dismisses its own experts' opinions about both the sufficiency of available information, the necessity to gather data as quickly as possible, and the necessity for the information to make programmatic leasing decisions.

172. Defendants cannot fulfill their duty to take a "hard look" at potential impacts of the Leasing Program without vital baseline data about migratory birds because there is no way to know what effect the Leasing Program will have on the birds without it.

173. The absence of such critical data precludes Defendants from making reasoned choices about impacts of pre-leasing seismic activity, which land to lease, and how to define conservation and management priorities, including what impacts to mitigate, whether mitigation proposed would be adequate to offset impacts, or why mitigation measures were not adopted. The contradiction and inconsistencies between expert reports, studies, and opinions and the FEIS and subsequent Record of Decision are arbitrary and irrational.

174. Without the necessary data to meaningfully analyze the Leasing Program's impact on migratory birds, Defendants' analysis relies on generic, broad, and unsupported statements.

175. When the FEIS does cite studies to support its conclusory statements, it improperly relies on stale data, some of which is more than 40 years old.

176. Updated geographic, population, and impact data are essential to make reasoned programmatic decisions for the Leasing Program, specifically those determining where and under what terms and conditions leasing will occur; those decisions cannot be remedied later with to-be-determined site-specific analysis.

177. Moreover, because the Record of Decision permits substantially more surface disturbance than the FEIS contemplates, the Record of Decision renders the FEIS's incomplete analysis of migratory birds impacts even more deficient.

178. In addition, the deficient analysis of impacts on migratory birds undermines Defendants' ability to comply with their legal obligations under ANILCA and the Refuge Administration Act to manage the Arctic Refuge consistent with all of its purposes.

V. THE LEASING PROGRAM WILL HARM STATE PLAINTIFFS

179. State Plaintiffs have concrete and particularized interests in preventing harm to their natural resources, including public lands, waterways, and migratory birds that State Plaintiffs own and hold in both proprietary and regulatory capacities and in trust by the states for the benefit of the people of each state. These interests include protecting migratory birds that frequent the Coastal Plain and State Plaintiffs and reducing climate change impacts from fossil fuel development.

180. State Plaintiffs suffer concrete and redressable injury to these interests as a consequence of Defendants' failure to develop a lawful and adequate Record of Decision and FEIS that satisfy NEPA, properly interpret the Tax Act, and act in a manner consistent with all purposes of the Arctic Refuge.

181. Defendants' actions harm State Plaintiffs' sovereign and proprietary interests. State Plaintiffs devote considerable resources and efforts to fulfill their trustee duties and protect their sovereign and proprietary interests in their natural resources. *See supra* III. Parties; IV.C. Fossil Fuels and Climate Change Impacts.

182. However, because nature does not recognize state borders, environmental harms often have cross-border impacts. As discussed above, climate change impacts resulting from accumulation of greenhouse gas emissions have harmed and are increasingly harming state sovereign lands and coastal areas, state natural resources, state infrastructure, and the health and safety of state residents. These impacts result in economic losses for State Plaintiffs and their residents and businesses. Intergovernmental bodies like the Flyway Councils recognize the reality of cross-border impacts in their efforts for coordinated migratory bird conservation. But whether State Plaintiffs act alone or in collaboration with public agencies, they cannot make informed and reasoned regulatory decisions to protect their natural resources if they do not have accurate or meaningful information about the environmental impacts of actions taken outside of their states.

183. Defendants acknowledged in the FEIS that the Leasing Program will impact climate change and migratory birds, and those impacts will reach State Plaintiffs. The Record of Decision also recognizes that the Leasing Program "will have transboundary impacts" on migratory birds and other wildlife. ROD 16. However, without an adequate Record of Decision and FEIS, State Plaintiffs can neither mitigate these environmental impacts through their independent regulatory authorities nor protect their sovereign and proprietary interests. This inability to prevent these harms is especially concerning because the environmental impacts of the Leasing Program may be particularly devastating and lasting due to the already harsh and rapidly changing climate of the Arctic Refuge. Moreover, accelerated climate change on the Coastal Plain directly impacts State Plaintiffs because atmospheric circulation patterns connect the climates of the Arctic and the contiguous United States.

184. State Plaintiffs have a particularly pronounced interest in the health of migratory birds on the Coastal Plain given the documented and staggering net population loss of nearly three billion birds in North America since 1970. Given the immense density (millions) and diversity (at least 156 species) of migratory birds on the Coastal Plain, the area's ecological importance cannot be overstated. The area is vital for conservation and population management of thousands of birds that fly 3,000 miles or more annually from breeding, molting, and resting areas in the Coastal Plain to lower-48 states, including Plaintiffs' states where the bird and wildlife watchers collectively spent

over $20 billion in 2011, generating an economic impact—including direct, indirect, and induced effects—of approximately $37 billion. The Leasing Program, including its authorization of expansive surface development, will forever alter the fragile landscape of the Coastal Plain, imperiling migratory birds and their habitat.

185. State Plaintiffs have also expended considerable resources and efforts to significantly reduce greenhouse gas emissions in their states through increased use of renewable energy sources and promoting electric vehicles. Any greenhouse gas emissions from the Leasing Program's will offset and undermine these efforts and will harm State Plaintiffs' sovereign and proprietary interests. *See also supra* IV.C. Fossil Fuel and Climate Change Impacts.

186. Defendants' actions also harm State Plaintiffs procedural interests. Nearly all State Plaintiffs participated in the administrative review process by submitting comments on the DEIS and expressed their interest in Defendants' legal compliance, including environmental review obligations under NEPA. Defendants' failure to comply with NEPA in developing the challenged FEIS and Record of Decision and Defendants' failure to reach a reasoned decision that complies with the framework of laws protecting the Arctic Refuge harms State Plaintiffs' procedural interests. Lease sales and authorizations for oil and gas activities, including pre-leasing seismic exploration that could occur across the entire leasing program area, will irreparably degrade the Arctic

Refuge, harm wildlife and their habitat, emit greenhouse gases, and harm State Plaintiffs' concrete sovereign and proprietary interests in the resources affected by these impacts.

187. A court judgment vacating the Record of Decision and the Final EIS will redress the harms to State Plaintiffs by requiring Defendants to comply with its statutory obligations under the Refuge Administration Act, ANILCA, the APA, NEPA, and the Tax Act.

VI. FIRST CAUSE OF ACTION
(Violation of Refuge Administration Act, ANILCA, and APA)

188. State Plaintiffs incorporate all preceding paragraphs by reference.

189. The APA, which establishes the requirements of agency decision making, applies to review of the Record of Decision, FEIS, and any other final agency action concerning the Arctic Refuge. 5 U.S.C. §§ 701–06.

190. Under the APA, a "reviewing court shall . . . hold unlawful and set aside" agency action found to be "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law," or "without observance of procedure required by law." 5 U.S.C. § 706.

191. Agency actions are "arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise." *Motor Vehicle Mfrs. Ass'n, Inc. v.*

State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983), *cited in Greater Yellowstone Coal., Inc. v. Servheen*, 665 F.3d 1015, 1023 (9th Cir. 2011).

192. The Refuge Administration Act and ANILCA govern administration of the Arctic Refuge.

193. Under ANILCA, the Secretary must administer the Arctic Refuge "in accordance with the laws governing the administration of units of the National Wildlife Refuge System, and this Act." ANILCA § 304(a). ANILCA, Public Land Order 2214, and the Tax Act identify the Arctic Refuge's purposes.

194. ANILCA identifies four conservation purposes for the Arctic Refuge: (1) conservation of wildlife and their habitat (including migratory birds); (2) fulfillment of international treaty obligations with respect to wildlife and their habitats; (3) protection of water quality and quantity; and (4) opportunity for continued subsistence uses by local residents. ANILCA § 303(2)(B).

195. The ANILCA purposes built on the original conservation purposes the Secretary identified for creating the Arctic Range to preserve unique wildlife, wilderness, and recreational values. PLO 2214.

196. The Tax Act added "to provide for an oil and gas program on the Coastal Plain" to the existing conservation purposes for the Arctic Refuge. Tax Act § 20001(b)(2)(B).

197. The Refuge Administration Act provides that "the Secretary shall not initiate or permit a new use of a refuge or expand, renew, or extend an existing use of a refuge, unless the Secretary has determined that the use is a compatible use." 16 U.S.C. § 668dd(d)(3)(A)(i).

198. ANILCA provides that oil and gas leasing is a "use" that requires compatibility with the Refuge purposes. ANILCA § 304(b); *see also* 50 C.F.R. § 25.12.

199. A use is a "compatible use" if it will not "materially interfere with or detract from the fulfillment of the mission of the [Refuge] System or the purposes of the refuge." 16 U.S.C. § 668ee(1).

200. Compatibility determinations must be in writing and based on "sound professional judgment." 50 C.F.R. § 25.12.

201. "Sound professional judgment" means a decision "that is consistent with principles of sound fish and wildlife management and administration, available science and resources, and adherence to the requirements of [the Refuge Administration] Act and other applicable laws." 16 U.S.C. § 668ee(3).

202. The Leasing Program is a new use of the Arctic Refuge that requires a compatibility determination. Defendant Bernhardt did not make such a determination in violation of the Refuge Administration Act. 16 U.S.C. §§ 668dd–68ee.

203. The Refuge Administration Act also requires that the Secretary manage each refuge "to fulfill the mission" of the Refuge System, "as well as the specific purposes for which that refuge was established." *Id*. § 668dd(a)(3)(A).

204. The Refuge Administration Act further directs the Secretary to, among other things, provide for the conservation of fish, wildlife, and their habitats, ensure the biological integrity and health of the Refuge System, contribute to the conservation of ecosystems in the United States, and ensure the mission of the Refuge System and the purposes of each refuge are carried out. *See id*. § 668dd(a)(4).

205. The Record of Decision authorizes a leasing program that materially interferes with or detracts from the fulfillment of the mission of the Refuge System and purposes of the Arctic Refuge because it unlawfully prioritizes oil and gas development above the conservation purposes of the Refuge System and the Arctic Refuge. The Secretary thus violated his obligations under the Refuge Administration Act, 16 U.S.C. §§ 668dd–668ee, and ANILCA, § 303(2)(B), as well as the rational decision making mandates of the APA, 5 U.S.C. § 706.

206. To the extent the Secretary made a compatibility determination or considered fulfillment of the Refuge System mission and the Arctic Refuge purposes, the Secretary failed to provide a rational explanation to support either a compatibility determination or a decision that the Leasing Program will fulfill the mission of the Refuge System or the Arctic Refuge purposes. The Secretary's authorization of the

Leasing Program is thus arbitrary, capricious, an abuse of discretion, and otherwise not in accordance with law in violation of the APA. 5 U.S.C. § 706.

VII. SECOND CAUSE OF ACTION
(Violation of NEPA and the APA: Failure to Consider a Reasonable Range of Alternatives)

207. State Plaintiffs incorporate all preceding paragraphs by reference.

208. Courts review claims challenging NEPA violations under the APA. *Pit River Tribe*, 469 F.3d at 778.

209. NEPA requires federal agencies to review the environmental impacts of major federal actions before the action occurs to ensure agencies make informed decisions based on sound science and public input. 42 U.S.C. § 4332.

210. As part of this environmental review, agencies must, "to the fullest extent possible," develop an EIS that rigorously explores and objectively evaluates all reasonable alternatives to the proposed action, including a no action alternative, and to discuss the reasons for eliminating any alternatives rejected from detailed study. 42 U.S.C. § 4332; 40 C.F.R. § 1502.14(a) and (d).

211. NEPA further requires that agencies state in the EIS how alternatives considered will achieve NEPA's requirements and the requirements of other environmental laws, including the Refuge Administration Act and ANILCA. 42 U.S.C. §§ 4331–32; 40 C.F.R. § 1502.2(d).

212. The Refuge Administration Act and ANILCA require the Secretary to manage the Arctic Refuge consistent with its seven conservation purposes and the oil and gas program purpose established in the Tax Act and to fulfill the mission of the Refuge System. 16 U.S.C. § 668dd(a)(3)(A), (4); ANILCA §§ 303(2)(B), 304–05; PLO 2214.

213. Contrary to these mandates, Defendants failed to analyze a reasonable alternative that adequately protects the Coastal Plain from significant environmental harm and is consistent with the conservation purposes of the Arctic Refuge. Instead, Defendants analyzed action alternatives that prioritize oil and gas development above those conservation purposes.

214. An alternative that minimizes environmental impact to the Coastal Plain would, among other things, place parameters on the Leasing Program that are consistent with the Tax Act; protect the integrity of the Coastal Plain and its wildlife (by restricting surface acre disturbance, limiting ice road construction, limiting seismic activity, delaying or phasing leasing, minimizing greenhouse gas emissions, protecting wildlife habitat, and minimizing other adverse environmental impacts); and otherwise be consistent with the conservation purposes of the Arctic Refuge. Such an alternative is a reasonable alternative under the purpose and need of the Leasing Program.

215. Defendants should have analyzed such an alternative in detail but did not do so.

216. Defendants' failure to analyze an alternative that would implement the Tax Act in a manner consistent with the conservation purposes of the Arctic Refuge renders the Record of Decision and the FEIS inadequate under NEPA.

217. Because Defendants failed to consider a reasonable range of alternatives, the Record of Decision and the FEIS on which it relies are arbitrary, capricious, an abuse of discretion, and otherwise not in accordance with law and without observance of procedure required by law contravening NEPA, 42 U.S.C. §§ 4331, 4332, its implementing regulations, and the APA, 5 U.S.C. §§ 701–06.

VIII. THIRD CAUSE OF ACTION
(Violation of NEPA and the APA: Inadequate Analysis of Greenhouse Gas Emissions and Climate Change Impacts)

218. State Plaintiffs incorporate all preceding paragraphs by reference.

219. Courts review claims challenging NEPA violations under the APA. *Pit River Tribe*, 469 F.3d at 778.

220. NEPA requires that federal agencies take a "hard look" at the significant impacts on the human environment of any proposed major federal action to foster informed decision making and informed public participation. *Methow Valley Citizens Council*, 490 U.S. at 350.

221. To fulfill this requirement, an EIS must carefully review the reasonably foreseeable direct, indirect, and cumulative environmental impacts of a proposed action and the significance of those impacts. 42 U.S.C § 4332; 40 C.F.R. §§ 1502.16, 1508.8.

222. An EIS must also discuss measures to mitigate adverse environmental consequences by avoiding, minimizing, rectifying, reducing, eliminating, or compensating for adverse impacts. 40 C.F.R. §§ 1502.14(f); 1502.16(h), 1508.20.

223. Defendants' FEIS inadequately and irrationally analyzes the direct, indirect, and cumulative impacts of greenhouse gas emissions and associated climate impacts from the proposed action.

224. The FEIS irrationally fails to analyze how Coastal Plain oil and gas development will impact global energy demand and emissions and irrationally concludes that 96% of Coastal Plain production will replace other U.S. production, likely underestimating program emissions; fails to consider the social cost of carbon or otherwise quantify the costs of carbon emissions; fails to analyze adequately methane emissions; and fails to analyze adequately the cumulative climate impacts of development and production.

225. For these reasons, Defendants failed to take a hard look at the greenhouse gas emission and climate change impacts of the Leasing Program and to consider measures to mitigate those impacts.

226. The Record of Decision and the FEIS on which it relies are thus arbitrary, capricious, an abuse of discretion, and otherwise not in accordance with law and without observance of procedure required by law, in violation of NEPA, 42 U.S.C. §§ 4331, 4332, and its implementing regulations, and the APA, 5 U.S.C. §§ 701–06.

IX. FOURTH CAUSE OF ACTION
(Violation of NEPA and the APA: Inadequate Analysis of Migratory Bird Impacts)

227. State Plaintiffs incorporate all preceding paragraphs by reference.

228. Courts review claims challenging NEPA violations under the APA. *Pit River Tribe*, 469 F.3d at 778.

229. In addition to NEPA's requirement that agencies take a "hard look" at significant environmental impacts and consider measures to mitigate those impacts, NEPA requires that agencies obtain information essential for making a reasoned choice among alternatives unless the costs of doing so would be "exorbitant." 40 C.F.R. § 1502.22.

230. The FEIS fails to adhere to these mandates by performing an inadequate analysis of impacts to migratory birds that in turn impairs Defendants' ability to consider the sufficiency of mitigation measures.

231. Specifically, the FEIS fails to include critical baseline data about migratory birds in the Coastal Plain. Instead, the FEIS relies on conclusory, unsupported statements and stale data and trivializes the significance of unknown data as inconsequential for the programmatic EIS. The FEIS improperly defers this data for site-specific impact statements. The FEIS further substantially understates the impact on migratory birds by predicating its incomplete analysis on surface disturbance acreage that is significantly

less than what is reasonably foreseeable under the Leasing Program as authorized in the Record of Decision.

232. The absence of essential data and failure to consider significant impacts precludes Defendants from making reasoned choices about programmatic parameters and potential mitigation measures, including but not limited to pre-leasing seismic activity, which tracts of land to lease, terms of lease stipulations, and sufficiency of required operating procedures.

233. In addition, Defendants' decision to defer analysis of migratory bird impacts violates NEPA's mandate that environmental analysis occur at the earliest possible time. 40 C.F.R. § 1501.2.

234. For these reasons, the Record of Decision and the FEIS on which it relies are arbitrary, capricious, an abuse of discretion, and otherwise not in accordance with law and without observance of procedure required by law, contravening NEPA, 42 U.S.C. §§ 4331, 4332, its implementing regulations, and the APA, 5 U.S.C. §§ 701–06.

X. FIFTH CAUSE OF ACTION
(Violation of Tax Act and APA)

235. State Plaintiffs incorporate all preceding paragraphs by reference.

236. The Tax Act contains a surface development provision that directs the Secretary, through BLM, to authorize up to 2,000 acres of federal land on the Coastal Plain "to be covered by production and support facilities (including airstrips and any

areas covered by gravel berms or piers for support of pipelines) during the term of the leases under the oil and gas program under this section." Tax Act § 20001(c)(3). This provision limits surface development to no more than 2,000 acres.

237. The Tax Act also contains a rights-of-way provision: "The Secretary shall issue any rights-of-way or easements across the Coastal Plain for the exploration, development, production, or transportation necessary to carry out this section." *Id*. § 20001(c)(2).

238. In the Record of Decision and the FEIS, Defendants unlawfully and irrationally interpreted the surface development provision as precluding an oil and gas leasing program that would allow less than 2,000 acres of surface disturbance, claiming such an alternative would be inconsistent with the Tax Act.

239. In the Record of Decision, Defendants also unlawfully and irrationally interpreted the 2,000-acre surface disturbance limit as applying only to facilities that are both production and support facilities. Under Defendants' interpretation, surface disturbance that does not fall within this narrow definition would not count towards the surface development cap, thereby allowing surface disturbance on the Coastal Plain to exceed the 2,000-acre limit Congress imposed.

240. Finally, Defendants unlawfully and irrationally interpreted the rights-of-way provision to override the 2,000-acre surface development limit by stating that BLM

must issue a right-of-way grant or necessary access authorization, providing Defendants another avenue to exceed the 2,000-acre surface development cap set by Congress.

241. Defendants' interpretation of the Tax Act violates the statute's plain language and contravenes Congressional intent. Thus, Defendants' adoption the Leasing Program based on these unlawful interpretations is contrary to the Tax Act and exceeds Defendants' statutory authority.

242. For these reasons, Defendants' interpretation of the Tax Act's surface acre development limit and the rights-of-way provision and adoption of the Leasing Program based on that interpretation is arbitrary, capricious, an abuse of discretion, and otherwise not in accordance with law, in violation of the Tax Act, § 20001, and the APA, 5 U.S.C. § 706.

XI. RELIEF REQUESTED

WHEREFORE, State Plaintiffs respectfully request that this Court:

A. Declare that Defendants have violated NEPA, the Refuge Administration Act, ANILCA, and the Tax Act, and further declare that Defendants abused their discretion and acted arbitrarily, capriciously, contrary to law, and in excess of their statutory jurisdiction and authority in authorizing the Leasing Program;

B. Vacate and set aside Defendants' Record of Decision, FEIS, and any other action taken by Defendants in reliance on either document;

C. Enter injunctive relief as necessary to prevent irreparable harm from

implementation of the Leasing Program based on the unlawful Record of Decision and FEIS;

D. Award State Plaintiffs all reasonable costs and fees as authorized by law; and

E. Award State Plaintiffs such other relief as the Court may deem just and proper.

DATED this 9th day of September, 2020.

ROBERT W. FERGUSON
Attorney General of Washington
s/ Aurora Janke
AURORA JANKE (Wash. Bar No. 45862)*
CINDY CHANG (Wash. Bar No. 51020)*
Assistant Attorneys General
Washington Attorney General's Office
Environmental Protection Division
800 5th Ave Ste. 2000 TB-14
Seattle, WA 98104-3188
(206) 233-3391
Aurora.Janke@atg.wa.gov
Cindy.Chang@atg.wa.gov

Attorneys for Plaintiff State of Washington

MAURA HEALEY
Attorney General of Massachusetts
s/ Matthew Ireland
MATTHEW IRELAND
(Mass. Bar No. 554868)*
Assistant Attorneys General
Office of the Attorney General
Environmental Protection Division
One Ashburton Place, 18th Floor
Boston, MA 02108
(617) 727-2200
matthew.ireland@state.ma.us

Attorneys for Plaintiff
Commonwealth of Massachusetts

For the STATE OF CALIFORNIA

XAVIER BECERRA
Attorney General of California

s/ Joshua R. Purtle
JOSHUA R. PURTLE
(Cal. Bar 298215)*
Elizabeth B. Rumsey
(Cal. Bar 257908)*
Deputy Attorneys General
David A. Zonana
(Cal. Bar 196029)*
Supervising Deputy Attorney General
1515 Clay Street, 20th Floor
Oakland, CA 94612-0550
(510) 879-0098
joshua.purtle@doj.ca.gov

For the STATE OF CONNECTICUT

WILLIAM TONG
Attorney General

s/ Daniel M. Salton
DANIEL M. SALTON
(Conn. Bar 437042)*
Office of the Attorney General of Connecticut
156 Capitol Avenue
Hartford, CT 06106
(860) 808-5280
daniel.salton@ct.gov

For the STATE OF DELAWARE

KATHLEEN JENNINGS
Attorney General of Delaware

s/ Christan Douglas Wright
CHRISIAN DOUGLAS WRIGHT
(Del. Bar No. 3554)*
Director of Impact Litigation
Ralph K. Durstein III
(Del. Bar No. 0912)*
Deputy Attorney General
Jameson A.L. Tweedie
(Del. Bar No. 4927)*
Special Assistant Deputy Attorney General
Delaware Department of Justice
820 N. French Street
Wilmington, DE 19801
(302) 577-8600
christian.wright@delaware.gov
ralph.durstein@delaware.gov
jameson.tweedie@delaware.gov

For the STATE OF ILLINOIS

KWAME RAOUL
Attorney General of Illinois

s/ Jason E. James
JASON E. JAMES
(Ill. Bar No. 6300100)*
Assistant Attorney General
Matthew J. Dunn
Chief, Environmental Enforcement/Asbestos Litig. Div.
Office of the Illinois Attorney General
Environmental Bureau
69 West Washington St., 18th Floor
Chicago, IL 60602
(312) 814-0660
jjames@atg.state.il.us

For the STATE OF MAINE

AARON M. FREY
Attorney General of Maine

s/ Margaret A. Bensinger
MARGARET A. BENSINGER
(Me. Bar No. 3003)*
Assistant Attorney General
Office of the Attorney General
6 State House Station
Augusta, Maine 04333
(207) 626-8578
peggy.bensinger@maine.gov

For the STATE OF MARYLAND

BRIAN FROSH
Attorney General of Maryland

s/ John B. Howard, Jr.
John B. Howard, Jr.
(Md. Bar No. 9106200125)*
Special Assistant Attorney General
Office of the Attorney General
200 Saint Paul Place, 20th Floor
Baltimore, Maryland 21202
(410) 576-6300
jbhoward@oag.state.md.us

For the PEOPLE OF THE STATE OF MICHIGAN

DANA ESSEL
Attorney General of Michigan

/s/ Elizabeth Morrisseau
ELIZBETH MORRISSEAU
(Mich. Bar No. P81889)*
Assistant Attorney General
Environment, Natural Resources, and Agriculture Division
6th Floor G. Mennen Williams Building
525 W. Ottawa Street
P.O. Box30755
Lansing, MI 48909
(517) 335-7664
MorrisseauE@michigan.gov

For the STATE OF MINNESOTA

KEITH ELLISON
Attorney General of Minnesota

/s/ Leigh K. Currie
LEIGH K. CURRIE
(Minn. Bar No. 0353218)*
Special Assistant Attorney General
Minnesota Attorney General's Office
445 Minnesota Street Suite 900
Saint Paul, MN 55101
(651) 757-1291
leigh.currie@ag.state.mn.us

For the STATE OF NEW JERSEY

GURBIR GREWAL
Attorney General of New Jersey

/s/ Dianna Shinn
DIANNA SHINN
(N.J. Bar No. 242372017)*
Deputy Attorney General
Environmental Enforcement &
Environmental Justice Section
New Jersey Division of Law
25 Market Street
P.O. Box 093
Trenton, NJ 08625-093
(609) 376-2789
Dianna.Shinn@law.njoag.gov

For the STATE OF NEW YORK

LETITIA JAMES
Attorney General of New York

/s/ Mihir A. Desai
MIHIR A. DESAI
(N.Y. Bar No. 4468823)*
Assistant Attorney General
Office of the New York State Attorney General
Environmental Protection Bureau
28 Liberty Street, 19th Floor
New York, NY 10005
(212) 416-8478
mihir.desai@ag.ny.gov

For the STATE OF OREGON

ELLEN ROSENBLUM
Attorney General of Oregon

/s/ Paul Garrahan
PAUL GARRAHAN
(Or. Bar No. 980556)*
Attorney-in-Charge
STEVE NOVICK
(Or. Bar No. 955353)*
Special Assistant Attorney General
Natural Resources Section
Oregon Department of Justice
1162 Court Street NE
Salem, OR 97301-4096
(503) 947-4593
Paul.Garrahan@doj.state.or.us
Steve.Novick@doj.state.or.us

For the STATE OF RHODE ISLAND

PETER F. NERONHA
Attorney General of Rhode Island

/s/ Gregory S. Schultz
GREGORY S. SCHULTZ
(R.I. Bar No. 5507)*
Special Assistant Attorney General
Rhode Island Office of Attorney General
150 South Main Street
Providence, RI 02903
(401) 274-4400
gschultz@riag.ri.gov

For the STATE OF VERMONT

THOMAS J. DONOVAN, JR.
Attorney General of Vermont

/s/ Nicholas F. Persampieri
NICHOLAS F. PERSAMPIERI
(Vt Bar No. 4718)*
Assistant Attorney General
Office of the Attorney General
109 State Street
Montpelier, VT 05609
(802) 828-3171
nick.persampieri@vermont.gov

**motions for pro hac vice admission pending or forthcoming*

Matthew N. Newman (AK Bar No. 1305023)
Wesley James Furlong (AK Bar No. 1611108)
Megan R. Condon (AK Bar No. 1810096)
NATIVE AMERICAN RIGHTS FUND
745 West 4th Avenue, Suite 502
Anchorage, AK 99501
Phone: 907-276-0680
mnewman@narf.org
wfurlong@narf.org
mcondon@narf.org

Lead Counsel for Plaintiffs Native Village of Venetie Tribal Government, Arctic Village Council, and Venetie Village Council

Teresa B. Clemmer (AK Bar No. 0111059)
Peter H. Van Tuyn (AK Bar No. 8911086)
Karen E. Schmidt (AK Bar No. 1211113)
BESSENYEY & VAN TUYN, LLC
310 K Street, Suite 200
Anchorage, AK 99501
Phone: 907-278-2000
teresa@bvt-law.com
peter@bvt-law.com
karen@bvt-law.com

Co-Counsel for Plaintiffs Native Village of Venetie Tribal Government, Arctic Village Council, and Venetie Village Council

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF ALASKA

NATIVE VILLAGE OF VENETIE TRIBAL GOVERNMENT; ARCTIC VILLAGE COUNCIL; and VENETIE VILLAGE COUNCIL, Plaintiffs, v. DAVID L. BERNHARDT, in his official capacity as Secretary of the United States Department of the Interior; UNITED STATES DEPARTMENT OF THE INTERIOR; UNITED STATES BUREAU OF LAND MANAGEMENT; and UNITED STATES FISH AND WILDLIFE SERVICE, Defendants.	Case No. _____ **COMPLAINT FOR DECLARATORY AND INJUNCTIVE RELIEF** **Alaska National Interest Lands Conservation Act §§ 303, 304, Pub. L. 96-487, and 16 U.S.C. §§ 3101-3233; National Wildlife Refuge System Administration Act, 16 U.S.C. §§ 668dd-668ee; Tax Cuts and Jobs Act § 20001, Pub. L. 115-97; National Historic Preservation Act, 54 U.S.C. §§ 306108-307108; National Environmental Protection Act, 42 U.S.C. §§ 4321-4370j; Administrative Procedure Act, 5 U.S.C. §§ 701-706**

I. NATURE OF THE CASE

1. Gwich'in people comprise an Indigenous Nation living in villages across the northern United States and Canada. Within Alaska, Gwich'in live in nine communities along or near the migratory route of the Porcupine Caribou Herd.

2. Gwich'in have considered themselves "Caribou People" for millennia. Caribou provide much more than physical sustenance to Gwich'in communities. Caribou

are entwined in Gwich'in stories, songs, worldview, spirituality, and traditions. Caribou are fundamental to their very existence.

3. To Gwich'in, the Coastal Plain of the Arctic National Wildlife Refuge is Iizhik Gwats'an Gwandaii Goodlit, the "Sacred Place Where Life Begins," because it is the place where the Porcupine Caribou Herd migrates each year to calve and raise their young.

4. For decades, Gwich'in have served as leaders in the effort to protect the Coastal Plain from the harmful effects of potential oil and gas drilling.

5. The Coastal Plain is also world-renowned for its extraordinary biological richness. In addition to caribou, migratory birds flock to the Coastal Plain in huge numbers. Many species of mammals, fish, and other wildlife thrive in and around its wild rivers, streams, lakes, tundra, and lagoons.

6. For all these reasons, the Coastal Plain was off-limits to oil and gas development for many decades. That all changed in 2017. Through a rider tucked into tax legislation, Congress authorized an oil and gas leasing program within the most intact and majestic landscape remaining in the United States. Since then, Defendants have conducted hurried and deeply flawed reviews of the program's impacts on subsistence, historic properties, and the environment. These reviews and the decisions flowing from them violate multiple federal laws and regulations.

7. One of the most egregious errors is Defendants' determination that the impacts of allowing large-scale oil and gas development across the entire Coastal Plain would have no significant impact on Neets'ąįį Gwich'in communities of Venetie and

Arctic Village. As a result, Defendants failed to conduct a full analysis of subsistence impacts with respect to these communities, as required by law.

8. Another major error is Defendants' refusal to recognize and take into account the program's adverse effects on the Sacred Place Where Life Begins, an historic property of traditional religious and cultural significance to Plaintiffs, as required by law. Defendants omitted the most important historic property from their review.

9. Similar omissions, erroneous assumptions, and incomplete analyses pervade Defendants' reviews and render their decisions unlawful.

10. Plaintiffs assert claims under the Alaska National Interest Lands Conservation Act ("ANILCA") §§ 303, 304, Pub. L. No. 96-487, 94 Stat. 2371 (1980), 16 U.S.C. §§ 3101-3233, and implementing regulations; National Wildlife Refuge System Administration Act ("Refuge Act"), 16 U.S.C. §§ 668dd–668ee, and implementing regulations; Tax Cuts and Jobs Act of 2017 ("Tax Act") § 20001, Pub. L. No. 115-97, 131 Stat. 2054 (2017); National Historic Preservation Act ("NHPA"), 54 U.S.C. §§ 300101-307108, and implementing regulations; National Environmental Policy Act ("NEPA"), 42 U.S.C. §§ 4321-4370j, and implementing regulations; and the standards for agency decision-making in the Administrative Procedure Act ("APA"). 5 U.S.C. §§ 701-706.

11. Plaintiffs challenge the Record of Decision ("ROD") issued by Defendants on August 17, 2020, approving an oil and gas leasing program ("Leasing Program") on the Coastal Plain of the Arctic National Wildlife Refuge ("Arctic Refuge"), as well as the associated Final Environmental Impact Statement ("EIS") and ANILCA § 810 Final

Evaluation published on September 20, 2019. Plaintiffs also challenge Defendants' implementation of the NHPA § 106 process and the Programmatic Agreement ("PA") that became effective October 4, 2019.

12. Plaintiffs seek declaratory, injunctive, mandamus, vacatur, and other and further relief.

II. JURISDICTION AND VENUE

13. This Court has subject matter jurisdiction over this matter pursuant to 28 U.S.C. § 1331 (federal question), 28 U.S.C. § 1346 (civil action against United States), 28 U.S.C. § 1361 (action to compel mandatory duty), and 28 U.S.C. § 1362 (federal question raised by Tribes).

14. This Court has personal jurisdiction over Defendants and their sovereign immunity is waived pursuant to 5 U.S.C. §§ 701–706 and 28 U.S.C. §§ 1346, 1361 because Defendants are federal agencies, officers, and employees of the United States acting in their official capacities.

15. Venue is proper in this Court pursuant to 28 U.S.C. § 1391 because Plaintiffs reside within the District of Alaska, Defendants maintain offices within the District of Alaska, a substantial part of the events or omissions giving rise to the claims occurred within the District of Alaska, and the Arctic Refuge is situated within the District of Alaska.

16. Judicial review is authorized pursuant to 5 U.S.C. §§ 701–706 because Defendants' actions, findings, conclusions, decisions, and failures to act in connection with their approval and issuance of the Final EIS, ROD, ANILCA § 810 Final

Evaluation, and NHPA § 106 PA are final agency actions that have adversely affected and aggrieved Plaintiffs.

17. Declaratory, injunctive, mandamus, vacatur, and other and further relief are authorized pursuant to 5 U.S.C. §§ 701–706 and 28 U.S.C. §§ 1361, 2201–2202.

III. PARTIES

A. Plaintiffs

18. Plaintiff NATIVE VILLAGE OF VENETIE TRIBAL GOVERNMENT is a federally recognized Indian Tribe,[1] and it is the Tribal governmental entity responsible for managing the 1.8 million acres of land surrounding Arctic Village and Venetie, which they own in fee simple and as tenants in common. Native Village of Venetie Tribal Government engaged in government-to-government consultation with Defendants and submitted extensive comments relating to the Leasing Program. Native Village of Venetie Tribal Government also served as a cooperating agency in Defendants' environmental review and decision-making process, as well as a consulting party in Defendants' NHPA § 106 review for the Leasing Program. Throughout these efforts, Native Village of Venetie Tribal Government consistently maintained that the proposed oil and gas leasing program would cause harm to migratory wildlife that rely on the Coastal Plain of the Arctic Refuge, and that such a program would cause harm to the Tribe and its members.

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[1] *See* 85 Fed. Reg. 5,462, 5,467 (Jan. 30, 2020).

19. Plaintiff ARCTIC VILLAGE COUNCIL is a federally recognized Indian Tribe and the Tribal government of the community of Arctic Village.[2] Arctic Village is situated on the southern side of the Arctic Refuge, along the east fork of the Chandalar River and about 100 miles north of Fort Yukon, Alaska. Arctic Village Council engaged in government-to-government consultation with Defendants and submitted extensive comments relating to the Leasing Program. Arctic Village Council also served as a cooperating agency in Defendants' environmental review and decision-making process, as well as a consulting party in Defendants' NHPA § 106 review for the Leasing Program. Throughout these efforts, Arctic Village Council consistently maintained that the proposed oil and gas leasing program would cause harm to the migratory wildlife that rely on the Coastal Plain of the Arctic Refuge, and that such a program would cause harm to the Tribe and its members.

20. Plaintiff VENETIE VILLAGE COUNCIL is a federally recognized Indian Tribe and the Tribal government of the community of Venetie.[3] Venetie is located south of the Arctic Refuge, on the north side of the Chandalar River and about forty-five miles northwest of Fort Yukon, Alaska. Venetie Village Council engaged in government-to-government consultation with Defendants and submitted extensive comments relating to the Leasing Program. Venetie Village Council also served as a cooperating agency in Defendants' environmental review and decision-making process, as well as a consulting

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[2] Arctic Village Council is federally recognized as "Arctic Village." *See* 85 Fed. Reg. at 5,466.

[3] Venetie Village Council is federally recognized as "Village of Venetie." *See id*. at 5,467.

party in Defendants' NHPA § 106 review for the Leasing Program. Throughout these efforts, Venetie Village Council consistently maintained that the proposed oil and gas leasing program would cause harm to migratory wildlife that rely on the Coastal Plain of the Arctic Refuge, and that such a program would cause harm to the Tribe and its members.

21. The members of the three Plaintiff Tribes described above are Neets'ąįį Gwich'in and, to a lesser extent, Gwich'yaa and Dihaii Gwich'in. These are subsets of the larger Gwich'in Nation, whose territory extends from the northeastern Interior of Alaska to the Yukon and Northwest Territories in Canada. Historically, Gwich'in people in northeastern Alaska lived a highly nomadic life. They used seasonal camps and semi-permanent settlements, such as Arctic Village and Venetie, for hunting, fishing, and other subsistence activities, and they traded with Inupiat Eskimos on the Arctic coast. Under the stewardship of Plaintiffs and other Tribes over many centuries, the Coastal Plain has remained an intact ecosystem which continues to support vibrant and productive subsistence ways of life beyond the borders of the Coastal Plain.

22. Gwich'in communities have become more settled in recent decades. The Venetie Indian Reservation was established in 1943, and the first school was built in 1959. When Congress enacted the Alaska Native Claims Settlement Act ("ANCSA") in 1971, Arctic Village and Venetie opted for fee title to the 1.8 million acres of land in the former reservation, and they have rejected both municipal government and ANCSA corporation structures. Today, Arctic Village and Venetie each serve as a home base for their residents to maintain their robust traditional culture and subsistence lifeways. They

rely heavily on caribou, birds, and other subsistence resources throughout the surrounding region, including wildlife that breeds, forages, inhabits, and migrates to and from the Coastal Plain of the Arctic Refuge.

23. Gwich'in people view their relationship to their aboriginal homelands and the wild resources found therein more broadly than federal agencies and other Western observers. While the resources that rely on the Coastal Plain certainly serve as a primary source of food, the Tribal members' relationship to the land and wildlife is also critically important for maintaining their Native language and dialects, cultural heritage and identity, community and family cohesion, spiritual and religious beliefs and ceremonies, transmission of knowledge and customs to children, connections with ancestors, intergenerational equity, and a whole host of other aspects of Gwich'in society.

24. The way of life of Plaintiffs' Tribal members and that of their communities depend on the Porcupine Caribou Herd, migratory waterfowl, and other wildlife that rely on the Coastal Plain of the Arctic Refuge. These wild resources are essential for subsistence and for maintaining sharing networks, kinship ties, and other social, cultural, physical, spiritual, and religious aspects of their identity and well-being. Many individual Tribal members testified at one or more of the public hearings relating to the Leasing Program, and they have been personally affected by the Defendants' decision to approve the Leasing Program.

25. With respect to the agency actions, findings, and conclusions challenged in this Complaint, Plaintiffs and their members have standing and they have exhausted administrative remedies.

26. Defendants' inadequate consultation and reviews in violation of ANILCA, the Refuge Act, the Tax Act, NHPA, NEPA, and the standards for agency decision-making in the APA have adversely affected and aggrieved Plaintiffs and their members by interfering with their ability to meaningfully participate in and influence governmental decision-making processes relating to the Leasing Program and denying them a meaningful opportunity to exercise the statutory rights they possess under these statutes and regulatory schemes.

27. Defendants' unlawful decisions approving and issuing the Final EIS, ANILCA § 810 Final Evaluation, and NHPA §106 PA and failing to carry out meaningful and legally sufficient subsistence, historic property, and environmental review processes have adversely affected and aggrieved Plaintiffs and their members by failing to adequately consider impacts and implement protections for subsistence, historic properties, and wildlife and their habitat.

28. Defendants' violations of ANILCA, the Refuge Act, the Tax Act, NHPA, NEPA, and the standards for agency decision-making in the APA have resulted in an unlawful decision in the ROD approving the Leasing Program on the Coastal Plain without adequate protections for Tribal interests, and this unlawful decision has adversely affected and aggrieved Plaintiffs and their members.

B. Defendants

29. Defendant DAVID L. BERNHARDT is sued in his official capacity as Secretary of the United States Department of the Interior ("DOI"). Defendant Bernhardt has responsibility for overseeing the activities and decisions of DOI, the United States

Bureau of Land Management ("BLM"), United States Fish and Wildlife Service ("FWS"), and other DOI sub-agencies.

30. Defendant UNITED STATES DEPARTMENT OF THE INTERIOR is the department of the executive branch of the federal government responsible for overseeing the activities and decisions of BLM, FWS, and other sub-agencies. The mission of DOI is to conserve and manage the Nation's natural resources and cultural heritage for the benefit of the American people, provide scientific and other information about natural resources and natural hazards to address societal challenges and create opportunities for the American people, and honor the Nation's trust responsibilities and special commitments to American Indians, Alaska Natives, and affiliated island communities to help them prosper.

31. Defendant UNITED STATES BUREAU OF LAND MANAGEMENT is a federal agency within DOI entrusted with the administration of the public lands. The mission of BLM is to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

32. Defendant UNITED STATES FISH AND WILDLIFE SERVICE is a federal agency entrusted with managing the National Wildlife Refuge System, a diverse network of lands and waters dedicated to conserving America's rich fish and wildlife heritage, including the Arctic Refuge. The mission of FWS is to assist in the development and application of an environmental stewardship ethic for our society, based on ecological principles, scientific knowledge of fish and wildlife, and a sense of moral responsibility; guide the conservation, development, and management of the Nation's fish

and wildlife resources; and administer a national program to provide the public opportunities to understand, appreciate, and wisely use fish and wildlife resources.

IV. FACTS

A. Gwich'in People and the Coastal Plain of the Arctic National Wildlife Refuge

33. The Arctic Refuge is a breathtaking, resplendent landscape—one of very few remaining in the world—and it lies at the heart of the traditional way of life for the Gwich'in people.

34. The Coastal Plain region of the Arctic Refuge stretches southward from barrier islands in the Beaufort Sea to the foothills of the Brooks Range. It is an area of rolling hills, small lakes, and braided rivers dominated by tundra vegetation.

35. The Coastal Plain serves as the calving grounds for the Porcupine Caribou Herd, which migrates there in the summer to give birth, raise their young, seek relief from insects, avoid predators, and forage on high quality food.

36. Gwich'in people enjoy a close and lasting relationship with these caribou, which pass through and near Gwich'in lands and communities on their annual migration. Caribou are the main source of subsistence harvests as well as a spiritual and cultural treasure for the nine Gwich'in communities along or near the migration route in Alaska: Arctic Village, Beaver, Birch Creek, Canyon Village, Chalkyitsik, Circle, Eagle Village, Fort Yukon, and Venetie.

37. Gwich'in have maintained their culture, identity, and integrity as traditional Indigenous inhabitants of the area, with sacred relationships to the land and caribou, for thousands of years. Their culture relies upon and honors the caribou and the ancestral

homelands that have provided for them. For them, the Coastal Plain is Iizhik Gwats'an Gwandaii Goodlit, the Sacred Place Where Life Begins.

38. The Sacred Place Where Life Begins is an historic property to which Plaintiffs ascribe traditional religious and cultural significance. Plaintiffs repeatedly provided information to BLM that the Sacred Place Where Life Begins is an historic property of traditional religious and cultural significance, a traditional cultural property ("TCP"), and a cultural landscape that must be taken into account in the NHPA § 106 process.

39. In addition to caribou, the Coastal Plain is also home to many migratory bird species that are important for sustaining Gwich'in people's traditional subsistence culture and way of life. A profusion of vegetation and insect life on the Coastal Plain in the spring, summer, and fall attracts tens of thousands of geese and other birds each year as part of their annual migrations across six continents. Tribal members hunt these migratory geese and gather their eggs, and both activities are important for social cohesion and for the transmission of language and cultural values from one generation to the next.

B. Procedural History

40. From 2018 to 2019, Defendants conducted an environmental review pursuant to NEPA for the Leasing Program. Defendants also conducted ANILCA § 810 and NHPA § 106 reviews concurrently with the NEPA review.

41. Defendant BLM served as the lead agency in preparing the EIS and conducting the ANILCA § 810 and NHPA § 106 reviews, under the supervision of

Defendant DOI. Cooperating agencies in BLM's NEPA review included FWS, the United States Environmental Protection Agency, State of Alaska, North Slope Borough, Native Village of Kaktovik, and Plaintiffs.

42. Defendants published a Notice of Intent to prepare an EIS for the Leasing Program on April 20, 2018, and they carried out a formal scoping period from May through July 2018. 83 Fed. Reg. 17,562 (Apr. 20, 2018). The Notice of Availability of the Draft EIS was published on December 28, 2018, and public comments were accepted until March 13, 2019. 83 Fed. Reg. 67,337 (Dec. 28, 2018). In February 2019, Defendants held public meetings at various locations in Alaska and Washington, DC.

43. Plaintiffs participated extensively in the agency review processes, including without limitation scoping, Draft EIS review, ANILCA § 810 evaluation, and the NHPA § 106 process. Plaintiffs' leaders and members gave testimony at public meetings, submitted written comments, participated in government-to-government consultations, and served as cooperating agencies and consulting parties.

44. Defendants published the Final EIS and ANILCA § 810 Final Evaluation on September 20, 2019, 84 Fed. Reg. 50,472 (Sept. 25, 2019), executed the NHPA § 106 PA, which became effective on October 4, 2019, and issued the ROD approving the Leasing Program on August 17, 2020. 85 Fed. Reg. 51,754 (Aug. 21, 2020).

45. On a separate track, in the spring of 2018, SAExploration, Inc., submitted a detailed application to Defendants seeking authorization to conduct large-scale and intensive pre-leasing seismic survey activities throughout the Coastal Plain. In the summer of 2018, Defendants initiated a separate NEPA review for these activities.

Although the results of pre-leasing seismic surveying are intended to inform the Leasing Program, Defendants excluded these proposed activities and analysis of their impacts from the environmental review for the Leasing Program. When the Final EIS for the Leasing Program was published in September 2019, the pre-leasing seismic NEPA review process remained in the early stages of scoping and had been "paused," according to Defendants' website. As such, the final information and analyses from the pre-leasing seismic NEPA review were not available and could not be incorporated into or relied on in the Final EIS.

C. ANILCA § 810 Process

46. Defendants acknowledged the "importance of the program area to caribou—particularly the [Porcupine Caribou Herd] and [Central Arctic Herd]"—and that twenty-two Alaskan communities engage in subsistence use of these caribou. ANILCA § 810 Final Evaluation, FEIS appx. E, at E-3.

47. Defendants conducted a Tier 1 evaluation under ANILCA § 810 with respect to only four communities: the two Neets'ąįį Gwich'in communities of Arctic Village and Venetie and the two Inupiat communities of Kaktovik and Nuiqsut.

48. Defendants thus included only two of the nine Gwich'in communities in Alaska in its ANILCA § 810 evaluation.

49. Defendants' rationale for limiting the Tier 1 evaluation to only four communities was that these were the "closest to the program area and have subsistence uses in or near the program area or rely heavily on resources that use the program area." *Id*.

50. Defendants thus applied an erroneously high threshold at the outset of the Tier 1 evaluation based on close proximity and "heav[y]" subsistence use.

51. On the basis of that threshold, Defendants excluded seven Gwich'in communities despite their acknowledgment that those communities also engaged in subsistence use of the caribou that would be affected by the Leasing Program.

52. Defendants' Tier 1 evaluation is flawed and inadequate in many ways.

53. Defendants failed to properly evaluate the effect of the proposed Leasing Program on subsistence uses and needs for many reasons, including without limitation Defendants': (a) utilization of an overly narrow definition of subsistence; (b) imposition of unduly restrictive thresholds, such as whether a resource comprised the "majority" of wild foods consumed by residents; (c) exclusion of culturally important resources, such as migratory birds, and culturally important practices, such as bartering and sharing; (d) flawed and inadequate analysis of caribou impacts, including without limitation major data gaps, erroneous facts and reasoning concerning displacement distance and calving habitat, and overreliance on mitigation measures not shown to be effective; (e) failure to adequately identify which lands are needed for subsistence purposes; (f) flawed and inadequate analysis of cumulative impacts, including without limitation (i) lack of a meaningful analysis of climate change; (ii) overreliance on unproven mitigation; (iii) failure to meaningfully evaluate the impacts of oil and gas activities on caribou and migratory bird abundance; (iv) failure to meaningfully evaluate the impacts of oil and gas activities on caribou and migratory bird availability and access for subsistence communities; (iv) failure to meaningfully evaluate the impacts of transportation on

caribou and migratory bird abundance; and (v) failure to meaningfully evaluate the impacts of transportation on caribou availability and access for subsistence communities; and (g) failure to meaningfully consider and take into account the comments and traditional knowledge provided by Plaintiffs, other Tribes, and their members.

54. Defendants failed to adequately consider the availability of other lands for the Leasing Program that would have lesser impacts on subsistence.

55. Defendants failed to adequately consider other alternatives to the Leasing Program that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes, including without limitation: (a) phased-leasing of only 400,000 acres of the highest hydrocarbon areas; (b) allowing less than 2,000 acres of surface development; (c) prohibiting seismic exploration on areas of the Coastal Plain not offered for lease; (d) not offering certain lands for leasing, such as caribou calving and post-calving areas; and (e) more protective lease stipulations and required operating procedures to protect caribou, migratory birds, subsistence, and other Coastal Plain resources, uses, and values.

56. Defendants failed to conduct a meaningful analysis of abundance, availability, and access for all subsistence communities and all subsistence resources.

57. Defendants applied an overly high threshold to determine whether to proceed with a Tier 2 analysis.

58. With respect to Arctic Village and Venetie, as well as Nuiqsut, Defendants found that the Leasing Program would not significantly restrict subsistence uses and, as

such, did not conduct Tier 2 analyses, hold any formal subsistence hearings, or make any formal findings pursuant to ANILCA § 810(a)(3) in connection with these communities.

59. With respect to Kaktovik, Defendants found that the Leasing Program may significantly restrict subsistence uses and thus conducted a Tier 2 analysis relating to Kaktovik. Defendants held a formal subsistence hearing in Kaktovik on February 5, 2019, and included formal findings relating to Kaktovik pursuant to ANILCA § 810(a)(3) in their Final Evaluation.

60. Defendants' Tier 2 evaluation and determinations are flawed and inadequate in many ways.

61. Defendants' determination that the Leasing Program's significant restriction of subsistence use is necessary, consistent with sound management principles for the utilization of public lands, is erroneous for many reasons, including without limitation: (a) Defendants' improper exclusion of numerous subsistence communities, including without limitation Arctic Village, Venetie, and the seven other Gwich'in subsistence communities that Defendants have acknowledged are reliant on the caribou that will be affected by the Leasing Program; (b) the many flaws and inadequacies of the Tier 1 evaluation described above; (c) Defendants' overreliance on unproven mitigation; (d) Defendants' failure to adequately consider the availability of other lands with lesser impacts on subsistence; (e) Defendants' failure to consider alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes, such as the examples described above; and (f) Defendants' erroneous interpretations and applications of the Tax Act described below.

62. Defendants' determination that the Leasing Program will involve the minimal amount of public lands necessary to accomplish its purposes is erroneous for many reasons, including without limitation: (a) Defendants' improper exclusion of numerous subsistence communities, including without limitation Arctic Village, Venetie, and the seven other Gwich'in subsistence communities that Defendants have acknowledged are reliant on the caribou that will be affected by the Leasing Program; (b) the many flaws and inadequacies of the Tier 1 evaluation described above; (c) Defendants' overreliance on unproven mitigation; (d) Defendants' failure to adequately consider the availability of other lands with lesser impacts on subsistence; (e) Defendants' failure to consider alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes, such as the examples described above; and (f) Defendants' erroneous interpretations and applications of the Tax Act described below.

63. Defendants' determination that reasonable steps will be taken to minimize adverse effects upon subsistence uses and resources resulting from the Leasing Program is erroneous for many reasons, including without limitation: (a) Defendants' improper exclusion of numerous subsistence communities, including without limitation Arctic Village, Venetie, and the seven other Gwich'in subsistence communities that Defendants have acknowledged are reliant on the caribou that will be affected by the Leasing Program; (b) the many flaws and inadequacies of the Tier 1 evaluation described above; (c) Defendants' overreliance on unproven mitigation; (d) Defendants' failure to adequately consider the availability of other lands with lesser impacts on subsistence; (e)

Defendants' failure to consider alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes, such as the examples described above; and (f) Defendants' erroneous interpretations and applications of the Tax Act described below.

64. The problems with Defendants' ANILCA § 810 evaluation are compounded by their reliance on the information in the Final EIS. Defendants' faulty NEPA review (described below) undermined the ANILCA § 810 evaluation in numerous ways, including without limitation Defendants': (a) erroneous interpretations and applications of the Tax Act; (b) a development scenario based on erroneous assumptions later rejected by Defendants; (c) exclusion of pre-leasing seismic surveying activities; (d) utilization of low oil production estimates and associated development levels; (e) consideration of only development-maximizing action alternatives; (f) failure to conduct or take into account NHPA § 106 consultation concerning broad historic properties; (g) failure to take into account comments and traditional knowledge provided by Tribes and their members; and (h) deeply flawed and inadequate analyses of direct and indirect effects, cumulative impacts, and mitigation measures.

D. NHPA § 106 Process

65. During meetings and through comments, Plaintiffs repeatedly urged Defendants to initiate the NHPA § 106 process early enough in the development of the Leasing Program that it would inform the development, evaluation, and selection of Leasing Program, or development scenario, alternatives. Defendants failed to do so.

66. Defendants published their Notice of Intent to prepare an EIS in April 2018. During scoping thereafter, Defendants held a three-day workshop to develop and evaluate Leasing Program alternatives in July 2018. A preliminary Draft EIS containing the alternatives that had already been selected for evaluation was shared with cooperating agencies in early August 2018.

67. By this time, Defendants had not held a single NHPA § 106 consultation or meeting with Plaintiffs and all consulting parties. The first NHPA § 106 meeting took place in late October 2018. The purpose of the October 2018 meeting was simply to inform consulting parties of Defendants' timeline for developing a PA; nothing substantive was discussed.

68. When the Draft EIS was released to the public in late December 2018, Defendants had not held a single NHPA § 106 consultation with Plaintiffs. On Plaintiffs' information and belief, Defendants had not engaged in substantive discussions with any consulting parties concerning the NHPA § 106 process, historic properties within the Leasing Program's area of potential effects ("APE"), potential adverse effects of the Leasing Program on historic properties, possible alterations or modifications to avoid, minimize, or mitigate those effects, the PA, or other aspects of the NHPA § 106 process.

69. Defendants' failure to initiate the NHPA § 106 process early enough meant that neither the process nor the historic properties it is meant to protect informed Defendants' development, evaluation, and selection of the alternatives that were evaluated in the NEPA process or the final alternative that was selected by Defendants in the ROD.

70. None of the action alternatives evaluated by Defendants, including the alternative selected in the ROD, considered alternatives or modifications to the Leasing Program what would avoid, minimize, or mitigate adverse effects to historic properties, including cultural landscapes and TCPs, specifically, the Sacred Place Where Life Begins. Instead, all of the action alternatives evaluated by Defendants, including the alternative selected in the ROD, maximize industrial oil and gas development without taking into account the Leasing Program's effects on historic properties, including without limitation the following. Each action alternative: (a) allows seismic surveying to occur throughout the entire program area, including areas closed to leasing; (b) allows leasing in the majority or entirety of the program area; (c) allows for surface development on at least 2,000 acres; (d) fails to exclude key lands from leasing, such as caribou calving and post-calving areas; and (e) is subject to mitigation measures which have not been developed in consultation with Plaintiffs and other consulting parties in the NHPA § 106 process, analyzed or shown to be effective, and are broadly subject to waivers, exemptions, and modifications.

71. The belated NHPA § 106 "process" undertaken by Defendants was woefully and legally deficient in numerous ways. The following are a few examples.

72. Defendants failed to engage in adequate and meaningful NHPA § 106 consultations. The interactions Defendants had with Plaintiffs were *pro forma* and failed to take their concerns, comments, and traditional knowledge about historic properties and potential adverse effects into account in any meaningful way. On information and belief, Defendants' interactions with other consulting parties were similarly inadequate.

73. For example, Defendants planned to conduct interviews in Arctic Village and Venetie in December 2018 and January 2019 as part of their effort to identify historic properties and evaluate their eligibility for inclusion in the National Register of Historic Places ("National Register"). These consultations were cancelled. Defendants eventually conducted interviews in Venetie and Fairbanks in April 2019, but Defendants never conducted interviews in Arctic Village. Defendants never engaged in consultation with Plaintiffs to identify and evaluate the National Register-eligibility of historic properties potentially affected by the Leasing Program. Instead, Plaintiffs were forced to conduct interviews on their own and provide the transcripts to Defendants along with information about the National Register-eligibility of such properties. Defendants thus failed to make a reasonable and good faith effort to identify historic properties potentially affected by the Leasing Program, to fulfill their statutory obligation to comply with NHPA § 106 requirements, and to bear full legal and financial responsibility for such compliance. *See* 36 C.F.R. §§ 800.2(a), 800.4(b)(1).

74. Defendants never engaged in NHPA § 106 consultations with Plaintiffs to apply the adverse effects criteria, *see id.* § 800.5(a), and develop alternatives and modifications to the Leasing Program to avoid, minimize, or mitigate adverse effects. *Id.* § 800.6(a). On information and belief, Defendants failed to meaningfully and adequately consult with other consulting parties as well.

75. In March 2019, Defendants provided Plaintiffs and other consulting parties with a draft PA and held a meeting the next day to discuss it, despite none of the consulting parties, including Plaintiffs, having had sufficient time to review it. In June

2019, Defendants provided Plaintiffs and other consulting parties with a second draft of the PA. In July 2019, Defendants held a meeting with Plaintiffs and other consulting parties, but instead of discussing the second draft PA, Defendants merely indicated they would review the consulting parties' written comments on the second draft and declined to engage in substantive discussions. In sum, Defendants accepted written comments from Plaintiffs and, on information and belief, other consulting parties concerning the PA but never engaged in meaningful consultations with them about it.

76. As a result of Defendants' superficial approach to consultation, they failed to give Plaintiffs special consideration, recognizing their special expertise in identifying and evaluating historic properties and adverse effects, and the government-to-government relationship, as required in the NHPA § 106 process. On information and belief, Defendants likewise failed to give special consideration to other Tribal consulting parties as well.

77. Defendants failed to adequately consult with Plaintiffs at specific steps in the NHPA § 106 process, including but not limited to: (a) information-gathering; (b) identification and evaluation of the National Register-eligibility of historic properties potentially affected by the Leasing Program; (c) assessment of the Leasing Program's effects on historic properties; (d) resolution of adverse effects by developing and evaluating alternatives and modifications to the Leasing program that avoid, minimize, and mitigate adverse effects; (e) and development and implementation of the PA. On information and belief, Defendants' failures extend to other consulting parties as well.

78. Defendants also improperly limited the scope of the NHPA § 106 process to small, localized historic properties and refused to consider larger historic properties, such as TCPs and cultural landscapes, including the Sacred Place Where Life Begins. Plaintiffs emphasized the deep traditional religious and cultural significance to them of the Sacred Place Where Life Begins, submitted extensive documentation of its significance, integrity, and contributing resources, and repeatedly urged Defendants to take into account this historic property in their NHPA § 106 evaluation. Defendants declined to do so, deferring identification and evaluation, assessment of effects, and resolution of adverse effects through the development of avoidance, minimization, and mitigation plans until later stages of oil and gas development, *i.e.*, post-leasing, when applications for permits to drill ("APD") are submitted.

79. Defendants took the position that they were not required to carry out these steps prior to the APD stage because approval of the Leasing Program would not authorize ground-disturbing activities. This position is based on unlawfully narrow interpretations of Defendants' NHPA § 106 obligations and the adverse effects federal agencies must consider. Adverse effects that must be considered include without limitation direct, indirect, reasonably foreseeable, and cumulative effects, as well as effects not involving physical alterations. *See* 36 C.F.R. § 800.5(a)(1).

80. Defendants' position is also erroneous because the scope of subsequent reviews will be limited to the specific sub-areas being permitted. Only at the leasing stage is it possible to consider the adverse effects of the entire Leasing Program on landscape-level historic properties, such as the Sacred Place Where Life Begins, as well

as avoidance, minimization, and mitigation measures for the entire Leasing Program that reduce such effects.

81. As a result of their unlawfully narrow scope, Defendants failed to properly identify and evaluate the National Register-eligibility of landscape-level historic properties, including the Sacred Place Where Life Begins, failed to assess the effects of the Leasing Program on such properties, and failed to develop and consider alternatives or modifications to the Leasing Program that would avoid, minimize, or mitigate such adverse effects.

82. Defendants also failed to engage the public in the NHPA § 106 process. Defendants never provided the public with information about the undertaking and its effects on historic properties. Further, Defendants never provided the public with notice or an opportunity to comment on the NHPA § 106 process, including without limitation key steps such as the identification and evaluation of historic properties, assessment of effects, resolution of adverse effects through the development and evaluation of alternatives and modifications to the Leasing Program that avoid, minimize, and mitigate adverse effects, and development and implementation of the PA.

83. Additionally, the NHPA § 106 process was not completed before the issuance of the Draft EIS or by the end of the public comment period for the NEPA review. As a result, during the NEPA review process, the public was not informed about and did not have a meaningful opportunity to comment on numerous issues relating to the NHPA § 106 process, including but not limited to key steps such as the identification and evaluation of historic properties, assessment of effects, resolution of adverse effects

through the development and evaluation of alternatives and modifications to the Leasing Program that avoid, minimize, and mitigate adverse effects, and development and implementation of the PA.

84. The Final PA was signed by BLM and the Alaska State Historic Preservation Officer ("SHPO") on September 20 and 23, 2019, respectively. The Notice of Availability for the Final EIS was published a few days later on September 25, 2019. The Final PA was then signed by FWS on September 30, 2019. The Final PA when into effect when it was signed by the Advisory Council on Historic Preservation ("ACHP") on October 4, 2019.

85. Despite the close timing of the finalization of these NEPA and NHPA § 106 documents, the PA was not included as an appendix to the Final EIS or otherwise made available to the public. Defendants did not inform Plaintiffs that the Final PA was executed until March 11, 2020.

E. NEPA REVIEW PROCESS

86. The reasonably foreseeable development ("RFD") scenario serves as the basis for the entire Leasing Program EIS, including without limitation its action alternatives and its evaluation of direct and indirect impacts, cumulative impacts, and mitigation measures. The RFD and the Leasing Program EIS are fundamentally flawed in numerous ways, including without limitation the following.

87. Defendants relied on unduly low oil production estimates ranging from about 2.4 billion barrels of oil ("BBO") for Alternatives D1 and D2 to roughly 2.7 BBO for Alternative C and 3.0 BBO for Alternative B. Defendants have erroneously

characterized these oil production estimates as “optimistic high-production” levels used to “minimize the chance that the resultant impact analysis will understate potential impacts.” Final EIS, at B-3. Truly high-end estimates, however, would be approximately 10.0 BBO or greater, and the corresponding extent of oil and gas facilities and operations evaluated in the action alternatives would be approximately triple what is described in the Final EIS. Defendants’ use of unduly low oil production estimates resulted in an understatement of impacts in the Final EIS.

88. Defendants improperly excluded pre-leasing seismic surveying activities from the NEPA review for the Leasing Program, rather than considering these closely interrelated activities as part of the same NEPA review process. As a result, Defendants failed to acknowledge and properly evaluate the combined impacts of these activities, and this led to an understatement of impacts in the Final EIS.

89. None of the action alternatives in the Final EIS maximize protection for subsistence, wildlife, habitat, ecosystems, historic properties, cultural landscapes, TCPs, and/or public health. Instead, all of the action alternatives in the Final EIS maximize industrial oil and gas development in multiple ways, including but not limited to the following. Each action alternative: (a) allows seismic surveying to occur throughout the entire program area, including areas closed to leasing; (b) allows leasing in the majority or entirety of the program area; (c) allows for surface development on at least 2,000 acres; (d) fails to exclude key lands from leasing, such as caribou calving and post-calving areas; and (e) is subject to mitigation measures which have not been analyzed or shown to be effective and are broadly subject to waivers, exemptions, and modifications.

90. Due to the flawed ANILCA § 810 process described above, the action alternatives in the Final EIS reflect inadequate Tier 1 analyses for too few subsistence communities and do not reflect any Tier 2 formal subsistence hearings or findings relating to Arctic Village, Venetie, or any other Gwich'in subsistence community. As a consequence, Defendants failed to adequately consider which areas not to offer for leasing to reduce impacts on subsistence, and the alternatives do not include sufficient features designed to reduce impacts on subsistence. Similarly, due to the delayed, deferred, and inadequate NHPA § 106 process described above, the action alternatives in the Final EIS do not reflect the required consultations and evaluations with respect to historic properties, including cultural landscapes and TCPs, and do not include features designed to reduce adverse effects on them.

91. The analyses of direct and indirect effects, cumulative impacts, and mitigation measures in the Final EIS are flawed and inadequate in numerous ways, including without limitation the following:

a. Subsistence, Sociocultural Systems, and Environmental Justice. With respect to subsistence, sociocultural systems, and environmental justice, the flaws and inadequacies in the Final EIS include without limitation: (i) inadequate baseline data and other data gaps; (ii) erroneous assumptions; (iii) reliance on unduly low oil production estimates and associated development levels; (iv) reliance on erroneous interpretations of the Tax Act; (v) failure to analyze the impacts of pre-leasing seismic activities; (vi) reliance on a flawed and inadequate ANILCA § 810 process; (vii) reliance on a deferred, delayed, and inadequate NHPA § 106 process; (viii) inadequate

demographic information, harvest data, and subsistence use maps for Arctic Village, Venetie, and other communities; (ix) excessive focus on overall quantity of food consumption and harvest with inadequate attention to culturally important subsistence practices, such as egg-gathering, and inadequate attention to lower quantity but essential subsistence activities in time periods and locations with limited resources; (x) inadequate attention to the timing of harvesting; (xi) erroneous assumption that Kaktovik and Nuiqsut are the only communities that could be precluded from subsistence use in the program area; (xii) inadequate analysis of seismic activities and water withdrawals on subsistence resources; (xiii) reliance on other flawed and inadequate analyses in the Final EIS, such as those relating to caribou, waterfowl, soils, and vegetation (described below); (xiv) overly generalized and non-quantified analysis; (xv) failure to take into account traditional knowledge; (xvi) failure to meaningfully address climate change; (xvii) cursory and inadequate cumulative impact analysis; (xviii) failure to analyze the efficacy of reclamation and other mitigation measures; (xix) and overall understatement of impacts.

b. Public Health. With respect to public health, the flaws and inadequacies in the Final EIS include without limitation: (i) inadequate baseline data and other data gaps; (ii) erroneous assumptions; (iii) reliance on unduly low oil production estimates and associated development levels; (iv) reliance on erroneous interpretations of the Tax Act; (v) failure to analyze the impacts of pre-leasing seismic activities; (vi) inadequate analyses of public health impacts on Arctic Village, Venetie, and other communities; (vii) deferral of a Health Impact Analysis and other evaluations until later

stages of oil and gas development; (viii) reliance on an inadequate ANILCA § 810 process; (ix) inadequate and inaccurate data regarding subsistence resources, subsistence activities, and wild food consumption; (x) reliance on other flawed and inadequate analyses in the Final EIS, such as those relating to subsistence, sociocultural systems, environmental justice, caribou, and waterfowl (described above and below); (xi) failure to take into account traditional knowledge; (xii) failure to meaningfully address climate change; (xiii) cursory and inadequate cumulative impact analysis that excludes Arctic Village and Venetie and other communities; (xiv) failure to analyze the efficacy of mitigation measures; and (xv) overall understatement of impacts.

c. Cultural Resources. With respect to cultural resources, the flaws and inadequacies in the Final EIS include without limitation: (i) inadequate baseline data and other data gaps; (ii) erroneous assumptions; (iii) reliance on unduly low oil production estimates and associated development levels; (iv) reliance on erroneous interpretations of the Tax Act; (v) failure to analyze the impacts of pre-leasing seismic activities; (vi) failure to follow guidelines concerning ethnographic studies; (vii) reliance on a delayed, deferred, and inadequate NHPA § 106 process; (viii) reliance on an inadequate ANILCA § 810 process; (ix) failure to consider psychosocial and other impacts of the Leasing Program approval decision itself; (x) failure to take into account traditional knowledge; (xi) failure to meaningfully address climate change; (xii) cursory and inadequate cumulative impact analysis that fails to address colonialism, trauma, and other historical impacts; (xiii) failure to analyze the efficacy of mitigation measures; and (xiv) overall understatement of impacts.

d. Caribou. With respect to caribou, the flaws and inadequacies in the Final EIS include without limitation: (i) inadequate baseline data and other data gaps; (ii) erroneous assumptions; (iii) reliance on unduly low oil production estimates and associated development levels; (iv) reliance on erroneous interpretations of the Tax Act; (v) failure to analyze the impacts of pre-leasing seismic activities; (vi) unreasonable 40% threshold for important calving habitat; (vii) inadequate analysis of forage habitat and vegetation types; (viii) failure to explain how acreages affected by development are significant for caribou; (ix) failure to adequately analyze impacts on post-calving grounds; (x) improper assumption that the Porcupine Caribou Herd will react in a manner similar to other herds and excessive reliance on data from other herds; (xi) failure to discuss general decline in caribou herds across the Arctic; (xii) inadequate analysis of seismic activities and water withdrawals; (xiii) overly generalized and non-quantified analysis; (xiv) failure to take into account traditional knowledge; (xv) failure to meaningfully address climate change; (xvi) cursory and inadequate cumulative impact analysis; (xvii) failure to analyze the efficacy of reclamation and other mitigation measures; and (xviii) overall understatement of impacts.

e. Migratory Waterfowl. With respect to migratory waterfowl, the flaws and inadequacies in the Final EIS include without limitation: (i) inadequate baseline data and other data gaps; (ii) erroneous assumptions; (iii) reliance on unduly low oil production estimates and associated development levels; (iv) reliance on erroneous interpretations of the Tax Act; (v) failure to analyze the impacts of pre-leasing seismic activities; (vi) inadequate analysis of seismic activities and water withdrawals; (vii)

overly generalized and non-quantified analysis; (viii) failure to take into account traditional knowledge; (ix) failure to meaningfully address climate change; (x) cursory and inadequate cumulative impact analysis; (xi) failure to analyze the efficacy of reclamation and other mitigation measures; and (xii) overall understatement of impacts.

f. Vegetation, Tundra, and Wetlands. With respect to vegetation, tundra, and wetlands, the flaws and inadequacies in the Final EIS include without limitation: (i) inadequate baseline data and other data gaps; (ii) erroneous assumptions; (iii) reliance on unduly low oil production estimates and associated development levels; (iv) reliance on erroneous interpretations of the Tax Act; (v) failure to analyze the impacts of pre-leasing seismic activities; (vi) lack of meaningful analysis of habitat value of vegetation, tundra, and wetlands and the impacts of their degradation on caribou, waterfowl, and other wildlife; (vii) deferral of meaningful analysis until later stages of oil and gas development; (viii) overreliance on non-comparable data from the Prudhoe Bay region and other areas; (ix) inadequate analysis of seismic activities and water withdrawals; (x) overly generalized and non-quantified analysis; (xi) limitation of scope of impacts to the program area; (xii) failure to take into account traditional knowledge; (xiii) failure to meaningfully address climate change; (xiv) cursory and inadequate cumulative impact analysis; (xv) failure to analyze the efficacy of reclamation and other mitigation measures; and (xvi) overall understatement of impacts.

g. Soils, Permafrost, Sand, and Gravel. With respect to soils, permafrost, sand, and gravel, the flaws and inadequacies in the Final EIS include without limitation: (i) inadequate baseline data and other data gaps; (ii) erroneous assumptions;

(iii) reliance on unduly low oil production estimates and associated development levels; (iv) reliance on erroneous interpretations of the Tax Act; (v) failure to analyze the impacts of pre-leasing seismic activities; (vi) deferred consideration of gravel supply plans, reclamation plans, and site-specific analysis based on them until later stages of oil and gas development; (vii) inadequate analysis of seismic activities and water withdrawals; (viii) inadequate evaluation of climate change; (ix) failure to account for unique characteristics of the Coastal Plain; (x) overly generalized and non-quantified analysis; (xi) limitation of scope of impacts to the program area; (xii) failure to take into account traditional knowledge; (xiii) failure to meaningfully address climate change; (xiv) cursory and inadequate cumulative impact analysis; (xv) failure to analyze the efficacy of reclamation and other mitigation measures; and (xvi) overall understatement of impacts.

92. In an effort to address the many flaws, inadequacies, and gaps in the Final EIS, Defendants improperly relied on, purported to tier to, and/or attempted to incorporate by reference, with little or no accompanying summary or explanation, numerous other documents, including but not limited to non-NEPA documents, non-federal documents, future or incomplete NEPA reviews, and NEPA reviews concerning unrelated projects and activities.

F. FINAL DECISION APPROVING THE LEASING PROGRAM

93. In the ROD, Defendants have selected and approved Alternative B, which allows oil and gas development across virtually the entire Coastal Plain and is the most

damaging and destructive of the action alternatives presented in the Final EIS for the Leasing Program.

94. Defendants' rationale for this decision is that including the entire Coastal Plain in the Leasing Program will ensure that it is making available the highest hydrocarbon potential areas for lease and maximizing flexibility to ensure that these areas will be developed. Defendants also contend there is too much uncertainty for them to reasonably foresee which areas have the highest potential until after exploration drilling occurs.

95. Defendants' assertions appear inconsistent with the maps in the Final EIS identifying specific areas of "high," "medium," and "low" hydrocarbon potential. *See* FEIS, appx. A, maps 3-6 to 3-9 and 3-59. The Final EIS also discusses areas with hydrocarbon potential, including their acreage, oil and gas recovery potential, and other characteristics in Appendix B in connection with the RFD scenario and in various other places in the Final EIS text and associated tables and figures. *See, e.g.*, FEIS, at ES-4; 3-50 to 3-51, tbls. 3-11, 3-12, 3-13, and 3-14; and appx. B, at B-3 to B-9, tbls. B-1, B-2, and map B-1. Defendants presumably have access to additional information concerning the oil and gas resources of the Coastal Plain in the Administrative Record, through the studies required under ANILCA, and through ongoing interactions with the oil and gas industry.

96. All of the lease stipulations and required operating procedures that Defendants rely on to support their claims that they are adequately protecting subsistence,

wildlife, habitat, ecosystems, historic properties, cultural resources, and public health are unproven and subject to waivers, exceptions, and modifications.

97. Defendants have failed to include meaningful protections for subsistence, wildlife, habitat, ecosystems, historic properties, cultural resources, and public health.

98. Defendants have failed to make a determination that the Leasing Program is a compatible use of the Arctic Refuge or that the Leasing Program fulfills the purposes of the Refuge. Instead, Defendants merely indicate that they took the other Refuge purposes into account and that there will be some adverse impacts on those purposes.

99. The RFD and EIS were developed based on erroneous and unlawful interpretations of the Tax Act's 2,000-acre provision, including without limitation the understanding that this provision imposes a minimum acreage requirement (*i.e.*, prohibits any action alternative that provides for surface development covering less than 2,000 acres) and that it applies on a rolling rather than cumulative basis (*i.e.*, allows for multiple successive 2,000-acre areas of surface development).

100. In the ROD, Defendants abandoned these interpretations and set forth several new legal interpretations of the Tax Act, which are likewise erroneous and unlawful, including without limitation the following: (a) the "up to 2,000 surface acres" language is not an upper limit on a range of surface acres that Defendants may allow but part of a mandate that they must authorize production and support facilities covering the entire 2,000 surface acres; (b) facilities counting toward the 2,000 acres must be both "production" *and* "support facilities"; (c) other facilities assumed to count toward the 2,000 acres in the RFD and EIS, such as airstrips, roads, pads, gravel pits and stockpiles,

and barge landing and storage facilities, may or may not be counted toward the 2,000 acres by future decision-makers; and (d) rights-of-way and easements are not subject to the 2,000-acre limitation.

101. The ROD asserts that Defendants' last-minute changes in interpretation do not affect the validity of the EIS because the assumptions underlying its analysis of environmental impacts were conservative and designed to overstate the impacts.

102. The ROD does not acknowledge the potential that, because there are now many facilities ineligible to be counted toward the 2,000 acres and many others that potentially will not be counted toward the 2,000 acres by future decision-makers, the acreage associated with surface development could far exceed 2,000 acres and, as a result, the EIS may actually understate environmental impacts or otherwise inaccurately characterize impacts.

103. The potential for expansive surface impacts beyond the 2,000 acres assumed in the EIS is compounded by Defendants' erroneous interpretations that they are subject to stringent mandates and have little or no discretion with respect to the 2,000 acres of surface development and the authorization of rights-of-way and easements for exploration, development, production, and transportation facilities related to the Leasing Program.

V. STATUTORY FRAMEWORK

A. Alaska National Interest Lands Conservation Act

104. The Coastal Plain and surrounding areas were federally protected in 1960 through an order issued by the Secretary of the Interior. Pub. Land Order 2214 (Dec. 6,

1960), 25 Fed. Reg. 12,598 (Dec. 8, 1960). This Order established the Arctic National Wildlife Range "for the purpose of preserving unique wildlife, wilderness and recreational values."

105. Congress formally renamed the Arctic National Wildlife Range the Arctic National Wildlife Refuge through the enactment of ANILCA in 1980. Pub. L. No. 96-487, 94 Stat. 2371 (1980). Through ANILCA, Congress added four purposes for the land now included within the Arctic Refuge, emphasizing the conservation and subsistence objectives of ANILCA. These purposes are: "(i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd . . . , polar bears, grizzly bears, muskox, Dall sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling; (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats; (iii) to provide . . . the opportunity for continued subsistence uses by local residents; and (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the refuge." *Id.* § 303(2)(B).

106. More generally, Congress's intent in establishing conservation system units under ANILCA was to "provide for the maintenance of sound populations of, and habitat for, wildlife species of inestimable value to the citizens of Alaska and the Nation, including those species dependent on vast relatively undeveloped areas; to preserve in their natural state extensive unaltered arctic tundra, boreal forest, and coastal rainforest

ecosystems; to protect the resources related to subsistence needs; [and] to protect and preserve historic and archeological sites, rivers, and lands." 16 U.S.C. § 3101(b).

107. Congress further intended for fish and wildlife within ANILCA conservation system units to be managed "in accordance with recognized scientific principles and the purposes for which each conservation system unit is established, designated, or expanded." *Id.* § 3101(c); *see id.* § 3112(1).

108. Congress also intended for conservation system units established under ANILCA to "provide the opportunity for rural residents engaged in a subsistence way of life to continue to do so." *Id.* § 3101(c); *see id.* § 3112(1). Congress found that the "continuation of the opportunity for subsistence uses . . . is essential to Native physical, economic, traditional, and cultural existence." *Id.* § 3111(1).

109. Congress further found that the "situation in Alaska is unique in that, in most cases, no practical alternative means are available to replace the food supplies and other items gathered from fish and wildlife which supply rural residents dependent on subsistence uses." *Id.* § 3111(2). Congress therefore declared it to be federal policy that the "utilization of the public lands in Alaska is to cause the least adverse impact possible on rural residents who depend upon subsistence uses of the resources of such lands." *Id.* § 3112(1).

110. Under ANILCA, the term "subsistence" is defined broadly to mean "the customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of nonedible

byproducts of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade." *Id.* § 3113.

111. Subsistence extends beyond a "sufficient food supply" and includes "customary and traditional practices which ANILCA was designed to protect." *Alaska Wilderness Rec'n & Tourism Ass'n v. Morrison*, 67 F.3d 723, 731 (9th Cir. 1995).

112. To achieve these conservation and subsistence objectives, ANILCA establishes both procedural and substantive requirements. Congress explained that the "national interest in the proper regulation, protection, and conservation of fish and wildlife on the public lands in Alaska and the continuation of the opportunity for a subsistence way of life . . . require that an administrative structure be established for the purpose of enabling rural residents who have personal knowledge of local conditions and requirements to have a meaningful role in the management of fish and wildlife and of subsistence uses on the public lands in Alaska." 16 U.S.C. § 3111(5).

113. The ANILCA § 810 process takes place in two phases. Under the first step, commonly known as "Tier 1," the agency must consider: (a) the "effect" of the proposed "use, occupancy, or disposition" on "subsistence uses and needs"; (b) the "availability of other lands for the purposes sought to be achieved"; and (c) "other alternatives which would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes." 16 U.S.C. § 3120(a). In conducting the Tier 1 evaluation, the agency must consider cumulative impacts, along with direct and indirect impacts. *See City of Tenakee Springs v. Clough*, 915 F.2d 1308, 1312 (9th Cir. 1990).

114. If, after completing the Tier 1 evaluation, the agency determines that the proposed activity "may significantly restrict subsistence uses," the agency must proceed to Tier 2. *Kunaknana v. Clark*, 742 F.2d 1145, 1151 (9th Cir. 1984). The Tier 2 threshold is "quite low." *Sierra Club v. Penfold*, 664 F. Supp. 1299, 1307 (D. Alaska 1987), *aff'd* 857 F.2d 1307 (9th Cir. 1988). Only a "threat of significant restriction" is required, and such a restriction "need not be likely." *Hanlon v. Barton*, 740 F. Supp. 1446, 1448 (D. Alaska 1988).

115. In Tier 2, the agency must provide notice, hold hearings, and make a series of detailed findings and determinations demonstrating compliance with ANILCA's substantive standards. The agency is prohibited from authorizing the proposed activity unless and until it: (a) "gives notice to the appropriate State agency and the appropriate local committees and regional councils"; (b) "gives notice of, and holds, a hearing in the vicinity of the area involved; and" (c) "determines that (A) such a significant restriction of subsistence uses is necessary, consistent with sound management principles for the utilization of the public lands, (B) the proposed activity will involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition, and (C) reasonable steps will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions." 16 U.S.C. § 3120(a).

116. Section 810 thus "provides that actions which would significantly restrict subsistence uses can only be undertaken if they are necessary and if the adverse effects are minimized." *Amoco Prod. Co. v. Vill. of Gambell*, 480 U.S. 531, 554 (1987).

117. When the Secretary of the Interior is required to prepare an EIS under NEPA, they or their designee "shall provide the notice and hearing and include the findings required by subsection (a) of this section as part of such environmental impact statement." 16 U.S.C. § 3120(b).

118. Only after a federal agency has complied with ANILCA's requirements regarding subsistence is it authorized to "manage or dispose of public lands" under its jurisdiction for other lawful uses or purposes. *Id*.

119. Furthermore, the Arctic Refuge and other refuges "shall be administered by the Secretary . . . in accordance with the laws governing the administration of units of the National Wildlife Refuge System, and this Act." Pub. L. No. 96-487, § 304(a).

B. National Wildlife Refuge System Administration Act

120. The Refuge Act governs the administration of the National Wildlife Refuge System, including the Arctic Refuge. *See* 16 U.S.C. § 668dd.

121. The mission of the National Wildlife Refuge System is to "administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans." *Id.* § 668(d)(a)(2).

122. In administering the National Wildlife Refuge System, the Secretary of the Interior must comply with statutory management standards, including but not limited to obligations to "provide for the conservation of fish, wildlife, and plants, and their habitats within the System;" "ensure that the biological integrity, diversity, and environmental

health of the System are maintained;" and manage the System in a manner that "contribute[s] to the conservation of the ecosystems of the United States." *Id.* § 668dd(a)(4).

123. Each refuge "shall be managed to fulfill the mission of the System, as well as the specific purposes for which that refuge was established." *Id.* § 668dd(a)(3)(A).

124. The Secretary of the Interior also "shall not initiate or permit a new use of a refuge or expand, renew, or extend an existing use of a refuge, unless the Secretary has determined that the use is a compatible use." *Id.* § 668dd(d)(3(A)(i).

125. A use is "compatible" if it will not "materially interfere with or detract from the fulfillment of the mission of the [National Wildlife Refuge] System or the purposes of the refuge." *Id.* § 668ee(1).

126. Compatibility determinations must be in writing and based on the Secretary's "sound professional judgment." 50 C.F.R. § 25.12.

127. "Sound professional judgment" means a decision "that is consistent with principles of sound fish and wildlife management and administration, available science and resources, and adherence to the requirements of [the Refuge] Act and other applicable laws." 16 U.S.C. § 668ee(3).

C. Tax Act

128. For more than forty years, the State of Alaska and others sought authorization for exploration and development activities in the Coastal Plain of the Arctic Refuge, but they faced strong opposition from the local Alaska Native communities, as

well as the general public. Through ANILCA, Congress expressly prohibited such development. 16 U.S.C. § 3143.

129. In 2017, a provision inserted into the Tax Act added an "oil and gas leasing program on the Coastal Plain" as a new purpose of the Arctic Refuge and opened the Coastal Plain to oil and gas leasing and development. Tax Act § 20001(b)(2)(B)(v). This provision, however, did not modify the other purposes of the Arctic Refuge, and it did not waive, eliminate, or alter any of the procedural requirements and substantive standards applicable to the Arctic Refuge or its Coastal Plain under ANILCA, the Refuge Act, NHPA, NEPA, and other statutes. *See id.* § 20001.

130. The Tax Act requires DOI, acting through BLM, to hold two lease sales within four and seven years of the law's enactment. Each lease sale must offer at least 400,000 acres of land on the Coastal Plain and must include the areas within the Coastal Plain that have the "highest potential for the discovery of hydrocarbons." *Id.* § 20001(c)(1). The Tax Act limited surface development associated with such leasing to a maximum of 2,000 acres for oil and gas production and support facilities. *See id.* § 20001(c)(3).

D. National Historic Preservation Act

131. When Congress enacted the NHPA in 1966, it found and declared that the "historical and cultural foundation of the Nation should be preserved as a living part of our community life and development in order to give a sense of orientation to the American People." Pub. L. No. 89-665, (b), 80 Stat. 915, 915 (1966).

132. The NHPA seeks to "foster the conditions under which our modern society and our historic property can exist in productive harmony and fulfill the social, economic, and other requirements of present and future generations." 54 U.S.C. § 300101(1). The NHPA includes a "series of measures designed to encourage preservation of sites and structures of historic, architectural, or cultural significance." *Pit River Tribe v. U.S. Forest Serv.*, 469 F.3d 768, 787 (9th Cir. 2006) (internal citation omitted).

133. To achieve this "productive harmony" between "our modern society and our historic property," Congress enacted § 106 of the NHPA.

134. Section 106 provides:

> The head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department of independent federal agency having authority to license any undertaking, prior to the approval of the expenditure of any Federal funds or prior to the issuance of any license, shall take into account the effect of the undertaking on any historic property. The head of the Federal agency shall afford the [ACHP] a reasonable opportunity to comment with regard to the undertaking.

54 U.S.C. § 306108.

135. Additionally, the NHPA provides: "In carrying out its responsibilities under section 306108 of this title, a Federal agency shall consult with any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to property described in subsection (a)." *Id*. § 302706(b).

136. Subsection (a) provides: "Property of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization may be determined to be eligible for inclusion on the National Register." *Id*. § 302706(a).

137. Congress has delegated to the ACHP the exclusive authority to "promulgate regulations as it considered necessary to govern the implementation of section 306108 of this title in its entirety." *Id*. § 304108(a).

138. The ACHP has promulgated these regulations at 36 C.F.R. Part 800. These regulations are binding on all federal agencies. *See Te-Moak Tribe of W. Shoshone of Nev. v. U.S. Dep't Interior*, 608 F.3d 592, 607 (9th Cir. 2010) (citations omitted).

139. The ACHP's "regulations establish a four-step process" by which federal agencies must fulfill their NHPA § 106 obligations. *Presidio Historical Ass'n v. Presidio Trust*, No. C12-00522, 2013 WL 2435089, at *4 (N.D. Cal. June 3, 2013); *see* 36 C.F.R. §§ 800.3-800.6.

140. The goal of the NHPA § 106 process is to "identify historic properties potentially affected by the undertaking, assess its effects and seek ways to avoid, minimize or mitigate any adverse effects on historic properties." 36 C.F.R. § 800.1(a).

141. "The section 106 process seeks to accommodate historic preservation concerns with the needs of Federal undertakings." *Id.* The NHPA § 106 process is a "'stop, look, and listen' provision that requires each federal agency to consider the effects of its programs" on historic properties. *Muckleshoot Indian Tribe v. U.S. Forest Serv.*, 177 F.3d 800, 805 (9th Cir. 1999) (citation omitted).

142. Initiation. The first step of the NHPA § 106 process requires federal agencies to "determine whether the proposed Federal action is an undertaking . . . and, if so, whether it is the type of activity that has the potential to cause adverse effects on historic properties." 36 C.F.R. § 800.3(a).

143. An undertaking is any "project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of the Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license, or approval." *Id*. § 800.16(y); 54 U.S.C. § 300320.

144. An historic property is "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register." 36 C.F.R. § 800.16(l)(1); 54 U.S.C. § 300308.

145. Eligible for inclusion means "both properties formally determined as such in accordance with [36 C.F.R. Part 63] and all other properties that meet the National Register criteria." 36 C.F.R. § 800.16(l)(2); *see id.* § 60.4 (National Register criteria).

146. Historic properties "include[] properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization that meet the National Register criteria." *Id*. § 800.16(l)(1); 54 U.S.C. § 302706(a).

147. Properties of traditional religious and cultural importance are often referred to as TCPs or cultural landscapes.

148. A TCP is a property "eligible for inclusion in the National Register because of its association with cultural practices and beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continued cultural identity of the community." Patricia L. Parker & Thomas F. King, *National Register Bulletin: Guidelines for Evaluating and Documenting Traditional Cultural Properties* 1 (rev. ed. 1998).

149. A cultural landscape is a property encompassing a "geographic area including both cultural and natural resources and wildlife or domestic animals therein, associated with an historic event, activity, or person exhibiting other cultural or aesthetic values." Charles A. Birnbaum, *Preservation Briefs: Protecting Cultural Landscapes: Planning, Treatment and Management of Historic Landscapes* 1 (1994).

150. Both TCPs and cultural landscapes are among the historic properties that must be considered by federal agencies during the NHPA § 106 process. *See Muckleshoot Indian Tribe*, 177 F.3d at 807; ACHP, *Information Paper on Cultural Landscapes: Understanding and Interpreting Indigenous Places and Landscapes* 1 (Oct. 11, 2016).

151. The NHPA § 106 process must be initiated early enough in the undertaking's planning process that it can inform the development, evaluation, and selection of alternatives that avoid, minimize, or mitigate adverse effects on historic properties. *See* 36 C.F.R. §§ 800.1(c); 800.6(a); 800.8(a)(2).

152. During the first step, federal agencies must identify "consulting parties," including "any Indian tribes . . . that may attach religious and cultural significance to historic properties in the [undertaking's] area of potential effects" and initiate the consultation process. *Id*. § 800.3(f)(2).

153. <u>Identification and Evaluation</u>. Step two requires federal agencies to determine the undertaking's APE, *id.* § 800.4(a)(1), and "take the steps necessary to identify historic properties" within the APE. *Id.* § 800.4(b).

154. APE means the "geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties," and it is "influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking." *Id.* § 800.16(d).

155. Agencies must "make a reasonable and good faith effort to carry out appropriate identification efforts." *Id.* § 800.4(b)(1). Such efforts "may include background research, consultation, oral history interviews, sample field investigation, and field survey." *Id.*

156. In addition to identifying historic properties previously listed on, or determined eligible for inclusion on, the National Register, agencies must "apply the National Register criteria . . . to properties identified within the [APE] that have not been previously evaluated for National Register eligibility." *Id.* § 800.4(c)(1).

157. In applying the National Register criteria, agencies must "acknowledge that Indian tribes . . . possess special expertise in assessing the eligibility of historic properties that may possess religious and cultural significance to them." *Id.*

158. Assessment. Step three requires federal agencies to "apply the criteria of adverse effect to historic properties within the [APE]." *Id.* § 800.5(a). This means agencies must "assess the effects of the undertaking" on historic properties within the APE and "determine whether the effect will be adverse." *Mont. Wilderness Ass'n v. Connell*, 725 F.3d 988, 1005 (9th Cir. 2013) (internal quotation omitted).

159. An undertaking causes adverse effects if it "may alter, directly or indirectly, any of the characteristics of the historic property that qualify the property for inclusion in

the National Register in any manner that would diminish the integrity of the property's location, setting, materials, workmanship, feeling, or association." 36 C.F.R. § 800.5(a)(1).

160. Adverse effects do not need to physically alter an historic property to be direct. Direct "refers to the causality, and not the physicality, of the effect." Memo. from ACHP Office of Gen. Counsel to ACHP Staff, *Recent Court Decision Regarding the Meaning of "Direct" in Sections 106 and 110(f) of the National Historic Preservation Act* 2 (June 7, 2019). Accordingly, "if the effect comes from the undertaking at the same time and place with no intervening cause, it is 'direct' regardless of its specific type (e.g., whether it is visual, physical, auditory, etc.)." *Id.*; *see Nat'l Parks Conservation Ass'n v. Semonite*, 916 F.3d 1075, 1088 (D.C. Cir. 2019).

161. "Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative." 36 C.F.R. § 800.5(a)(1).

162. Examples of adverse effects include without limitation:

a. "Physical destruction of or damage to all or part of the property," *id.* § 800.5(a)(2)(i);

b. "Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance," *id.* § 800.5(a)(2)(iv);

c. "Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features," *id.* § 800.5(a)(v); and

d. "Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance," *id*. § 800.5(a)(2)(vii).

163. Resolution. Step four requires federal agencies to "develop and evaluate modifications to the undertaking that could avoid, minimize, or mitigate adverse effects on historic properties." *Id.* § 800.6(a).

164. Agency commitments to avoidance, minimization, and mitigation may be documented through a memorandum of agreement ("MOA"). *See id*. § 800.6(b). The execution and implementation of the MOA "evidences the agency official's compliance with section 106" and governs NHPA § 106 compliance for the undertaking moving forward. *Id.* § 800.6(c).

165. A PA, instead of an MOA, may be developed "for dealing with the potential adverse effects of complex projects or multiple undertakings," such as long-term or phased undertakings. *Id*. § 800.14(b)(3). A PA controls NHPA § 106 compliance for the undertaking as it is implemented and supersedes the procedures established at 36 C.F.R. Part 800.

166. Consultation. Consultation is the most important aspect of the NHPA § 106 process. The accommodation of historic preservation concerns with the needs of federal undertakings occurs "*through consultation*." *Id.* § 800.1(a) (emphasis added)).

167. In carrying out their NHPA § 106 obligations, federal agencies are required to "consult with any Indian tribe . . . that attaches religious and cultural significance to historic properties that may be affected by the undertaking." *Id*. § 800.2(c)(2)(ii); 54 U.S.C. § 302706(b).

168. Consultation is the "process of seeking, discussing, and considering the views of other participants, and, where feasible, seeking agreement with them regarding matters arising in the section 106 process." 36 C.F.R. § 800.16(f).

169. The statutory obligation to consult with Tribes requires federal agencies to grant Tribes "*special consideration* in the course of the agency's fulfillment of its consultation obligations." *Quechan Tribe of Fort Yuma Indian Reservation v. U.S. Dept. Interior*, 755 F. Supp. 2d 1104, 1109 (S.D. Cal. 2010) (emphasis in original).

170. Consultation with Tribes is "not an empty formality," *id*. at 1108, and cannot be satisfied by "mere *pro forma* recitals," "professions of good intent," and "solicitations to consult." *Id*. at 1118. Instead, consultation "should be conducted in a sensitive manner respectful of tribal sovereignty," 36 C.F.R. § 800.2(c)(2)(ii)(B); it "must recognize the government-to-government relationship," *id*. § 800.2(c)(2)(ii)(C); and it should be "conducted in a manner sensitive to the concerns and needs of the Indian tribe." *Id*.

171. Consultation "should commence early in the planning process" and must ensure that Tribes are provided a "reasonable opportunity to identify [their] concerns about historic properties, advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance, articulate

[their] views on such properties, and participate in the resolution of adverse effects." *Id.* § 800.2(c)(2)(ii)(A).

172. Federal agencies must consult with Tribes at specific points in the NHPA § 106 process about specific determinations, including without limitation the following.

a. Identification. In determining and documenting the APE, federal agencies must "gather information from any Indian tribe . . . to assist in identifying properties . . . which may be of religious and cultural significance to them and may be eligible for the National Register," *id.* § 800.4(a)(4). Federal agencies must "take the steps necessary to identify historic properties within the [APE]" "in consultation with . . . any Indian tribe . . . that might attach religious and cultural significance to properties within the [APE]." *Id.* § 800.4(b).

b. Evaluation. Federal agencies must apply the National Register criteria to previously unidentified or unevaluated historic properties "[i]n consultation with . . . any Indian tribe . . . that attaches religious and cultural significance to identified properties." *Id.* § 800.4(c)(1). In applying the National Register criteria, federal agencies must "acknowledge that Indian tribes . . . possess special expertise in assessing the eligibility of historic properties that may possess religious and cultural significance to them." *Id.*

c. Assessment. Federal agencies must apply the criteria of adverse effect to historic properties within the APE "[i]n consultation with . . . any Indian tribe . . . that attaches religious and cultural significance to identified historic properties." *Id.* § 800.5(a).

d. Resolution. Federal agencies "shall consult with . . . Indian tribes . . . to develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize, or mitigate adverse effects on historic properties." *Id.* § 800.6(a).

173. Public Participation. ACHP regulations recognize that the "views of the public are essential to informed Federal decisionmaking" concerning historic properties. *Id.* § 800.2(d)(1). Accordingly, federal agencies "shall seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties, the likely interest of the public in the effects on historic properties . . . and the relationship of the Federal involvement to the undertaking." *Id.*

174. Federal agencies must "provide the public with information about an undertaking and its effects on historic properties and seek public comment and input." *Id.* § 800.2(d)(2); *see Winnemem Wintu Tribe v. U.S. Dep't Interior*, No. CIV. 2:09-cv-01072-FCD EFB, 2009 WL 10693214, at *7 (E.D. Cal. Sept. 15, 2009); *Mont. Wilderness Ass'n v. Fry*, 310 F. Supp. 2d 1127, 1151 (D. Mont. 2004).

175. The obligation to involve the public applies at every step of the NHPA § 106 process, including without limitation the following.

a. Initiation. During the first step, federal agencies "shall plan for involving the public in the section 106 process[and] . . . identify the appropriate points for seeking public input and for notifying the public of proposed actions." *Id.* § 800.3(e).

b. Identification and Evaluation. During the second step, federal agencies must make "available for public inspection prior to approving the undertaking"

documentation that no historic properties are present within the APE or that the undertaking will not affect historic properties present within the APE." *Id.* § 800.4(d)(1).

c. Assessment. During the third step, federal agencies "shall consider any views concerning [adverse] effects that have been provided by . . . the public." *Id.* § 800.5(a).

d. Resolution. During the fourth step, federal agencies "shall make information available to the public," "provide an opportunity for members of the public to express their views on resolving adverse effects of the undertaking," and "use appropriate mechanisms . . . to ensure that the public's views are considered." *Id.* § 800.6(a)(4).

E. National Environmental Policy Act

176. NEPA requires federal agencies to prepare an EIS before approving any "major Federal action[] significantly affecting the quality of the human environment." 42 U.S.C. § 4332(2)(C). Regulations promulgated by the Council of Environmental Quality ("CEQ") to implement NEPA are set forth at 40 C.F.R. §§ 1500–1508, and they are binding on all federal agencies.[4] *See* 40 C.F.R. § 1500.3. Federal agencies "shall integrate the NEPA process with other planning at the earliest possible time." *Id.* § 1501.2; *accord* 36 C.F.R. § 800.8(a).

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[4] CEQ has recently revised its regulations implementing NEPA, and the changes take effect September 14, 2020. *See* 85 Fed. Reg. 43,304 (July 16, 2020). CEQ's prior regulations govern Defendants' decision-making in this matter. All references in this complaint are to the 1978 CEQ regulations as they existed prior to September 14, 2020.

177. An agency preparing an EIS "may not 'segment' its analysis so as to conceal the environmental significance of the project or projects." *Hammond v. Norton*, 370 F. Supp. 2d 226, 244 (D.D.C. 2005) (internal quotation omitted). "Connected" actions should be considered together in the same EIS. 40 C.F.R. § 1508.25(a). Actions are connected if they: (a) "[a]utomatically trigger other actions which may require environmental impact statements;" (b) "[c]annot or will not proceed unless other actions are taken previously or simultaneously;" or (c) "[a]re interdependent parts of a larger action and depend on the larger action for their justification." *Id*. § 1508.25(a)(1).

178. Courts apply an "independent utility" test to determine "whether multiple actions are so connected as to mandate consideration in a single EIS." *Sierra Club v. U.S. Bureau Land Mgmt.*, 786 F.3d 1219, 1226 (9th Cir. 2015). Relevant factors include without limitation: (a) whether each project would have taken place without the other; (b) whether projects have been separated from each other to circumvent full NEPA review or downplay impacts; (c) whether each project was intended to stand alone; (d) whether one project would be irrational or unwise without another; and (e) whether a project will render a subsequent project a *fait accompli* or otherwise tie the agency's hands.

179. NEPA requires federal agencies to take a "hard look" at the environmental consequences of their actions in an EIS. *Metcalf v. Daley*, 214 F.3d 1135, 1141 (9th Cir. 2000). The effects that must be analyzed in the EIS include without limitation impacts on natural resources, ecosystems, cultural resources, social systems, and health. 40 C.F.R. § 1508.8(b); *see id.* § 1508.14. An EIS must:

a. "Rigorously explore and objectively evaluate all reasonable alternatives," *id*. § 1502.14(a);

b. Analyze the "environmental effects of alternatives including the proposed action," *id*. § 1502.16(d);

c. Analyze "[d]irect effects and their significance" and "[i]ndirect effects and their significance," *id*. § 1502.16(a)–(b); *see id.* § 1508.8;

d. Analyze the "cumulative impact" on the environment resulting from the "incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency . . . or person undertakes such other actions," *id*. § 1508.7; *see id.* §§ 1502.16, 1508.8; and

e. Analyze the "[m]eans to mitigate adverse environmental impacts," *id*. § 1502.16(h); *see id.* §§ 1502.14(f), 1508.20.

180. An agency "[s]hall prepare supplements to either draft or final environmental impact statements if: (i) The agency makes substantial changes in the proposed action that are relevant to environmental concerns; or (ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." *Id*. § 1502.9(c)(1).

181. NEPA seeks to ensure the use of high-quality scientific information and mandates scientific integrity. *See id*. §§ 1500.1(b), 1502.24. In the absence of adequate baseline data, "there is simply no way to determine what effect the proposed [action] will have on the environment and, consequently, no way to comply with NEPA." *Half Moon Bay Fisherman's Mktg. Ass'n v. Carlucci*, 857 F.2d 505, 510 (9th Cir. 1988). Where

"incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement." 40 C.F.R. § 1502.22(a).

182. Overall, the analysis in the EIS must provide a "clear basis for choice among options by the decisionmaker and the public." *Id*. § 1502.14.

F. Administrative Procedure Act

183. Under the APA, the "reviewing court shall . . . compel agency action unlawfully withheld or unreasonably delayed . . . [and] hold unlawful and set aside agency action, findings, and conclusions found to be . . . arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law" or "without observance of procedure required by law." 5 U.S.C. § 706(1), (2)(A), (D).

184. An agency "must examine the relevant data and articulate a satisfactory explanation for its action, including a rational connection between the facts found and the choice made." *Encino Motorcars, LLC v. Navarro*, 136 S. Ct. 2117, 2125 (2016) (internal quotation omitted).

185. An agency action, finding, or conclusion is arbitrary and capricious if the agency has "relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise." *Ctr. for*

Biological Diversity v. Zinke, 900 F.3d 1053,1067 (9th Cir. 2018) (internal quotation omitted).

186. A federal agency's failure to consult with a Tribe during the NHPA § 106 process may be challenged under Section 706(1) of the APA as a failure to act. *See Grand Canyon Trust v. Williams*, 38 F. Supp. 3d 1073, 1083 (D. Ariz. 2014).

VI. FIRST CLAIM

Violations of the Refuge Act and ANILCA: Failure to Make a Compatibility Determination and Failure to Approve a Leasing Program Compatible with the Purposes of and Consistent with the Management Standards Applicable to the Arctic Refuge

187. Plaintiffs repeat and incorporate by reference the allegations set forth in paragraphs 1 through 186 above.

188. Under the Refuge Act, the Arctic Refuge and other refuges "shall be managed to fulfill the mission of the System, as well as the specific purposes for which that refuge was established." 16 U.S.C. § 668dd(a)(3)(A).

189. The Secretary of the Interior must "provide for the conservation of fish, wildlife, and plants, and their habitats within the System;" "ensure that the biological integrity, diversity, and environmental health of the System are maintained;" and manage the System in a manner that "contribute[s] to the conservation of the ecosystems of the United States." *Id.* § 668dd(a)(4).

190. The mission of the National Wildlife Refuge System is to "administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of fish, wildlife, and plant resources and their habitats within the

United States for the benefit of present and future generations of Americans." *Id.* § 668(d)(a)(2).

191. Under ANILCA, the Arctic Refuge and other refuges "shall be administered" by the Secretary of the Interior "in accordance with the laws governing the administration of units of the National Wildlife Refuge System and [ANILCA]." ANILCA § 304(a), Pub. L. No. 96-487, 94 Stat. 2371.

192. Conservation system units established under ANILCA, including the Arctic Refuge, are expected to be managed "in accordance with recognized scientific principles and the purposes for which each conservation system unit is established, designated, or expanded." 16 U.S.C. § 3101(c); *see id.* § 3112(1).

193. The original and ANILCA purposes of the Arctic Refuge emphasize the conservation of wildlife, habitat, and ecosystems, the continuation of traditional subsistence-based ways of life, and the protection of historic properties. *See* PLO 2214 (Dec. 6, 1960); ANILCA § 303(2)(B), Pub. L. No. 96-487, 94 Stat. 2371; 16 U.S.C. §§ 3101, 3111, 3112.

194. Congress has also declared it to be federal policy that the "utilization of the public lands in Alaska is to cause the least adverse impact possible on rural residents who depend upon subsistence uses of the resources of such lands." 16 U.S.C. § 3112(1).

195. The Leasing Program is a new use of the Arctic Refuge that required a compatibility determination.

196. Defendants have failed to make a determination that the Leasing Program is compatible with the other purposes of the Arctic Refuge.

197. Defendants have approved an oil and gas leasing program for the Coastal Plain of the Arctic Refuge that maximizes industrial development opportunities and will cause grave harm to subsistence, wildlife, habitat, ecosystems, historic properties, cultural resources, and public health.

198. In doing so, Defendants failed to meaningfully consider and take into account relevant factors, including but not limited to the original Refuge purposes set forth in PLO 2214.

199. Defendants have failed to demonstrate that their proposed mitigation measures are sufficient to reduce adverse impacts to levels compatible with the purposes of and consistent with the management standards governing the Arctic Refuge.

200. To the extent Defendants have addressed compatibility with Refuge purposes or consistency with management standards, Defendants have failed to provide a rational explanation to support a compatibility determination, consistency with applicable management standards, or their decision to approve the Leasing Program.

201. Defendants' approval of the Leasing Program is an exercise of their authority to manage the Arctic Refuge, and it is subject to the requirements of the Refuge Act and ANILCA.

202. Defendants' approval of the Leasing Program is also a final agency action subject to the standards for federal agency decision-making in the APA. 5 U.S.C. § 706(2).

203. For the foregoing reasons and others, Defendants' decision to approve the Leasing Program despite its incompatibility with the purposes of the Arctic Refuge and

its inconsistency with applicable management standards violates ANILCA § 304(a), Pub. L. No. 96-487, 94 Stat. 2371, 16 U.S.C. § 3114, the Refuge Act, 16 U.S.C. § 668dd, and their implementing regulations, and it is arbitrary, capricious, an abuse of discretion, contrary to law, and without observance of the procedure required by law under the APA. 5 U.S.C. § 706(2).

VII. SECOND CLAIM

Violations of ANILCA § 810: Failure to Comply with Procedural and Substantive Requirements for Subsistence Evaluation and Protection

204. Plaintiffs repeat and incorporate by reference the allegations set forth in paragraphs 1 through 203 above.

205. ANILCA is meant to "enabl[e] rural residents who have personal knowledge of local conditions and requirements to have a meaningful role in the management of fish and wildlife and of subsistence uses on the public lands in Alaska." 16 U.S.C. § 3111(5).

206. Federal agencies are prohibited from authorizing any "withdrawal, reservation, lease, permit, or other use, occupancy or disposition of such lands which would significantly restrict subsistence uses" unless and until the relevant agency first completes the evaluations and makes the findings specified in ANILCA § 810. *Id.*

207. Under ANILCA § 810, federal agencies "shall evaluate the effect" of any proposed "use, occupancy, or disposition" of public lands on "subsistence uses and needs, the availability of other lands for the purposes sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy, or disposition of public

lands needed for subsistence purposes." *Id*. § 3120(a). If, after completing the Tier 1 evaluation, the agency determines that the proposed activity "may significantly restrict" subsistence uses, the agency must proceed to Tier 2. *Kunaknana*, 742 F.2d at 1151.

208. In Tier 2, the agency must provide notice, conduct hearings, and make a series of detailed findings and determinations demonstrating compliance with ANILCA's substantive standards, including without limitation determinations that (a) the restriction of subsistence uses is necessary, consistent with sound management principles for the utilization of the public lands; (b) the proposed activity will involve the minimal amount of public lands necessary; and (c) reasonable steps will be taken to minimize adverse impacts on subsistence uses. *See* 16 U.S.C. § 3120(a).

209. Only after a federal agency has complied with ANILCA's requirements regarding subsistence is it authorized to "manage or dispose of public lands" under its jurisdiction for other lawful uses or purposes. *Id.* § 3120(d).

210. Defendants applied an erroneous and unlawful threshold at the outset of the Tier 1 evaluation based on close proximity and heavy subsistence use.

211. Defendants failed to conduct a Tier 1 evaluation for all nine Gwich'in subsistence communities they identified as relying on the caribou that will be affected by the Leasing Program.

212. Defendants prepared a deeply flawed and inadequate Tier 1 evaluation for only four subsistence communities: Arctic Village, Venetie, Kaktovik, and Nuiqsut.

213. Defendants only considered alternatives maximizing oil and gas development and failed to consider an adequate range of alternatives that would "reduce

or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes." 16 U.S.C. § 3120(a).

214. Defendants failed to adequately evaluate the direct, indirect, and cumulative impacts of the Leasing Program on subsistence.

215. Defendants applied a standard higher than the applicable "may significantly restrict" subsistence uses standard in determining whether to proceed to Tier 2.

216. Defendants made an erroneous, unfounded, and unlawful determination that the Leasing Program would not significantly restrict subsistence uses with respect to Arctic Village, Venetie, and seven other Gwich'in subsistence communities.

217. Defendants failed to conduct any Tier 2 analysis, hold any formal subsistence hearings, or make any formal findings pursuant to ANILCA § 810(a)(3) in connection with Arctic Village, Venetie, and seven other Gwich'in subsistence communities.

218. Defendants' approval of the Leasing Program is a federal authorization subject to ANILCA § 810 requirements. Defendants' approval of the Leasing Program is also a final agency action subject to the standards for federal agency decision-making in the APA. 5 U.S.C. § 706(2).

219. For the foregoing reasons and others, Defendants' approval of the Leasing Program without having conducted a valid ANILCA § 810 process violates ANILCA and its implementing regulations, and it is arbitrary, capricious, an abuse of discretion, contrary to law, and without observance of the procedure required by law under the APA. 5 U.S.C. § 706(2).

VIII. THIRD CLAIM

Violations of NHPA § 106: Failure to Comply with Procedural and Substantive Requirements for Historic Property Evaluation and Protection

220. Plaintiffs repeat and incorporate by reference the allegations set forth in paragraphs 1 through 219 above.

221. Before expending any federal funds on or issuing any license for a proposed "undertaking," NHPA § 106 provides that federal agencies "shall take into account the effect of the undertaking on any historic property" and "shall afford" the ACHP a "reasonable opportunity to comment with regard to the undertaking." 54 U.S.C. § 306108.

222. ACHP regulations establish a four-step process for complying with NHPA § 106: (1) initiation; (2) identification and evaluation; (3) assessment; and (4) resolution. *See* 36 C.F.R. §§ 800.3–800.6.

223. In carrying out their NHPA § 106 obligations, federal agencies "shall consult with any Indian tribe . . . that attaches religious and cultural significance to historic property that may be affected by an undertaking." *Id.* § 800.2(c)(2)(ii); 54 U.S.C. § 302706(b).

224. In the NHPA § 106 process, federal agencies must give Tribes special consideration, recognizing the government-to-government relationship and taking into account Tribes' special expertise. *See* 36 C.F.R. § 800.2(c)(2)(ii)(A)-(C).

225. Federal agency consultation with Tribes "should commence early in the planning process," and each Tribe must have a reasonable opportunity to "identify its

concerns about historic properties, advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance, articulate its views on such properties, and participate in the resolution of adverse effects." *Id.* § 800.2(c)(2)(ii)(A).

226. Federal agencies must consult with Tribes at many points about specific determinations, including but not limited to information-gathering, identification and evaluation of historic properties, alternatives development, assessment of effects, development and consideration of alternatives and modifications to the undertaking that avoid, minimize, or mitigate adverse effects, and development and implementation of the MOA or PA. *See id*. §§ 800.3–800.6.

227. Federal agencies must also provide the public with information and documentation regarding the undertaking and adverse effects, and they must seek and consider the views of the public at many points throughout the NHPA § 106 process. *See id*. §§ 800.2–800.6, 800.11.

228. Defendants failed to initiate the NHPA § 106 process early enough in the development of the Leasing Program for it to inform the development, evaluation, and selection of Leasing Program alternatives evaluated in the NEPA process and the selection of the final Leasing Program alternative in the ROD. Defendants only considered alternatives maximizing oil and gas development and failed to develop and consider an adequate range of alternatives that would avoid, minimize, or mitigate adverse effects on historic properties. *See* 36 C.F.R. §§ 800.1(c); 800.6(a); 800.8(a)(2).

229. Defendants failed to engage in adequate and meaningful consultation with Plaintiffs and, on information and belief, other consulting parties in the NHPA § 106 process, including without limitation in identifying and evaluating historic properties for National Register-eligibility, assessing the Leasing Program's effects on historic properties, developing and evaluating alternatives and modifications to the Leasing Program that would avoid, minimize, or mitigate adverse effects on historic properties, and in developing the PA.

230. Defendants improperly limited the scope of the NHPA § 106 process by failing to take into account the Leasing Program's adverse effects on landscape-level historic properties of traditional religious and cultural significance to Plaintiffs and, on information and belief, other consulting parties, such as the Sacred Place Where Life Begins.

231. Defendants failed to engage the public in the NHPA § 106 process by failing to provide the public with adequate opportunities for participating, including without limitation opportunities to comment on the NHPA § 106 process, the identification and evaluation of historic properties, and the assessment and resolution of adverse effects.

232. The Leasing Program is an undertaking subject to NHPA § 106 requirements. Defendants' approval of the Leasing Program is a final agency action subject to the standards for federal agency decision-making in the APA. 5 U.S.C. § 706.

233. For the foregoing reasons and others, Defendants' approval of the Leasing Program without having conducted a valid NHPA § 106 process violates the NHPA and

its implementing regulations, and it is arbitrary, capricious, an abuse of discretion, contrary to law, and without observance of the procedure required by law under the APA. *Id.* § 706(2)(A), (C).

234. The Court must compel Defendants to engage in the adequate and meaningful consultation that they unlawfully withheld. *Id*. § 706(1).

IX. FOURTH CLAIM

Violations of the Tax Act: Failure to Properly Interpret and Implement Surface Development Limitation

235. Plaintiffs repeat and incorporate by reference the allegations set forth in paragraphs 1 through 234 above.

236. The Tax Act provides that the Secretary of the Interior "shall authorize up to 2,000 surface acres of Federal land on the Coastal Plain to be covered by production and support facilities (including airstrips and any areas covered by gravel berms or piers for support of pipelines) during the term of the leases under the oil and gas program under this section." Pub. L. No. 115-97, § 20001(c)(3).

237. Defendants erroneously and unlawfully interpret this provision to mean that they cannot authorize surface development in an amount less than 2,000 acres in connection with the Leasing Program.

238. Defendants erroneously and unlawfully interpret this provision as mandating that facilities counting toward the 2,000 acres must be both "production" *and* "support facilities."

239. Defendants erroneously and unlawfully interpret this provision as allowing them to exclude airstrips, roads, pads, gravel pits and stockpiles, barge landing and storage facilities, and other facilities from the 2,000 acres.

240. Defendants erroneously and unlawfully interpret this provision as excluding rights-of-way and easements from the 2,000-acre limitation.

241. These interpretations and others violate the plain meaning and intent of the 2,000-acre limitation in the Tax Act.

242. Defendants developed and approved the Leasing Program in reliance on these erroneous and unlawful statutory interpretations.

243. Defendants have rejected proposed alternatives on the basis of these erroneous and unlawful interpretations.

244. Defendants' erroneous and unlawful interpretations would allow surface infrastructure associated with the Leasing Program to cover more than 2,000 acres, in violation of the Tax Act.

245. Defendants' approval of the Leasing Program is a final agency action subject to the standards for federal agency decision-making in the APA. 5 U.S.C. § 706(2).

246. For the foregoing reasons and others, Defendants' approval of the Leasing Program in reliance on erroneous and unlawful legal interpretations violates the Tax Act § 20001(c)(3), and it is arbitrary, capricious, an abuse of discretion, contrary to law, and without observance of the procedure required by law under the APA. 5 U.S.C. § 706(2).

X. FIFTH CLAIM

Violations of NEPA

1. Improper Segmentation of the NEPA Review for the Leasing Program from the NEPA Review for Pre-Leasing Seismic Activities

247. Plaintiffs repeat and incorporate by reference the allegations set forth in paragraphs 1 through 246 above.

248. NEPA requires federal agencies to prepare an EIS before approving any "major Federal action[] significantly affecting the quality of the human environment." 42 U.S.C. § 4332(2)(C).

249. "Connected" actions should be considered together in the same EIS. 40 C.F.R. § 1508.25(a). It is mandatory for multiple actions to be considered together where one or more of them lack independent utility or if their separation reflects an intent to circumvent a full and meaningful NEPA review.

250. In spring 2018, SAExploration, Inc., submitted an application to Defendants seeking authorization for large-scale and intensive pre-leasing seismic survey activities throughout the Coastal Plain of the Arctic Refuge.

251. The results of such pre-leasing seismic surveying activities are intended to help inform the Leasing Program.

252. Defendants excluded pre-leasing seismic surveying activities from the NEPA review for the Leasing Program. Instead, Defendants initiated a separate NEPA review for these activities, and this process remained in the early stages of scoping at the time the Final EIS for the Leasing Program was issued. As such, the final information

and analyses from the pre-leasing seismic NEPA review were not available and could not be incorporated into or relied on in the Final EIS.

253. In the absence of the Leasing Program, the pre-leasing seismic surveying activities would have no independent utility.

254. Plaintiffs are informed and believe that the NEPA review for the pre-leasing seismic surveying activities and the NEPA review for the Leasing Program have been improperly separated from each other as a means to circumvent full environmental review and/or to downplay the combined impacts of the two actions.

255. The Leasing Program is a major federal action significantly affecting the quality of the human environment, and it is therefore subject to the requirements of NEPA and its implementing regulations.

256. Defendants' issuance of the Final EIS and their approval of the Leasing Program are each final agency actions subject to the standards for federal agency decision-making in the APA. 5 U.S.C. § 706(2).

257. For the foregoing reasons and others, Defendants' issuance of a Final EIS that excludes pre-leasing seismic surveying activities and their approval of the Leasing Program without having analyzed the impacts of pre-leasing seismic surveying activities constitute unlawful segmentation in violation of NEPA and its implementing regulations. These decisions are also arbitrary, capricious, an abuse of discretion, contrary to law, and without observance of the procedure required by law under the APA, 5 U.S.C. § 706(2).

2. Failure to Consider a Reasonable Range of Alternatives.

258. Plaintiffs repeat and incorporate by reference the allegations set forth in paragraphs 1 through 257 above.

259. An EIS must "[r]igorously explore and objectively evaluate all reasonable alternatives." 40 C.F.R. § 1502.14(a).

260. The action alternatives in the Final EIS are very similar to each other and heavily weighted toward maximizing oil and gas development.

261. Each of the action alternatives: (a) allows seismic surveying to occur throughout the entire program area, including areas closed to leasing; (b) allows leasing in the majority or entirety of the program area; (c) allows for surface development on at least 2,000 acres; (d) fails to exclude key lands from leasing, such as caribou calving and post-calving areas; and (e) is subject to mitigation measures which have not been analyzed or shown to be effective and are broadly subject to waivers, exemptions, and modifications.

262. None of the action alternatives in the Final EIS maximize protection for subsistence, wildlife, habitat, ecosystems, historic properties, cultural landscapes, TCPs, and/or public health.

263. Due to the flawed ANILCA § 810 process, the action alternatives in the Final EIS reflect inadequate Tier 1 analyses and do not reflect any Tier 2 formal subsistence hearings or findings relating to Arctic Village, Venetie, or any other Gwich'in subsistence community. As a consequence, Defendants failed to adequately

consider which areas not to offer for leasing to reduce impacts on subsistence, and the alternatives do not include sufficient features designed to reduce impacts on subsistence.

264. Due to the delayed, deferred, and inadequate NHPA § 106 process, the action alternatives in the Final EIS do not reflect the required consultations and evaluations with respect to historic properties, including cultural landscapes such as the Sacred Place Where Life Begins, and do not include features designed to reduce adverse impacts on them.

265. Defendants' erroneous and unlawful interpretations of the Tax Act have skewed the alternatives toward maximizing industrial development by: (a) requiring all the action alternatives to provide for at least 2,000 acres of surface development; (b) mandating that facilities counting toward the 2,000 acres must be both "production" *and* "support facilities"; (c) allowing the exclusion of airstrips, roads, pads, gravel pits and stockpiles, barge landing and storage facilities, and other facilities from the 2,000 acres; and (d) excluding rights-of-way and easements from the 2,000-acre limitation.

266. The Leasing Program is a major federal action significantly affecting the quality of the human environment, and it is therefore subject to the requirements of NEPA and its implementing regulations.

267. Defendants' issuance of the Final EIS and their approval of the Leasing Program are each final agency actions subject to the standards for federal agency decision-making in the APA. 5 U.S.C. § 706(2).

268. For the foregoing reasons and others, Defendants' issuance of a Final EIS that fails to evaluate a reasonable range of alternatives and their approval of the Leasing

Program without having analyzed a reasonable range of alternatives violate NEPA and its implementing regulations. These decisions are also arbitrary, capricious, an abuse of discretion, contrary to law, and without observance of the procedure required by law under the APA. 5 U.S.C. § 706(2).

3. Failure to Properly Analyze Direct and Indirect Effects, Cumulative Impacts, and Mitigation Measures

269. Plaintiffs repeat and incorporate by reference the allegations set forth in paragraphs 1 through 268 above.

270. NEPA requires federal agencies to take a hard look at the environmental consequences of their actions.

271. An EIS must analyze the environmental effects of the alternatives, including without limitation direct and indirect effects, cumulative impact, and mitigation measures. *See* 40 C.F.R. §§ 1502.14, 1502.16, 1508.7, 1508.8, 1508.20.

272. The effects that must be analyzed in the EIS include without limitation impacts on natural resources, ecosystems, subsistence, cultural resources, social systems, and health. *See id*. §§ 1508.8, 1508.14.

273. NEPA seeks to ensure the use of high-quality scientific information and mandates scientific integrity. *See id.* §§ 1500.1(b), 1502.24.

274. Overall, the analysis in the EIS must provide a "clear basis for choice among options by the decisionmaker and the public." *Id.* § 1502.14.

275. Throughout the Final EIS, Defendants' evaluation of impacts was based on development scenarios utilizing unduly low oil production estimates ranging from about

2.4 BBO for Alternatives D1 and D2 to roughly 2.7 BBO for Alternative C and 3.0 BBO for Alternative B. Defendants have erroneously characterized these oil production estimates as "optimistic high-production" levels used to "minimize the chance that the resultant impact analysis will understate potential impacts." Final EIS, at B-3. Truly high-end estimates, however, would be in the range of approximately 10.0 BBO or greater as supported by DOI analyses. The corresponding extent of oil and gas facilities and operations evaluated in the action alternatives would be approximately triple what is described in the Final EIS. Defendants' use of unduly low oil production estimates thus resulted in an understatement of impacts in the Final EIS. Defendants also failed to properly develop and evaluate mitigation measures addressing the impacts associated with the full scope of potential oil and gas development.

276. Defendants' belated, erroneous, and unlawful interpretations of the Tax Act are different from the assumptions underlying the RFD that the analysis of environmental consequences was based on, and this renders the Final EIS's evaluation of direct, indirect, and cumulative impacts and mitigation measures inaccurate and inadequate as a basis for informed decision-making.

277. Defendants improperly excluded pre-leasing seismic surveying activities from the NEPA review for the Leasing Program, rather than considering these closely interrelated activities as part of the same NEPA review process. As a result, Defendants failed to acknowledge and properly evaluate the combined impacts of these activities, and this led to an understatement of impacts in the Final EIS. Defendants also failed to

properly develop and evaluate mitigation measures addressing the impacts associated with the full scope of leasing-related activities.

278. The analyses of direct and indirect effects, cumulative impacts, and mitigation measures relating to subsistence, sociocultural systems, environmental justice, public health, cultural resources, caribou, migratory waterfowl, vegetation, tundra, wetlands, soils, permafrost, sand, and gravel are flawed, inadequate, and unlawful in numerous ways, as described above.

279. In an effort to address the many flaws, inadequacies, and gaps in the Final EIS, Defendants improperly relied on, purported to tier to, and/or attempted to incorporate by reference, with little or no accompanying summary or explanation, numerous other documents, including but not limited to non-NEPA documents, non-federal documents, future or incomplete NEPA reviews, and NEPA reviews concerning unrelated projects and activities.

280. The Leasing Program is a major federal action significantly affecting the quality of the human environment, and it is therefore subject to the requirements of NEPA and its implementing regulations.

281. Defendants' issuance of the Final EIS and their approval of the Leasing Program are each final agency actions subject to the standards for federal agency decision-making in the APA. 5 U.S.C. § 706(2).

282. For the foregoing reasons and others, Defendants' issuance of the Final EIS and their approval of the Leasing Program without having properly analyzed direct and indirect effects, cumulative impacts, and mitigation measures violate NEPA and its

implementing regulations. These decisions are also arbitrary, capricious, an abuse of discretion, contrary to law, and without observance of the procedure required by law under the APA. 5 U.S.C. § 706(2).

4. Failure to Prepare a Supplemental EIS

283. Plaintiffs repeat and incorporate by reference the allegations set forth in paragraphs 1 through 282 above.

284. CEQ regulations implementing NEPA require federal agencies to prepare a supplemental EIS whenever the agency "makes substantial changes in the proposed action that are relevant to environmental concerns" or there are "significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." 40 C.F.R. § 1502.9(c)(1).

285. Defendants' abandonment of the rationale and key assumptions underlying the RFD and the entire analysis of environmental consequences in the EIS, together with their belated assertion of differing legal interpretations of the Tax Act, constitute "substantial changes in the proposed action that are relevant to environmental concerns" as well as "significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts."

286. Defendants were required to prepare a supplemental EIS, and their failure to do so violates 40 C.F.R. § 1502.9(c)(1).

287. The Leasing Program is a major federal action significantly affecting the quality of the human environment, and it is therefore subject to the requirements of NEPA and its implementing regulations.

288. Defendants' issuance of the Final EIS and their approval of the Leasing Program are each final agency actions subject to the standards for federal agency decision-making in the APA. 5 U.S.C. § 706(2).

289. For the foregoing reasons and others, Defendants' failure to prepare a supplemental EIS and their approval of the Leasing Program based on a faulty EIS that depends on legal assumptions no longer in effect without the benefit of a revised analysis of impacts in a supplemental EIS violate NEPA and its implementing regulations, and these decisions are also arbitrary, capricious, an abuse of discretion, contrary to law, and without observance of the procedure required by law under the APA. 5 U.S.C. § 706(2).

XI. REQUEST FOR RELIEF

WHEREFORE, Plaintiffs respectfully request that this Court grant the following relief:

A. Enter a declaratory judgment that Defendants' actions, findings, conclusions, decisions, and failures to act pertaining to the Final EIS, ANILCA § 810 Final Evaluation, NHPA § 106 process, NHPA § 106 PA, and ROD approving the Leasing Program violate ANILCA, the Refuge Act, the Tax Act, NHPA, and NEPA, and that these actions, findings, conclusions, decisions, and failures to act are arbitrary, capricious, an abuse of discretion, not in accordance with law, and without observance of procedure as required by law;

B. Vacate and set aside the Final EIS, ANILCA § 810 Final Evaluation, NHPA § 106 PA, and ROD approving the Leasing Program, and any decisions to lease or actual leases;

C. Enter appropriate injunctive and mandamus relief;

D. Award Plaintiffs all reasonable attorney fees and costs as authorized by law, including without limitation the NHPA, 54 U.S.C. § 307105, and the Equal Access to Justice Act, 28 U.S.C. § 2412; and

E. Grant such other relief as this Court deems just and proper.

DATED: September 9, 2020

Respectfully submitted,

NATIVE AMERICAN RIGHTS FUND

By: *s/ Matthew N. Newman*
s/ Wesley James Furlong
s/ Megan R. Condon
Matthew N. Newman (AK Bar No. 1305023)
Wesley James Furlong (AK Bar No. 1611108)
Megan R. Condon (AK Bar No. 1810096)

Lead Counsel for Plaintiffs Native Village of Venetie Tribal Government, Arctic Village Council, and Venetie Village Council

BESSENYEY & VAN TUYN, LLC

By: *s/ Teresa B. Clemmer*
Teresa B. Clemmer (AK Bar No. 0111059)
Peter H. Van Tuyn (AK Bar No. 8911086)
Karen E. Schmidt (AK Bar No. 1211113)

Co-Counsel for Plaintiffs Native Village of Venetie Tribal Government, Arctic Village Council, and Venetie Village Council

U.S. Department of the Interior
Bureau of Land Management

Coastal Plain Oil and Gas Leasing Program Record of Decision

August 2020

Prepared by:

US Department of the Interior
Bureau of Land Management

In cooperation with:

US Fish and Wildlife Service
US Environmental Protection Agency
State of Alaska
North Slope Borough
Arctic Village Council
Native Village of Kaktovik
Native Village of Venetie Tribal Government
Venetie Village Council

Cover Photo: Northward view in central coastal plain area near the Sadlerochit River showing gently rolling topography typical of the area. Natural oil indications are visible of an oil seep that occurs along the coast (Barter Island). Photo by David Houseknecht (USGS).

DOI-BLM-AK-0000-2018-0002-EIS

BLM/AK/PL-20/003+1610+930

Record of Decision

I hereby adopt Alternative B of the Coastal Plain Oil and Gas Leasing Program Environmental Impact Statement as described further and modified herein, and subject to the lease stipulations, required operating procedures, and lease notices developed by the Bureau of Land Management for that alternative, as reflected in this Record of Decision. My approval of this Decision constitutes the final decision of the Department of the Interior and, in accordance with the regulations at 43 CFR § 4.410(a)(3), is not subject to appeal under Departmental regulations at 43 CFR Part 4.

Approved by:

David L. Bernhardt
Secretary of the Interior

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Record of Decision

SUMMARY

On December 22, 2017, after decades of congressional consideration regarding whether oil and gas development should take place on any area of the 1.56 million-acre Coastal Plain within the 19.3 million-acre Arctic National Wildlife Refuge (ANWR), Congress looked to the oil and gas potential of this area for needed federal revenues and enacted Section 20001 of the Tax Cuts and Jobs Act (Public Law [PL] 115-97). The law was considered pursuant to rules contained in the Congressional Budget Act of 1974 (2 United States Code (U.S.C.) 644) that limited the scope of the text to matters necessary for establishing an oil and gas program that would generate revenue for the treasury.

Section 20001(b)(1) of PL 115-97 lifted a prior prohibition on oil and gas leasing and development in the ANWR that had been established by Section 1003 of the Alaska National Interest Lands Conservation Act (ANILCA), as that prohibition pertained to the Coastal Plain. Section 20001(b)(2)(A) of PL 115-97 went further to *require* the Secretary of the Interior (Secretary), acting through the Bureau of Land Management (BLM)[1], to establish and administer a competitive oil and gas program for the "leasing, development, production, and transportation of oil and gas in and from the Coastal Plain." The Secretary is required to manage the oil and gas program on the Coastal Plain "in a manner similar to the administration of lease sales under the Naval Petroleum Reserves Production Act of 1976 (42 U.S.C. 6501 et. seq.) (including regulations)."

In addition to directing the establishment of a new competitive oil and gas program in the Coastal Plain, the statute also includes additional mandates to the Secretary, acting through the BLM, to expedite and provide certainty toward establishment and development of the program in order to meet the statute's revenue-generating purpose. First, Section 20001(c)(1) requires that at least two lease sales be held by December 22, 2024, including the first by December 22, 2021, and that each sale offer for lease at least 400,000 acres of the highest hydrocarbon potential lands within the Coastal Plain. Section 20001(c)(2) requires that the BLM issue any rights-of-way or easements across the Coastal Plain "for the exploration, development, production, or transportation" necessary to carry out the oil and gas program. Finally, Section 20001(c)(3) requires the Secretary, acting through the BLM, to authorize up to 2,000 surface acres of federal land on the Coastal Plain to be covered by production and support facilities during the term of the leases under the oil and gas program.

In summary, exercising its plenary authority over the management of federal lands, Congress's enactment of Section 20001 of PL 115-97 decided the question of whether activities related to leasing, exploration, development, production and transportation of oil and gas would take place on the Coastal Plain. In doing so, Congress, among other things: (1) directed the Secretary, acting through the BLM, to "establish and administer a competitive oil and gas program for the leasing, development, production, and transportation of oil and gas in and from the Coastal Plain"; (2) included a Coastal Plain oil and gas program as a refuge purpose on equal footing with the other refuge purposes; (3) directed the Secretary, acting through the BLM, to manage the program in a manner similar to the administration of lease sales on the National Petroleum Reserve-Alaska

[1]This provision grants authority to the Secretary but prevents the Secretary from re-delegating his authority to an agency within Interior other than the Bureau of Land Management. *See Trustees for Alaska v. Watt*, 524 F. Supp. 1303 (D. Alaska 1981) (holding that certain delegations of authority to the US Geological Survey were invalid because Congress had required those functions to be performed by the U.S. Fish and Wildlife Service).

(the NPR-A); (4) directed the Secretary, acting through the BLM, to issue rights-of-way or easements "for the exploration, development, production, or transportation necessary" to carry out the program; and (5) directed the Secretary, acting through the BLM, to authorize up to 2,000 surface acres to be covered by production and support facilities.

This Record of Decision (ROD or Decision) approves a program to carry out this statutory directive. By determining *where and under what terms and conditions* leasing will occur, this Decision takes into account the requirements of PL 115-97 and other applicable law. To inform this Decision, the BLM prepared the Coastal Plain Oil and Gas Leasing Program Environmental Impact Statement (Leasing EIS).

As explained further in the Leasing EIS, there is tremendous uncertainty regarding future potential exploration and development on the Coastal Plain. Any development scenario at this point is highly speculative because: it is unknown whether or where leases will be issued, it is unknown whether or where exploratory drilling may occur under such leases, and it is unknown whether or where commercially developable oil and gas discoveries may be made.

Despite these vast uncertainties, to meet its obligations under the National Environmental Policy Act (NEPA) the BLM endeavored to develop a hypothetical development scenario in a good faith effort to identify plausible indirect effects of leasing that are not known at this time but nonetheless might be theoretically considered "reasonably foreseeable" if leasing was to result in the exploration and development of oil and gas resources (40 Code of Federal Regulations [CFR] Section 1508.8(b)) (see Appendix B to the Leasing EIS). Further, in order to minimize the chance that the resultant impact analysis would understate potential impacts, the hypothetical scenario described in the Leasing EIS represents a successful discovery and optimistic high-production development scenario in a situation of favorable market prices.

Given the uncertainty, and the hypothetical, speculative and aggressive nature of the development scenario analyzed, the potential impacts described in the Leasing EIS are necessarily uncertain and likely overstated. At some future stage in the administration of the oil and gas program where impacts from proposed actions are actually reasonably foreseen, i.e., if and when the BLM is presented with proposals for exploration or development, those decisions by the BLM for specific authorizations will also be subject to project-specific analysis, including compliance with NEPA and other laws.

This Decision adopts Alternative B of the Leasing EIS as to where and under what terms and conditions leasing may occur subject to future specific environmental analysis and permitting decisions, except clarifications have been provided for required operating procedures (ROP) 11 and 17, as well as Lease Notice 2.[2] The ROD also does not adopt the interpretive assumptions made in the Leasing EIS as to the implementation of Section 20001(c)(3) of PL 115-97. Rather, it provides guidance regarding certain general principles for the future application of that section of the law. As explained in further detail below, this is not a substantial change in the proposed action.

This Decision implements the requirement that the Secretary, acting through the BLM, provide for a competitive oil and gas program for the leasing, production, development, and transportation of oil and gas in and from the Coastal Plain. This Decision takes into account protection of important surface resources and other uses of the Coastal Plain in consideration of the purposes of the ANWR set out in Section 303(2)(B) of ANILCA, as amended by Section 20001(b)(2)(B) of PL 115-97.

[2] See Section 3.4 and Appendix A of the ROD.

This Decision makes approximately 1,563,500 acres, or the entire program area,[3] available for oil and gas leasing, and consequently for potential future exploration, development, and transportation. While providing these opportunities, the program adopted in this ROD also provides protections for surface resources and other uses, including subsistence use, through a comprehensive package of lease stipulations and ROPs, listed in **Appendix A**, that will apply to future oil and gas activities. Together these lease stipulations and ROPs build on, without frustrating, the statutorily-mandated oil and gas program taking into account other refuge purposes, which include conservation of fish and wildlife populations and habitats, fulfillment of international treaty obligations, allowance for continued subsistence use, and protection of water quality and quantity necessary to meet fish and wildlife conservation needs. This Decision also takes into account that any future specific exploration and development proposals will be subject to further environmental analysis and additional, project-specific ROPs as appropriate and necessary.

This Decision establishes a program to achieve the statutory oil and gas program while still providing that approximately 359,400 acres (23 percent of lands available) will be subject to No Surface Occupancy (NSO) stipulations within barrier islands and important aquatic habitats, including rivers and streams, nearshore marine waters, and lagoons, and that approximately 721,200 acres (46 percent of lands available) will be subject to operational timing limitations (TLs) in the primary calving habitat area for the Porcupine caribou herd. Together, these partially overlapping lease stipulations cover more than 60 percent of the program area. Additional lease stipulations and the 44 ROPs that apply to oil and gas activities throughout the program area provide further protections for important resources and uses, as discussed in **Section 3.3**, below.[4]

This Decision was reached after an extensive review and is made after an outreach effort where the BLM and the Department of the Interior heard and benefited from a wide variety of perspectives. The U.S. Fish and Wildlife Service (USFWS), U.S. Environmental Protection Agency (EPA), State of Alaska, North Slope Borough (NSB), Native Village of Kaktovik, Native Village of Venetie Tribal Government, Venetie Village Council, and Arctic Village Council participated in the NEPA process as cooperating agencies. These agencies worked with the BLM by providing input as to what should be analyzed in the Leasing EIS, including suggestions for alternatives, lease stipulations, and ROPs, and by reviewing in-house drafts of the Draft and Final Leasing EISs; however, as the lead agency for the Leasing EIS, the BLM is ultimately responsible for the analysis therein, as well as this ROD.

In addition, the BLM met with Canadian government officials in Canada and conducted tribal consultation throughout the NEPA process with tribes in northern Alaska, including the four tribes that served as cooperating agencies and other tribes whose members have the potential to be substantially impacted by implementation of the Coastal Plain oil and gas leasing program. The BLM also held Native consultations with Alaska Native Claims Settlement Act (ANCSA) corporations during development of the EIS. See Appendix C of the Leasing EIS for complete listings of consultations.

The BLM provided for public involvement in the development of the Leasing EIS. Public meetings, both during scoping and on the Draft EIS, were held in Anchorage, Arctic Village, Fairbanks, Kaktovik, Utqiaġvik, and Venetie, Alaska, and Washington, DC. A public meeting on the Draft EIS was also held in Fort Yukon,

[3] The program area includes all lands within the Coastal Plain for which the federal government owns the mineral interest, with the exception of Air Force-administered lands near Kaktovik and approximately 4,400 acres of federal lands selected for conveyance under the Alaska Native Claims Settlement Act.

[4] The specific conditions of those stipulations and ROPs are contained in Table 2-3 in Chapter 2 of the Final EIS. As noted therein, PL 115-97 requires that the BLM issue rights-of-way for essential roads and pipeline crossings, and other necessary access, even in areas subject to an NSO stipulation.

Alaska. In addition to receiving public comments at the scoping and Draft EIS public meetings, comments were also taken online, by email, and through the mail. Altogether, during the public scoping period and public review period for the Draft EIS, the BLM received more than 1.8 million comment submissions, containing more than 8,000 unique substantive comments. Additionally, the BLM and Departmental officials met with representatives of a broad range of stakeholders, including local and state governments, tribes, Canadian government, Alaska Native corporations, and industry and environmental organizations.

1. DECISION

An environmental impact statement informs a decision-maker before the decision is made. See 40 CFR 1502.1, 1505.2. To facilitate this outcome, the Council on Environmental Quality's (CEQ) NEPA regulations establish a minimum 30-day period after notice is published that the Final EIS has been filed with EPA before the agency may make a decision on a proposed action. See 40 CFR 1506.10. During this period, the decisionmaker completes its own internal final review, and the public and other agencies may comment on the Final EIS prior to the agency's final action on the proposal. See CEQ's NEPA's Forty Most Asked Questions (Q&A 34b). Consistent with this process, this Decision is rendered after carefully reviewing the Draft EIS and the Final EIS, public comments, and the BLM's response to public comments submitted on the Draft EIS.

The Decision described and adopted in this ROD implements the Congressional directive to the BLM in Section 20001(b)(2)(A) of PL 115-97 to establish and administer a competitive oil and gas program for the leasing, development, production, and transportation of oil and gas in and from the Coastal Plain area of the ANWR, as that area is defined by Section 20001(a)(1) of PL 115-97 (see **Map 1-1** in **Appendix B**).

In accordance with the provisions of PL 115-97 and for the reasons stated in more detail below,[5] this Decision adopts Alternative B in the Leasing EIS as to where and under what terms and conditions leasing may occur subject to future specific environmental analysis and permitting decisions, except clarifications have been provided for ROPs 11 and 17, as well as Lease Notice 2. The ROD also does not adopt the interpretive assumptions made in the Leasing EIS as to the implementation of Section 20001(c)(3) of PL 115-97. The Decision makes the entire "program area" covered by the Congressional directive in PL 115-97, approximately 1,563,500 acres, available for oil and gas leasing, and consequently, for potential oil and gas exploration and development (**see Map 1-2 in Appendix B**), subject to the lease stipulations and ROPs listed in **Appendix A**.

Map 1-3 in **Appendix B** illustrates the geographic scope of some of these lease stipulations. These stipulations and ROPs are derived from those listed for Alternative B in Table 2-3 of the Leasing EIS. This Decision expressly establishes the program to carry out the statutorily-required lease sales as described in **Section 1.5** below, including the issuance of necessary rights-of-way and easements and the authorization of up to 2,000 surface acres to be covered by production and support facilities as mandated by PL 115-97.

As noted above, the program area includes all lands within the Coastal Plain for which the federal government owns the mineral interest, with the exception of Air Force-administered lands near Kaktovik and approximately 4,400 acres of federal lands selected for conveyance under ANCSA; however, while the BLM may lease the subsurface mineral interest underlying Native allotments, which comprise approximately 900 acres of the program area (0.06 percent), lease stipulations and ROPs will not apply on Native allotments,

[5] This section describes how the Decision conforms to the applicable provisions of PL 115-97. Additional considerations, including compliance with other applicable laws, are discussed in **Section 3**, *Management Considerations*.

except for Lease Stipulation 11, which requires written consent from allotment owners for the construction and maintenance of improvements on allotments. Instead, as the surface owners of these privately-owned lands, Native allotment owners have the authority to establish conditions for oil and gas operators' surface use of their allotments.

Future on-the-ground actions requiring BLM approval, including potential exploration, development, production and transportation proposals, will require further NEPA analysis based on site-specific proposals. For example, before drilling on any lease, a leaseholder will be required to submit an application for permit to drill, which will require appropriate NEPA analysis (as well as compliance with other applicable laws) before any drilling may be authorized. Potential applicants will be subject to the terms of the lease; however, the BLM Authorized Officer may require additional project-specific terms and conditions before authorizing any oil and gas activity based on the required project-level environmental, marine mammal, endangered species and subsistence impact analyses.

As described in more detail in **Section 1.5** below, this Decision provides guidance for potential future permitting purposes, regarding Section 20001(c)(3) of PL 115-97. The determination as to whether particular surface acreage must be authorized to be covered by "production and support facilities" is necessarily left to future fact specific determinations. This Decision determines where and under what conditions to apply to the statutorily-required lease sales that will benefit from the statutory mandate for authorizing production and support facilities covering up to the 2,000 acres of federal land. In so doing, this Decision takes a conservative approach to the highly speculative oil and gas program analyzed under the Leasing EIS that could span more than five decades.

1.1 Statutory Background

The ANWR established by ANILCA (PL 96-487) on December 2, 1980, consists of approximately 19.3 million acres in northeast Alaska. Section 303(2) of ANILCA established the ANWR, converting and expanding by approximately 9.2 million acres of public domain lands to the south and west the prior Arctic National Wildlife Range established by the Secretary of the Interior in 1960. Section 702(3) of ANILCA designated approximately 8 million acres of the ANWR as wilderness. Section 1002 of ANILCA excluded the Coastal Plain from wilderness designation, setting aside 1.56 million acres for study of all the resources of what is referred to commonly as the "1002 area" in recognition of the area's potential for oil and gas resources. Section 1003 of ANILCA prohibited oil and gas development throughout the ANWR until authorized by Congress.

Pursuant to Section 1002(a) of ANILCA, the Secretary was required to conduct ". . . an analysis of the impacts of oil and gas exploration, development, and production, and to authorize exploratory activity within the coastal plain in a manner that avoids significant adverse effects on the fish and wildlife and other resources." Section 1002(c)(D) of ANILCA required the Secretary to analyze the potential impacts of oil and gas exploration, development, and production on such wildlife and habitats, and Section 1002(c)(E) of ANILCA required the Secretary to analyze the potential effects of such activities on the culture and lifestyle (including subsistence) of affected Native and other people.

Section 1002(h) of ANILCA required the Secretary to prepare and submit a report to Congress with recommendations with respect to whether further exploration for, and the development and production of, oil and gas within the coastal plain should be permitted and, if so, what additional legal authority is necessary to ensure that the adverse effects of such activities on fish and wildlife, their habitats, and other resources are avoided or minimized.

On April 21, 1987, the Department of the Interior's *Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment: Report and Recommendation to the Congress of the United States and Final Legislative Environmental Impact Statement* was published in accordance with Section 1002(h) of ANILCA. The report analyzed the environmental consequences of five management alternatives, ranging from opening the entire Coastal Plain area to oil and gas leasing, to wilderness designation. Therein, after 5 years of scientific study by the USFWS, U.S. Geological Survey (USGS) and BLM, the Secretary of the Interior selected as the preferred alternative making available for consideration the entire ANWR Coastal Plain for oil and gas leasing.

On December 22, 2017, following more than three decades of Congressional debate and consideration of the Secretary's recommendation to Congress, Congress enacted the Tax Cuts and Jobs Act (PL 115-97). Section 20001(b)(1) of PL 115-97 amends ANILCA to provide that Section 1003, which prohibited oil and gas development in the ANWR unless authorized by Congress, does not apply to the Coastal Plain. Section 20001(b)(2)(A) directs the Secretary, acting through the BLM, to establish and administer a competitive oil and gas program for the leasing, development, production, and transportation of oil and gas in and from the Coastal Plain area of the ANWR, as that area is defined by Section 20001(a)(1).

Section 20001(b)(2)(B) amended Section 303(2)(B) of ANILCA to add as a purpose of the ANWR: "to provide for an oil and gas program on the Coastal Plain." Section 20001(b)(3) requires the Secretary, acting through the BLM, to "manage the oil and gas program on the Coastal Plain in a manner similar to the administration of lease sales under the Naval Petroleum Reserves Production Act of 1976 (42 U.S.C. 6501 et seq.) (including regulations)." Section 20001(b)(4) sets a royalty rate of 16.67 percent for leases, and Section 20001(b)(5) requires 50 percent of revenues from lease bonus bids, rentals, and royalties to be paid to the State of Alaska and the other 50 percent to be deposited into the Federal Treasury.

Section 20001(c)(1) of PL 115-97 requires that at least two lease sales be held by December 22, 2024, with the first sale conducted by December 22, 2021, and that each sale offer for lease not fewer than 400,000 acres of the highest hydrocarbon potential lands within the Coastal Plain. Section 20001(c)(2) requires the Secretary, acting through the BLM, to issue any rights-of-way or easements across the Coastal Plain for "exploration, development, production, or transportation necessary to carry out the program." Additionally, Section 20001(c)(3) requires the Secretary, acting through the BLM, to authorize up to 2,000 surface acres of federal land to be covered by production and support facilities.

As set forth more fully below, this Decision takes into account and is fully consistent with all the foregoing provisions of Section 20001 of PL 115-97.

1.2 Section 20001(b)(2)(A) of PL 115-97—Establishment of the Program

As noted above, this Decision establishes a competitive oil and gas program. Section 20001(b)(2)(A) of PL 115-97 requires the Secretary, acting through the BLM, to both establish and to administer "a competitive oil and gas program for leasing, development, production, and transportation of oil and gas in and from the Coastal Plain." This broad directive by Congress plainly gives the Secretary, acting through the BLM, both a directive and the express authority necessary to carry out all elements typically associated with a competitive oil and gas program, including leasing, exploration, development, production, and transportation of oil and gas in and from the Coastal Plain. The lease stipulations and ROPs adopted in this ROD provide terms and conditions applicable to each such aspect of the program, from lease sales through reclamation of resulting oil and gas developments.

1.3 Section 20001(b)(2)(B) of PL 115-97—The Purposes of the ANWR

After the amendment by Section 20001(b)(2)(B) of PL 115-97, Section 303(2)(B) of ANILCA now provides (emphasis added in italic):

> The purposes for which the Arctic National Wildlife Refuge is established and shall be managed include—
>
> (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;
>
> (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
>
> (iii) to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents;
>
> (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the refuge; *and*
>
> *(v) to provide for an oil and gas program on the Coastal Plain.*

Under Section 20001 of PL 115-97, Congress directed the Secretary, acting through the BLM, to implement the Coastal Plain oil and gas program in the ANWR. See Sections 20001(a)(2) and (b)(2)(A). Thus, under Section 20001 of PL 115-97 and, acting through the BLM, the Secretary's administration of the Coastal Plain oil and gas program, the USFWS does not have jurisdiction over matters related to administration of the oil and gas program within the Coastal Plain, but exercises its authorities and responsibilities with regard to all other matters not related to the oil and gas program throughout the entire ANWR, under the National Wildlife Refuge System Administration Act (NWRSAA), ANILCA, and various other applicable fish and wildlife and conservation-related statutes.

Jurisdiction for the authorization and administration of uses related to the oil and gas program rests with the Secretary, acting through the BLM. The specific requirements of Section 20001 and its directive to establish an oil and gas program on the Coastal Plain in accordance with the terms set by Congress requires, among other things, that the Secretary, acting through the BLM, hold lease sales and authorize all uses necessary to carry out the Coastal Plain oil and gas program.

By adding an oil and gas program on the 1.56 million-acre Coastal Plain as a purpose of the ANWR, Congress itself balanced the purposes of the 19.3 million-acre refuge, a balance which is now law. Although the ANWR has multiple purposes, Congress has mandated more specific management within particular areas. Just as Congress has mandated that 8 million acres of the ANWR be managed as wilderness, it has mandated that the 1.56 million-acre Coastal Plain be managed for an oil and gas program. Following the statutory directive, should leasing, exploration, development, production, and transportation activities actually take place on the Coastal Plain, those actions would potentially be limited in scope to only approximately 8 percent of the ANWR, with some potential impact on the other four refuge purposes.

Within this statutory framework, this Decision takes into account the other purposes of the ANWR. In developing lease stipulations and ROPs for evaluation in the Leasing EIS, and for purposes of adopting Alternative B's lease stipulations and ROPs in this Decision, the Secretary, acting through the BLM, implements purpose (v) of the ANWR in a way that takes into consideration that Congressional direction in light of the other four purposes of the ANWR.

This Decision provides consideration to the other refuge purposes so that the fifth purpose does not defeat the other four. In this way, the oil and gas program can take into account all of the purposes of the ANWR. For example, Alternative B, as adopted by this ROD, incorporates several lease stipulations and ROPs for the protection of the types of resources and uses that are cited in the statutory purposes of the ANWR. Such lease stipulations and ROPs include for example, but are not limited to: Lease Stipulation 9 and ROP 4, which provide protection for polar bears and their habitat, consistent with purpose (i); Lease Stipulation 7 and ROP 23, which provide protections for Porcupine herd caribou and their habitat, consistent with purpose (ii); Lease Stipulation 4 and ROP 18, which protect subsistence uses, consistent with purpose (iii); and Lease Stipulation 1 and ROP 8, which protect water quality and quantity, consistent with purpose (iv).

1.4 Section 20001(b)(3) of PL 115-97—Management in a Manner Similar to the Administration of Lease Sales in the NPR-A

This Decision follows the statutory direction to "manage the oil and gas program on the Coastal Plain in a manner similar to the administration of lease sales under the Naval Petroleum Reserves Production Act of 1976 (42 U.S.C. 6501 et seq.) (including regulations)," required by Section 20001(b)(3) of PL 115-97, except as otherwise provided. In this regard, where appropriate, and except as otherwise provided in Section 20001, the elements of the Coastal Plain oil and gas leasing program adopted by this Decision follow the NPR-A program statutory and regulatory scheme. For example, both programs determine which areas are available for leasing in future lease sales, and both establish the terms and conditions under which oil and gas activities will be conducted.

In many cases the terms and conditions (i.e., lease stipulations and ROPs) that will apply to oil and gas activities in the Coastal Plain pursuant to this Decision are derived from (with appropriate adjustments relevant to the Coastal Plain) lease stipulations and required best management practices contained in the February 2013 ROD for the current NPR-A Integrated Activity Plan, which governs the NPR-A program. Additionally, future on-the-ground oil and gas activities will be evaluated through additional, project-specific NEPA analysis, as is the case with the NPR-A program.

The words "similar to," in this context means consistent except where the statutory goals and mandates or differences in circumstances between the NPR-A and the Coastal Plain support a departure. For example, special areas, as that term is used by the BLM in its management of the NPR-A, including in its current NPR-A Integrated Activity Plan, are not established for the Coastal Plain.

In the NPR-A, the BLM is both the oil and gas program manager and the surface manager of the entire Petroleum Reserve. The term special area is used by the BLM to describe areas in the NPR-A that contain significant surface resource values which require specialized management prescriptions in order to adequately protect those values (see 42 U.S.C. 6504(a)).

Given that the USFWS is responsible for management of the ANWR, except for implementation of the oil and gas program, this Decision declines to establish special areas in the Coastal Plain. Nevertheless, the Decision treats much of the Coastal Plain as special, adopting particular, location-specific management

prescriptions in certain areas where appropriate, in a manner similar to the BLM's management of the NPR-A oil and gas program.

In this regard, the Leasing EIS considered, and this Decision adopts, the use of special, particularly stringent lease stipulations described in **Appendix A** that apply in certain large areas containing significant surface values. These include Lease Stipulations 1 and 4, establishing NSO prohibitions on 359,400 acres within barrier islands and important aquatic habitats, including rivers and streams, nearshore marine waters, and lagoons, and Lease Stipulation 7, which applies operational timing limitations on 721,200 acres of the program area within the primary calving habitat area for the Porcupine caribou herd during the calving season, prohibiting construction activities using heavy equipment (except drilling from established pads), and applying ground and air traffic restrictions.

In applying the NPR-A statutory and regulatory framework to the Coastal Plain oil and gas program, the BLM has determined that Section 202 of the Federal Land Policy and Management Act (FLPMA), 43 U.S.C. 1712, which applies to lands managed by the BLM and provides for its development of land use plans, does not apply to the surface management of the ANWR. In particular, the Naval Petroleum Reserves Production Act explicitly exempts the NPR-A program from the land use planning requirements of Section 202 of FLPMA. See 42 U.S.C. 6506a(c). Thus, similar to its management of the NPR-A, the Secretary, acting through the BLM, is not preparing land use plans under FLPMA for the Coastal Plain program. Moreover, as stated above, and except for jurisdiction over the oil and gas program on the Coastal Plain, the USFWS is responsible for management of the entire ANWR, as governed by its Comprehensive Conservation Plan (CCP) and in accordance with the NWRSAA and ANILCA.[6]

1.5 Section 20001(c) of PL 115-97

In General

To reduce uncertainty for prospective leaseholders and thereby increase the likelihood of achieving revenue goals for the ANWR oil and gas program, Congress went beyond the authorizations applicable to the NPR-A and required that necessary rights of way, easements and production and support facilities be authorized; thus, in contrast to the legislation and regulations establishing an oil and gas leasing program for the NPR-A, Section 20001(c) provides three striking differences. First, unlike in the NPR-A, where the timing of lease sales is left to the BLM's discretion, Section 20001(c)(1) directs the Secretary, acting through the BLM, to conduct "not fewer than 2 lease sales area-wide" by not later than December 22, 2024, each sale offering not fewer than 400,000 acres in areas with the highest hydrocarbon potential. The question as to whether or not to offer oil and gas leases in the Coastal Plain of the ANWR is not an open one. The BLM will comply with these mandatory provisions for lease sales under this ROD.

Second, Section 20001(c)(2) states that the Secretary, acting through the BLM, "shall issue any rights-of-way or easements across the Coastal Plain for the exploration, development, production, or transportation necessary to carry out this section." The BLM interprets the plain language of this provision as requiring that it authorize any such rights-of-way necessary to carry out the Coastal Plain oil and gas program established by Section 20001 of PL 115-97.

[6] Subsections (b)(4) and (b)(5) of 16 U.S.C. 3143 provide that the royalty rate for leases will be 16.67 percent and that 50 percent of adjusted bonus, rental and royalty receipts derived from the program shall go to the State of Alaska, respectively. These provisions will be appropriately implemented for leases issued under the program. These provisions are not significantly different from the Naval Petroleum Reserves Production Act of 1976 (42 U.S.C. 6501 et. seq.), which sets a 12.5 percent minimum royalty rate for low potential areas and a 16.67 percent rate in high potential areas. As under subsection (b)(5), 50 percent of NPR-A receipts are paid to the State.

Clearly Congress intended that successful implementation of the mandated oil and gas program should not be frustrated by an unavailability of necessary access. This directive is unlike the NPR-A, where issuance of such rights-of-way are at the BLM's discretion. This directive is not limited to development under a particular *lease*, but rather any right-of-way necessary to carry out the *section*. It would, for example, apply to a request for a road or pipeline right-of-way, even if sought by a non-leaseholder.

Finally, Section 20001(c)(3) provides:

> SURFACE DEVELOPMENT—In administering this section, the Secretary shall authorize up to 2,000 surface acres of Federal land on the Coastal Plain to be covered by production and support facilities (including airstrips and any area covered by gravel berms or piers for support of pipelines) during the term of the leases under the oil and gas program under this section.

This provision requires the Secretary, acting through the BLM, to authorize up to 2,000 surface acres of federal land to be covered by production and support facilities during the term of the leases under the oil and gas program. Just as with the rest of Section 20001, Congress's use of the term "shall" constitutes a directive to the Secretary, acting through the BLM, that he or she must: (1) establish and administer a competitive oil and gas program (Section 20001(b)), (2) hold lease sales within certain timeframes (Section 20001(c)(1)), (3) issue certain rights-of-way (Section 20001(c)(2)), and (4) authorize production and support facilities consistent with those leases (Section 20001(c)(3)).

In a letter dated October 21, 2019, after publication of the Final EIS, Region 10 of the EPA commented on several aspects of the document. As relevant here, Region 10 reiterated its comment on the Draft EIS that the BLM should have considered an alternative to reduce the impact area to less than 2,000 acres of production and support facilities.[7]

Such an interpretation is inconsistent with the mandate in Section 20001(c)(3), and, as described in the Final EIS, therefore inconsistent with the purpose and need for action. This mandate, requiring the authorization of up to 2,000 surface acres of federal land to be covered by production and support facilities during the term of the leases, will be carried out through leases that allow for regulation of facilities but may not preclude such infrastructure.

If a lessee discovers oil or gas, it may seek approval to develop the resources by submitting an application for a permit to drill that includes a drilling plan and a surface use plan of operations. In addition to the stipulations and ROPs included in this Decision, the BLM may require additional project-specific measures to further protect surface resources.

Consistent with Congress's objective to achieve revenue from the Coastal Plain oil and gas program, the "shall authorize" language in (c)(3) functions as a directive to the BLM that it must not deny or unreasonably limit development of production and support facilities on the Coastal Plain until 2,000 surface acres are covered by production and support facilities.

[7] The October 21 letter actually states that the BLM should "reduce the impact area" to less than 2,000 surface acres where practicable. Given the reference to 2,000 acres and EPA's prior comments on the draft, the BLM interprets this comment to suggest that the BLM consider an alternative of less than 2,000 acres of production and support facilities, not "impact area."

While Congress clearly mandated that the Secretary, acting through the BLM, authorize up to 2,000 acres to be covered by production and support facilities, it did not define the terms "covered by" or "production and support facilities." There are a broad range of actions potentially carried out during the entire life of an oil and gas program which may necessitate authorization of facilities related to exploration, development, transportation, production, and related facilities. In implementing the mandate of Section 20001(c)(3), the Secretary, acting through the BLM, will have to determine whether each type of proposed facility constitutes a "production and support facility," and if so, whether such proposed facilities would cover federal land on the Coastal Plain.

Future BLM determinations about which facilities benefit from the 2,000-surface acre mandate, and which do not, could potentially influence the total extent of development in the Coastal Plain and, thus, the potential environmental impacts stemming from the leasing program. Recognizing this, the BLM included in its Leasing EIS several preliminary interpretative assumptions that facilitated the creation of a more detailed reasonably foreseeable development (RFD) scenario and thus provided a clearer picture of how much total development is reasonably foreseeable at this preliminary stage. For example, all transportation facilities were included whether or not they supported production, the authorization of gravel mines was considered discretionary in the Draft EIS and mandatory in the Final EIS, and the reclamation of covered land over time was considered to increase the required authorization of surface acres covered by production and support facilities beyond 2,000 acres.

The analytical assumptions contained in Section 1.9.1 of the Leasing EIS generally had the effect of assuring that overall program impacts from the hypothetical RFD scenario would be evaluated in the EIS.

Statutory Interpretation and Guidance for Future Project-Specific Decisions

This Decision does not need to adopt the Leasing EIS's interpretive assumptions concerning Section 20001(c)(3) for several reasons. First, interpreting the language "covered by production and support facilities" is unnecessary at this preliminary stage of the leasing program, which focuses on broader issues such as which federal lands within the Coastal Plain are suitable for leasing, and under what general terms and conditions. To accomplish a good faith effort to meet its obligation under NEPA, the BLM reached these interpretive assumptions regarding the phrase "production and support facilities," to apply the mandatory authorization requirement to the hypothetical development scenario. This Decision does not actually authorize any surface acreage to be covered by "production and support facilities," so whether a particular facility will or will not fall within the 2,000-acre mandate is speculative at this stage and merely illustrative to provide an understanding of the hypothetical impacts.

Second, adopting and applying interpretive assumptions at this initial stage of the program would be premature. It is currently unknown whether any leases will ever be issued, it is unknown if any exploration will take place,[8] and if so, it is unknown whether eventually any lessees will ever apply to the BLM for authorization of any production and support facilities. It bears repeating that as we make this Decision all aspects of a future oil and gas program are highly speculative and dependent on unpredictable circumstances that will play out over decades. If leases are issued, if exploration takes place, and if lessees apply for BLM authorization of any production and support facilities, the types of facilities and technologies deployed may be very different than what is foreseeable today. It is, at this stage, not possible, reasonable or necessary to

[8] ROP 17, as amended by this Decision, prohibits construction of gravel roads and pads for exploratory drilling, and geophysical exploration does not result in the construction of production and support facilities.

establish for future administration the interpretive assumptions contained in the Leasing EIS regarding the treatment of each hypothetical facility for purposes of applying the mandate under Section 20001(c)(3).

Third, further review and consideration of the Leasing EIS's interpretive assumptions concerning Section 20001(c)(3) have highlighted several opportunities for improvement. Certain interpretive principles can be gleaned from the plain language of the statute, some of which may differ in some respects from the interpretive assumptions made in the Leasing EIS. Accordingly, this Decision provides the following guidance to help inform future project specific decisions about what does and does not qualify as "covered by production and support facilities":

- First, a proposal to cover surface acreage must be a facility; that is, under that term's ordinary dictionary definition, something that is built, installed, or established to serve a particular purpose.
- Second, under the plain language of the statute, the facility must be a "production and support facility." The term "production" is used elsewhere in Section 20001, but, in contrast to Section 20001(c)(3), in each of those other paragraphs the term is included as part of a longer list of various aspects that will likely occur with a successful oil and gas program. For example, Section 20001(c)(2) requires the issuance of rights-of-way or easements for necessary "exploration, development, production, or transportation," and Section 20001(b)(2)(A), refers to "leasing, development, production, and transportation." Had Congress decided to encompass a broad range of facilities for various aspects of an oil and gas program into 20001(c)(3) it knew how to do so. "Production and support facilities" are not "exploration and support facilities," nor are they "transportation and support facilities," or facilities that support some other aspect of the program that is not "production and support."

  This understanding of Section 20001(c)(3) is particularly clear, given Congress's use of the conjunctive "and" rather than the disjunctive "or." Further, Congress's inclusion of the parenthetical reference in Section 20001(c)(3) to "airstrips and any area covered by gravel berms or piers for support of pipelines" supports this understanding of 20001(c)(3). Depending upon particular factual circumstances, such facilities may necessarily constitute "production and support facilities," and they should be included in the 2,000-acre mandate if they are a facility for production or a facility supporting production, but otherwise they would not. With respect to airstrips in particular—which outside of the context of oil and gas development in Alaska could on their face seem to be "transportation" facilities –production of oil and gas in Alaska often requires an airstrip at the actual site of production. In such a case, an airstrip would reasonably be considered a facility in support of production benefitting from the 2,000-acre mandate, but an airstrip that is not incident to the actual site of production, and which generally supports transportation in support of the program, may not.
- Third, the BLM's authorization of a qualifying facility above must be to cover the surface of the federal land supporting that facility. This follows from the plain language of the provision, which provides that the Secretary, acting through the BLM, shall authorize up to 2,000 acres to be covered by the qualifying facilities.
- Fourth, the inclusion of the phrase "during the term of the leases under the oil and gas program under this section" should be reasonably read to mean the 2,000-acre mandate must be authorized throughout the term of all of the leases issued under the program. The interpretive assumption reached in the Leasing EIS that the phrase could reasonably be read to mean at any point in time during the term of all the leases is not supported by the plain meaning of the statutory language.

Although, again, no definitive application of these principles to particular types of development need be reached at this early stage given the uncertainty and hypothetical nature of projected development, the future application of these principles may differ in some respects from some of the assumptions made in the Leasing EIS as to their interpretation. In particular:

- Although the EIS assumed for analytical purposes that reclaimed acreage of federal land formerly containing production and support facilities would free up additional acreage to be subject to the 2,000-acre mandate in Section 20001(c)(3) once they are reclaimed, this would not be the case given the fourth sideboard referenced above.
- Ice roads and pads are not production and support facilities. Although the EIS assumed that such roads would not be such facilities within the meaning of Section 20001(c)(3) because they are temporary, as noted above, they are also reasonably understood to be a transportation or exploration facility, not a "production and support" facility.
- Depending on the precise facts of a future proposal, certain other types of facilities that the BLM assumed were included within the 2,000 acre limit in the EIS, such as gravel roads not required for production,[9] barge landing and storage, and gravel pits and stockpiles, may or may not be "production and support facilities," depending on particular circumstances at issue.

That this ROD does not adopt the assumptions made in the Final EIS as to the interpretation of 20001(c)(3) now and instead provides general guidance and principles for the future is not a change in the proposed action. Although the Leasing EIS made certain hypothetical development assumptions for purposes of analysis, the decision made in this ROD, consistent with the description in the EIS of the BLM's decisions to be made, are where and under what terms and conditions lease sales will occur. See Final EIS, Section 1.3. That decision need not, and does not here, adopt a particular interpretation of 20001(c)(3) or attempt to apply it to hypothetical future development. Providing guidance on how the BLM may interpret 20001(c)(3) in a potential subsequent permitting phase does not constitute a change to the BLM's present leasing action.

For the purpose of proceeding with the lease sales required to be offered by the statutorily-mandated oil and gas program, the hypothetical RFD reasonably projects that development so that the Leasing EIS can project what the effects might be of potential future development associated with oil and gas leases that will benefit from statutory mandates related to rights of way, easements and surface use for production and support facilities. See *Conner v. Burford*, 848 F.2d 1441, 1449 (9th Cir. 1988); see also *Northern Alaska Environmental Center v. Kempthorne*, 457 F.3d 969 (2006). The resulting analysis informs decision-making to the best of the agency's current abilities by providing a general but sufficient understanding (i.e., a reasonable "picture") of the potential types and potential extent of environmental impacts that may occur if leases are developed all the way up to the 2,000-surface acre mandate of 20001(c)(3).

2. ALTERNATIVES

Under the NEPA, an agency is required to take a "hard look" at the environmental effects of an agency action and its reasonable alternatives, including foreseeable direct, indirect, and cumulative impacts. The Leasing EIS presents four alternatives that were analyzed in detail. The alternatives focus on the questions of which areas within the Coastal Plain to make available for oil and gas leasing, and which terms and conditions (i.e., lease stipulations and ROPs) to apply to future oil and gas activities in order to avoid, minimize, and mitigate adverse impacts on Coastal Plain resources and uses, including subsistence use.

[9] That is, roads connecting production facilities to barge landings or other facilities, as opposed to roads connecting satellite well pads to the central processing facility. See Final EIS Appendix B, Figure B-1.

Under the NEPA, the BLM is generally required to analyze the reasonably foreseeable impacts of its action. Although the uncertain and speculative nature of oil and gas exploration and development can make those projections difficult at the leasing stage of the process, the Ninth Circuit has held that, unless future surface-disturbing activities on those leases can be absolutely precluded, the agency issuing the leases must prepare an EIS before issuing a lease and estimate what the reasonably foreseeable effects of future development of those leases might be. See *Conner v. Burford*, 848 F.2d 1441 (9th Cir. 1988).

Hypothetical future projections of development at the leasing stage are sufficient. See *Northern Alaska Environmental Center v. Kempthorne*, 457 F.3d 969 (9th Cir. 2006). Here, as explained further in the Leasing EIS, the BLM's ability to gauge the impacts of future exploration and development at the leasing stage is necessarily far from clear. Indeed, the issuance of an oil and gas lease does not have any direct effects on the environment since it does not authorize drilling or any other ground disturbing activities; however, a lease does grant the lessee certain rights to drill for and extract oil and gas subject to reasonable regulation, including applicable laws, terms, conditions, and stipulations of the lease.

Although the BLM cannot ascertain the precise extent of the effects of granting those rights until it receives and reviews potential future site-specific proposals for exploration and development, in order to meet the intent of NEPA, the BLM developed a hypothetical development scenario consistent with those leases, in a good faith effort to identify indirect effects that are not known at this time but nonetheless could be considered reasonably foreseeable (40 CFR 1508.8(b)) (see Appendix B of the Leasing EIS). Again, there is tremendous uncertainty regarding potential exploration and development on the Coastal Plain, due in part to the remoteness and lack of previous exploration and development as well as its harsh environment and potentially challenging engineering considerations, along with the extended time it has taken to go from leasing to development in other regions of the North Slope of Alaska including in the NPR-A.

As noted above and described in the Leasing EIS, these uncertainties include the amount and location of technically and economically recoverable oil, the timing of oil field discoveries and associated development, the future prices of oil and gas, and, more to the point, the many exploration companies' individual assessment of future prices and other competitive calculations that play into corporate investment decisions, and the ability of industry to find petroleum and to mobilize the requisite technology to exploit it. Indeed, USGS has repeatedly revised their prior assessments of producible oil and gas for the NPR-A and surrounding areas, as new information has become available and additional analysis has been conducted.

These assessments have proven to fluctuate significantly over time. This is evidenced by the fact that the assessments of technically recoverable reserves for the NPR-A and surrounding areas were projected by USGS to be 10.5 billion barrels of oil and 61 trillion cubic feet of gas in 2002. This was revised in 2010 to be 896 million barrels of oil and 53 trillion cubic feet of gas. In 2017 it was revised again to be 8.7 billion barrels of oil and 25 trillion cubic feet of gas in 2017 (USGS 2002, 2010, and 2017, cited in Appendix B of the Leasing EIS).

Future studies and assessments, whether by the USGS or others, will likely continue to evolve and shift based on advancements in geophysical assessment and drilling technology and as new geophysical data is acquired and made available.

Given the uncertainty, and in order to minimize the chance that the resultant impact analysis will understate potential impacts, the hypothetical scenario described in the Leasing EIS assumes a successful discovery and optimistic high-production development scenario in a situation of favorable market prices; thus, the projected impacts, which are necessarily uncertain, are likely overstated. At the stage at which those impacts would be

more reasonable to foresee—i.e., when the BLM is presented with proposals for exploration or development—those authorizations would be subject to project-specific and site-specific analysis, including compliance with NEPA, the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), ANILCA, and other laws.

The Leasing EIS alternatives include the following:

2.1 Alternative A: No Action Alternative

Under Alternative A, the No Action Alternative, no federal oil and gas in the Coastal Plain would be offered for future lease sales. Alternative A would not comply with the directive in PL 115-97 to establish and administer a competitive oil and gas program for leasing, developing, producing, and transporting oil and gas in and from the Coastal Plain in the ANWR that requires authorizations for necessary rights-of-way, easements and surface acres for production and support facilities. It also would not meet the purpose of the ANWR to provide for an oil and gas program on the Coastal Plain, set out in Section 303(2)(B)(v) of ANILCA. Under this alternative, current management actions would be maintained, and resource trends are expected to continue, as described in the USFWS's ANWR Revised CCP.

Alternative A would not meet the purpose and need of the action, which is the BLM's implementation of a Coastal Plain oil and gas program as required by PL 115-97, including the requirement to hold lease sales and to permit oil and gas activities; however, Alternative A was carried forward for analysis to provide a baseline for comparing impacts under the action alternatives, as required by 40 CFR 1502.14(d).

2.2 Alternative B: Preferred Alternative

Alternative B is the Preferred Alternative in the Leasing EIS and is the basis for this ROD. Alternative B offers the opportunity to lease the entire "program area" (1,563,500 acres) and has the fewest acres with NSO stipulations. In addition to applicable lease stipulations, 44 ROPs would apply to oil and gas activities to avoid, minimize, and mitigate potential adverse impacts on resources and uses. The development scenario for this alternative incorporates the Alternative B lease stipulations and ROPs from Table 2-3 of the Leasing EIS into the hypothetical projections.

2.3 Alternative C

The entire program area (1,563,500 acres) would also be available for lease under Alternative C; however, a majority of the program area would be subject to NSO. The BLM would rely on the same ROPs as under Alternative B to reduce potential adverse impacts on resources and uses from oil and gas activities.

2.4 Alternative D

Under Alternative D, portions of the Coastal Plain would not be available for lease, including the primary calving habitat for the Porcupine caribou herd. In addition, a large portion of the remaining area would be subject to NSO. In some instances, more prescriptive ROPs are included under Alternative D than under Alternatives B and C.

Alternative D contains two sub-alternatives, Alternatives D1 and D2, which use different approaches to avoid, minimize, and mitigate potential impacts on resources and uses through lease stipulations. The amount of land available for leasing under Alternative D1 is 1,037,200 acres and under Alternative D2 800,000 acres. Alternative D2 maximizes high hydrocarbon potential areas available for lease, while making unavailable for leasing additional caribou calving and post-calving habitat (areas along the coast of Camden Bay and east of the mouth of the Niguanak River), and expanding existing NSO buffers, including lands adjacent to springs

and aufeis habitats. Alternative D2 reflects the total minimum acreage PL 115-97 requires to be offered in two mandated lease sales.

2.5 Environmentally Preferred Alternative

Alternative D2 is the environmentally preferred alternative. This is primarily because Alternative D2 would make the least amount of land available for leasing (800,000 acres). Fewer acres available for leasing would reduce potential for adverse impacts from oil and gas exploration and development in the Coastal Plain. Further, though most of the lease stipulations and ROPs are the same as Alternative D1 and many of the ROPs are common across the action alternatives, where there are differences Alternative D2 typically has the most protective measures across the program area.

3. MANAGEMENT CONSIDERATIONS

3.1 Key Considerations to the Decision

In reaching this Decision, and with the aid of the Leasing EIS and the input provided by the public and various stakeholders throughout the development of the EIS, the Secretary, acting through the BLM, considered and weighed several important factors. An overriding consideration was the need to implement the Congressional directive in Section 20001 of PL 115-97 to establish and administer a competitive oil and gas leasing program for the Coastal Plain in a manner similar to the NPR-A leasing program. PL 115-97 requires that the program be administered in such a way that would allow the BLM to hold at least two lease sales within seven years, each of not fewer than 400,000 acres of land having the highest potential for oil and gas discovery, and to provide for authorization of up to 2,000 surface acres to be covered by production and support facilities, and granting of all necessary rights-of-way or easements to support the oil and gas program.

This Decision is constructed to provide for the protection of important surface resources and uses thereof, such as caribou (especially the Porcupine herd), polar bears, migratory birds, surface waters, and subsistence uses, among other resources and uses, and to take into account the other, non-oil and gas purposes of the ANWR, which include conservation of fish and wildlife populations and habitats, fulfillment of international treaty obligations, allowance for continued subsistence use, and protection of water quality and quantity necessary to meet fish and wildlife conservation needs.

Subsistence uses of Coastal Plain resources by rural Alaska residents and indigenous communities in Canada was given important consideration, in recognition of the life-sustaining customary and traditional uses of these resources. The Kaktovikmiut (i.e., Iñupiat of Kaktovik) are the primary users of the program area. They have strong cultural and subsistence ties, having occupied the Coastal Plain and relied on its resources for thousands of years, and consider themselves the stewards of the program area.

One particular aspect of this consideration is the cultural importance of the Porcupine caribou herd to Native communities in both Alaska and Canada, which the Gwich'in have stated is “central to their cultural identity,” in addition to the importance of the herd to many Iñupiat and Gwich'in for biological sustenance.

A related aspect of this consideration was the recognition that the program will have transboundary impacts on resources such as caribou, polar bears, and migratory birds, particularly affecting Native communities in Canada as well as in Alaska. For all these reasons, protection of subsistence uses of Coastal Plain resources and of the resources themselves, such as caribou, waterfowl and fish, as well as access to the resources and traditional hunting areas, was given due consideration in the development and adoption of lease stipulations and ROPs.

Another important factor in this Decision was to provide additional economic and community development opportunities to local residents and Alaska Native communities within and near the Coastal Plain. In this regard, much of the economic and community development that has occurred in Native communities on the North Slope of Alaska has been a direct result of North Slope oil and gas development, which provides job opportunities and substantial property taxes and other funding for community infrastructure development such as new schools, healthcare centers, roads, and drinking water, wastewater, and other utility systems. Prior to oil and gas development on the North Slope, many Native communities lacked these types of basic community infrastructure, including indoor plumbing in homes.

One particular aspect of this consideration was to ensure that the BLM's program will not impinge on the ability of ANCSA corporations owning lands and mineral interests within the Coastal Plain to develop their resources and thus provide economic and other benefits to the Native shareholders and communities they represent, as intended by ANCSA.

These types of considerations, together with the opportunity to generate substantial revenues for the State of Alaska and the Federal Treasury from the program, including from lease bonus bids, lease rentals, production royalties, and property and income taxes, played an important role in addressing the direction of Congress. This Decision does this by making the entire program area available for leasing, albeit subject to lease stipulations and ROPs that will serve to protect important resources and uses. By making the entire program area available for leasing, potential economic state and local opportunities and federal revenues from the program are maximized.

Additionally, making all of the "program area" available for leasing provides maximum flexibility for future decision-making and innovation for project proposals by potential lessees. This is particularly the case given that until exploration drilling occurs, the BLM cannot reasonably foresee which areas of the Coastal Plain have the highest prospects for oil and gas discoveries. Also, given the limited geophysical information that currently exists for the Coastal Plain, making the entire program area available for leasing ensures that the areas having the highest potential for the discovery of oil and gas can be prioritized for offering in the first two lease sales, as required by Section 20001(c)(1)(B)(i)(II) of PL 115-97.

This Decision recognizes that the ANWR provides large expanses of habitat for numerous species of fish and wildlife, including polar bear, Steller's eider, and spectacled eider, which are listed as threatened under the ESA, as well as support for meeting international treaty obligations associated with animals such as Porcupine caribou, polar bears, and migratory birds. The USFWS was a key partner in the BLM's development of the Leasing EIS and the Coastal Plain oil and gas program directed by Congress and adopted by this Decision. The BLM will continue to coordinate and consult with the USFWS, especially its ANWR management team, as the BLM implements the program, including during review of each application for proposed oil and gas activities in the Coastal Plain.

All of these and other factors were considered against the backdrop of our changing environment, with a recognition that the Arctic environment has been and will continue to be affected by a changing climate, experiencing such impacts as coastal erosion, melting permafrost, and changing sea ice patterns, among many others. There is a thorough discussion of climate change effects in the Leasing EIS in the Climate Change subsections of the Affected Environment as well as under the Direct and Indirect Impacts and Cumulative Impacts for each resource, as applicable. While the Coastal Plain program's contribution to global climate change is speculative, limited, and incremental in nature, this Decision was arrived at in full awareness of the potential environmental impacts associated with the potential development and continued use of fossil fuels.

Despite the vast uncertainty, the impact analysis undertaken for the Coastal Plain oil and gas development program presented in the Leasing EIS is robust and suitably specific for the broad-scale management decisions made in this ROD. This Decision authorizes multiple lease sales, including, at a minimum, the two sales mandated by Section 20001(c) of PL 115-97, as well as potential additional sales.

It is intended that the Leasing EIS and this ROD will provide NEPA compliance for multiple sales. Prior to the second and any subsequent sales, the BLM will evaluate the Leasing EIS to determine whether it remains adequate or requires supplementation based on new circumstances or information, or substantial changes to the leasing program (see 40 CFR 1502.9(c)(1) and 43 CFR 46.120(c)). The timing of the second and subsequent lease sales would depend in part on the response to earlier sales and the results of any exploration that may follow.

The Leasing EIS evaluates which lands to offer for lease and what terms and conditions to apply to oil and gas activities; it does not by itself provide NEPA compliance for any particular on-the-ground exploration or development. Future on-the-ground activities requiring BLM approval, including potential exploration and development proposals, would require further NEPA analysis based on the project-specific and site-specific proposal. In appropriate circumstances, such additional analyses could be tiered from the Leasing EIS, in accordance with 40 CFR 1502.20 and 43 CFR 46.140.

Applicants for oil and gas activities would be subject to the lease stipulations and ROPs adopted by this Decision; however, the BLM Authorized Officer may require additional project-specific and site-specific terms and conditions before authorizing any oil and gas activity based on the project-specific NEPA analysis. Provisions built in at the leasing stage through lease stipulations and ROPs allow for this Decision's selection of an alternative that both protects valuable resources and uses and is consistent with Congress's direction in PL 115-97 to establish and administer a competitive oil and gas program within the authorized area of the Coastal Plain.

In implementing the oil and gas development program required by Section 20001 of PL 115-97, the Secretary, acting through the BLM, will comply with applicable international agreements, federal, state, and local laws, regulations, and executive orders (see Appendix D of the Leasing EIS for a summary). The Secretary, acting through the BLM, will continue to consult with regulatory agencies, tribal governments, and ANCSA corporations, as appropriate, during subsequent NEPA processes before oil and gas activities are authorized, to ensure that all legal requirements are met.

3.2 Amendment of the Comprehensive Conservation Plan

To guide its management of the ANWR and other refuges in Alaska, the USFWS develops and implements CCPs as required by Section 304(g) of ANILCA. The USFWS adopted its most recently revised ANWR CCP in 2015,[10] prior to enactment of PL 115-97. Certain aspects of the current CCP, as it applies to the "program area," are overridden by Congress's enactment of PL 115-97.[11] The CCP does not constrain BLM actions taken consistent with its jurisdiction over the statutorily mandated oil and gas program within ANWR. As the USFWS previously explained in the CCP, until Congress took action to allow oil and gas exploration, leasing,

[10] USFWS 2015. Arctic National Wildlife Refuge Revised Comprehensive Conservation Plan. U.S. Fish and Wildlife Service, Final Environmental Impact Statement, Vol. 1. Internet website: https://www.fws.gov/home/arctic-ccp/.

[11] Both the Constitution's property clause and existing federal law make clear that Congress may direct the conduct of activities on Refuges that supersede the USFWS's administrative decisions. See 16 U.S.C. 668dd(c).

development and production, the Service could not permit it. Nevertheless, if Congress took such action, it would be incorporated into the CCP and implemented (see CCP at p. 1-1).

Now that Congress, through PL 115-97, has amended the purposes of the ANWR to provide for, and required the Secretary, acting through the BLM, to establish and administer, a competitive oil and gas program for leasing, developing, producing, and transporting oil and gas in and from the Coastal Plain, including authorizations for necessary rights-of-way, easements, and surface acres for production and support facilities, and in light of this ROD establishing the structure of such a program, the USFWS will take into account the statutory requirements and the Secretary's, acting through the BLM, jurisdiction over the "program area" oil and gas activities when it next amends the CCP. Thus, given the requirements of PL-115-97, this Decision does not require that the USFWS first amend its CCP governing the ANWR prior to its adoption.

Moreover, Section 304(g) of ANILCA, which requires the USFWS to develop management plans for Alaska Refuges, does not stipulate when the management plans must be amended. It leaves that matter to the USFWS's discretion, directing that the plans be amended, ". . . from time to time." While the USFWS adopted its original ANWR Management Plan in 1988, the plan was not amended until the adoption of the current plan in 2015. In the 2015 plan, the USFWS acknowledged that, ". . . much has changed since the (1988) Arctic Plan was completed" (see CCP at 1-1), and yet the USFWS had continued to manage the ANWR over the course of 27 years before amending the Plan. Thus, until the USFWS amends the CCP to be consistent with PL 115-97, the Congressional action directing the Secretary, acting through the BLM, to establish and administer an oil and gas development program in the ANWR supersedes any conflicting provisions in the current CCP.

3.3 Mitigation Measures

This Decision includes all practicable and reasonable means to avoid or minimize environmental harm consistent with the purpose and need of the action, including potential adverse direct, indirect, and cumulative impacts, through the lease stipulations, ROPs, and lease notices listed in **Appendix A**, which are designed to provide protection for a wide range of surface resources and non-oil and gas uses throughout the program area, including subsistence use. The lease stipulations, ROPs and lease notices, adopted herein will apply to all oil and gas activities authorized by the BLM in the Coastal Plain, according to the management framework outlined in Section 2.2.5 of the Leasing EIS.

Significant constraints on potential future oil and gas exploration and development activities are presented by lease stipulations adopted in this ROD. These include Lease Stipulations 1 and 4, which together apply NSO designations on approximately 359,400 acres of the program area within barrier islands and important aquatic habitats, including rivers and streams, nearshore marine waters, and lagoons; and Lease Stipulation 7, which applies operational timing limitations on 721,200 acres of the program area within the primary calving habitat area for the Porcupine caribou herd during the calving season, prohibiting construction activities using heavy equipment (except drilling from established pads), and applying ground and air traffic restrictions.

NSO stipulations prohibit the construction of most oil and gas facilities in areas open to leasing, with exceptions for facilities necessary to be located in such areas, such as essential road and pipeline crossings of streams and rivers as required by Section 20001(c)(2) of PL 115-97, and docks and seawater treatment plants located along coastlines (see Lease Stipulations 1 and 4).

Under Lease Stipulation 1, ten identified rivers and creeks will have 0.5 to 1-mile setbacks prohibiting permanent oil and gas facilities in the streambed and within the described setback distance, except for essential pipelines and road crossings. Under Lease Stipulation 4, exploratory well drill pads, production well drill

pads, and central processing facilities are prohibited in the nearshore marine waters, lagoons, and barrier island habitats to protect wildlife and subsistence uses and resources. Making these areas subject to an NSO stipulation allows for the use of modern technology to access oil and gas in accordance with the Congressional direction in PL 115-97. Other lease stipulations adopted by this ROD include measures to protect sensitive aquatic and coastal areas, polar bear denning habitat, and Native allotments.

In addition to lease stipulations, the 44 ROPs adopted by this ROD will apply to oil and gas activities throughout the Coastal Plain to provide further protections for numerous resources and uses. For example, ROP 4 requires operators to develop and implement polar bear interaction plans, ROP 19 requires 500-foot setbacks on all fish-bearing waterbodies (many of which are key drainages used for subsistence activities) within which permanent oil and gas facilities (except essential road and pipeline crossings) are prohibited, ROP 23 requires roads and pipelines to be designed to allow for the free movement of caribou and the safe passage of subsistence users, ROP 27 requires power lines to be buried or hung from pipeline vertical support members to reduce bird collisions, ROP 34 restricts use of aircraft to reduce interference with subsistence activities, and ROP 36 requires operators to coordinate activities directly with local communities to prevent unreasonable conflicts with subsistence uses and other activities.

In addition to ROPs and lease stipulations, this Decision requires baseline studies, oversight monitoring, and effectiveness monitoring for oil and gas related activities.

Baseline studies: Studies or surveys prior to activities to better mitigate impacts associated with the activities.

Project proponents may be responsible for conducting or funding baseline studies, including fish, wildlife, and vegetation surveys where applicable, to provide BLM decision-makers with sufficient information to make informed decisions on a project or series of projects. The type and scale of such studies will be determined by the BLM, based on the characteristics of the proposed project and location. The BLM will work with project proponents to coordinate any necessary surveys to ensure that consistent methods are used and that surveys are not duplicative of existing federal and state data or other publicly available data. Some such studies and surveys are described in Lease Stipulation 3, and ROPs 10, 23, 28, 29, 30, 32, 41, 43, 44 and 45.

Oversight monitoring: Monitoring to ensure compliance with applicable requirements.

The BLM will conduct oversight monitoring to ensure that project proponents' plans for activities and implementation of those plans conform to the relevant requirements. Commonly oversight monitoring will require review of planning documents; field visits prior to activities to ensure compliance with requirements at the on-the-ground preparation stage for construction, operational start-ups, and abandonment activities; presence in the field during activities to ensure compliance; and follow-up field visits to ensure that any required clean-up and abandonment activities were in compliance with requirements.

Effectiveness monitoring: Monitoring to evaluate the effectiveness of project designs and mitigation measures.

Project proponents may be responsible for planning and implementing monitoring to assess the effectiveness of project designs and required mitigations in protecting resources. As with baseline monitoring, the type and scale of such monitoring will be determined by the BLM Authorized Officer based on the characteristics of the proposed project and location. Lease Stipulation 9 is a specific example of a requirement at the leasing stage, for the development and implementation of an impact and conflict avoidance and monitoring plan to assess, minimize, and mitigate the effects of infrastructure and its use on the coastal habitats and their use by wildlife and people.

Studies and monitoring undertaken to provide baseline data or to monitor effectiveness of mitigation measures must meet the approval of the BLM Authorized Officer. As the Authorized Officer determines to be appropriate, the data collection process and product shall be consistent with standards established by the BLM's Assessment, Inventory, and Monitoring program. If studies and monitoring reveal significant changes in circumstances or conditions associated with the implementation of the oil and gas program, the BLM may re-evaluate its management of the program, including consideration of potential new lease stipulations and ROPs that would apply to future lease sales and oil and gas activities.

Taken together, the provisions of the program adopted by this ROD provide protections for areas important to numerous wildlife, bird, fish, and aquatic subsistence species, including primary calving habitat for the Porcupine caribou herd, and nearshore marine, lagoon, and barrier island habitats. Additionally, protections are put in place for coastal and river routes important for water quality, fish, wildlife, raptors, cultural resources, and subsistence uses and activities.

It is important to note that the lease stipulations and ROPs adopted in this ROD are the baseline for protection of the various resources and uses within the Coastal Plain. Subsequent NEPA analysis for on-the-ground oil and gas activities may evaluate additional, project-specific mitigation measures, including site-specific measures, suited and appropriate to the specific proposals, which could be adopted by the BLM and applied as additional required protective measures on a project-specific basis consistent with 40 CFR 1508.20.

3.4 Endangered Species Act Consultation

Section 7(a)(2) of the ESA requires federal agencies to consult with the USFWS and National Marine Fisheries Service (NMFS), as appropriate depending on the species at issue, to ensure that their actions do not jeopardize the continued existence of species listed as threatened or endangered under the ESA or destroy or adversely modify their critical habitat. To meet requirements outlined in Section 7(a)(2), the BLM consulted with the USFWS and NMFS on the species listed and described below.

USFWS-"managed species" under the ESA that are within or in close proximity to the program area include three threatened species: polar bear (*Ursus maritimus*), spectacled eider (*Somateria fischeri*), and the Alaska-breeding Steller's eider (*Polysticta stelleri*). In addition, there is USFWS-designated Critical Habitat for the polar bear within the program area.

The USFWS determined the oil and gas leasing program is *not likely to jeopardize the continued existence* of Spectacled eiders, Steller's eiders, or polar bears, and it is *not likely to destroy or adversely modify* polar bear critical habitat.

In addition, the threatened northern sea otter, Southwest Alaska Distinct Population Segment (DPS) (*Enhydra lutris kenyoni*), is present *en route* to the program area along the marine transit route described in the Leasing EIS. There is also USFWS-designated Critical Habitat for the northern sea otter, spectacled eider, and Steller's eider within or next to the marine transit route. USFWS has determined the oil and gas leasing program is *not likely to adversely affect* the southwest Alaska DPS of the northern sea otter, and *not likely to adversely affect* designated sea otter, spectacled eider, or Steller's eider critical habitat.

The USFWS identified four project design criteria (PDC) that would ensure compliance with Section 7(a)(2) of the ESA. They are:

1. Section 7 Consultation on Future Activities—The lease areas may now or hereafter contain plants, animals, or their habitats determined to be threatened or endangered. The BLM would not approve any activity that may affect any such species or critical habitat until it completes its obligations under

applicable requirements of the ESA, as amended (16 U.S.C. 1531 et seq.), including completion of any required procedure for conference or consultation.

*Lease Notice 1 is adopted as part of this Decision, which is the PDC described above (see **Appendix A**). It applies to all future oil and gas activities authorized by the BLM, including lease-based activities and non-lease-based activities.*

2. The lease area and/or potential project areas may now or hereafter contain marine mammals. The BLM may require modifications to exploration and development proposals to ensure compliance with federal laws, including the MMPA. The BLM would not approve any exploration or development activity absent documentation of compliance under the MMPA. Such documentation shall consist of a Letter of Authorization, Incidental Harassment Authorization, and/or written communication from USFWS and/or NMFS confirming that a take authorization is not warranted.

   *Lease Notice 2 is adopted as part of this Decision, which is the PDC described above, the last two sentences of which are modified from what was published in the Final Leasing EIS (see **Appendix A**). It applies to all future oil and gas activities authorized by the BLM, including lease-based activities and non-lease-based activities.*

3. The USFWS and the BLM will conduct programmatic reviews by meeting at least annually beginning one year after the first Lease Sale. These reviews will evaluate, among other things, 1) whether activities proposed are consistent with the RFD scenario, as described, for the Proposed Program, 2) whether the nature and scale of predicted effects remain valid, and 3) whether the programmatic consultation, including the PDCs and determinations reached, remain adequate and appropriate. In addition, these meetings will provide a venue where any new information on the status of species, their critical habitat, or new methods to avoid or minimize impacts can be shared.

   This requirement is adopted as part of this Decision. Annual meetings will be coordinated between the BLM and USFWS staff.

4. All activities, including plan development, study development, and consideration of exceptions, modifications, or waivers would include coordination with the USFWS as the refuge surface management agency[12] and would comply with the ESA. In addition, the BLM would coordinate with other appropriate federal, state, and NSB agencies, tribes, and ANCSA corporations.

   *This requirement is adopted as part of this Decision (see **Appendix A**).*

NMFS "managed species" under the ESA that are within or in close proximity to the program area, include the endangered bowhead whale (*Balaena mysticetus*), and the threatened bearded seal, Beringia DPS (*Erignathus barbatus*) and ringed seal, Arctic subspecies (*Phoca hispida hispida*). Additionally, along the marine transit route in the Bering and Chukchi Seas, seven additional species are protected under the ESA, the threatened humpback whale, Mexico DPS (*Megaptera novaeangliae*), and endangered: Steller sea lion, western DPS (*Eumetopias jubatus*), North Pacific right whale (*Eubalaena japonica*), blue whale

[12] The USFWS manages the refuge except for implementation of the oil and gas program. As described above, implementation of the oil and gas program (including surface authorizations for those purposes) is under the jurisdiction of the BLM. References in this Record of Decision to USFWS as the surface manager of the refuge refer to its role as the manager for purposes other implementation of the oil and gas program.

(*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*), humpback whale, Western North Pacific DPS (*Megaptera novaeangliae*), and the sperm whale (*Physeter catodon*).

NMFS determined that the proposed action is *not likely to jeopardize the continued existence* of Beringia DPS bearded seals, Arctic ringed seals, western DPS Steller sea lions, bowhead whales, blue whales, fin whales, Western North Pacific DPS and Mexico DPS humpback whales, North Pacific right whales, and sperm whales; and it is *not likely to destroy or adversely modify* designated critical habitat for North Pacific right whales and Steller sea lions.

Section 7(a)(1) of the ESA directs federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02). In this regard, both USFWS and NMFS provided two conservation recommendations each as follows:

USFWS

1. Continue to monitor threatened eiders, polar bears, and BLM special status species in the Arctic Refuge. Results will allow the Service and BLM to better evaluate abundance, distribution, and population trends of listed eiders, polar bears, and other special status species. These efforts will enhance the likelihood that future oil and gas development within the Arctic Refuge will not jeopardize listed species, impact the conservation value of critical habitat, or increase the need to list additional species.
2. Work with the Service and other Federal and State agencies in implementing recovery actions identified in the Steller's and spectacled eider recovery plans and the Polar Bear Conservation Management Plan. Research to determine habitat requirements, sensitivity to disturbance and other program-related impacts, and response to current population threats is an important step toward minimizing conflicts with current and future North Slope oil and gas activities.

NMFS

1. The BLM should conduct or fund surveys to determine densities and distribution of ringed and bearded seals on ice and in marine waters offshore of the Coastal Plain.
2. The BLM should conduct or fund surveys to determine densities and distribution of cetaceans in marine waters offshore of the Coastal Plain.

It should be noted that any proposed exploration or development projects will be subjected to further project-specific ESA consultation before permits or approvals for those projects will be granted to ensure that the BLM's decisions continue to be well informed as activities proceed. These subsequent ESA consultations will assess potential impacts from the specific projects on listed species in the project area, based on any new information about the resources and known information about the location and technology of the proposed projects. These subsequent ESA consultations will occur for each stage of oil and gas exploration and development activities proposed to be authorized by the BLM. It is during these subsequent reviews and through consultation with NMFS that the BLM will make a decision based on the proposed activities as to whether a survey to determine densities or distributions of marine mammals as identified above is necessary in order to minimize or avoid adverse effects on the listed species. Further, BLM will continue to work with USFWS, NMFS, and other federal agencies as appropriate to ensure continued compliance with ESA and

MMPA, and to ensure best available information is being gathered and used to inform decision making as it may relate to oil and gas development.

Lease Stipulation 5 further emphasizes the requirement to comply with the ESA and the MMPA to specifically minimize disturbance to denning polar bears and denning habitat areas. Lease Notice 1 notifies the lessee that the BLM would not approve any activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the ESA. Lease Notice 2 notifies lessees that activities that could result in the potential "take" of marine mammals would not be authorized without documentation of compliance with the MMPA by the USFWS and/or NMFS prior to commencement of such activities.

3.5 National Historic Preservation Act

In compliance with Section 106 of the National Historic Preservation Act (NHPA), 54 U.S.C. 306108, the BLM developed a programmatic agreement concurrent with the NEPA process, in accordance with 36 CFR 800.14(b)(1)(ii), and in consultation with the Advisory Council on Historic Preservation, the State Historic Preservation Officer, and the USFWS, who are signatories to the agreement. In addition, the BLM consulted with federally recognized Indian Tribes, as defined in 36 CFR 800.16(m), including Native villages, and regional and village ANCSA corporations.

The programmatic agreement establishes the process the BLM will follow to fulfill its responsibilities under Section 106 of the NHPA, including consultation with Indian Tribes, while implementing the oil and gas leasing program within the Coastal Plain.

3.6 ANILCA Section 810 Subsistence Evaluation

ANILCA Section 810(a), 16 U.S.C. 3120(a), requires that in determining whether to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands under any provision of law authorizing such actions, the head of the federal agency having primary jurisdiction over such lands or his designee must evaluate and include findings on three specific issues:

1. The effect of such use, occupancy, or disposition on subsistence uses and needs;
2. The availability of other lands for the purpose sought to be achieved; and
3. Other alternatives that reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes.

The following discussion summarizes the ANILCA Section 810 Final Evaluation for the Decision in this ROD. The summary is based on the detailed ANILCA Section 810 Final Evaluation contained in Appendix E of the Final Leasing EIS, as it pertains to the alternative selected by this Decision, Alternative B. The BLM's evaluation of the effects of this Decision are based on the impact analysis in the Final Leasing EIS, which, as described in this ROD, is based on the BLM's hypothetical, speculative, and aggressive development scenario.

- *Without the Cumulative Case:* The effects of the alternative adopted in this ROD, Alternative B, will not result in a significant restriction to subsistence uses. A positive determination pursuant to ANILCA Section 810 is not required. Adequate lease stipulations and ROPs have been incorporated into the alternative, including specific procedures for subsistence consultation with directly affected subsistence communities, requirements for extensive studies of caribou movement, and setbacks or other protective measures specific to birds, to ensure that significant restrictions to subsistence uses and needs would not occur. This finding applies to the communities of Arctic Village, Kaktovik, Nuiqsut, and Venetie.

- *With the Cumulative Case:* The cumulative case includes, but is not limited to, a road and pipeline between the Kaktovik area and the Dalton Highway/Trans-Alaska Pipeline, oil and gas development in the Colville-Canning Area, and oil and gas activity in the vicinity of Alpine. The cumulative case, when taken in conjunction with the selected alternative, will not result in a significant restriction to subsistence uses for the communities of Arctic Village, Nuiqsut, and Venetie; however, the effects of the cumulative case exceed the "may significantly restrict" threshold for the community of Kaktovik, and thus a positive ANILCA Section 810 determination was made. Although the effects of the activities proposed under the program adopted in this ROD alone fall below the threshold, adding them to those of the cumulative case results in a level of effects that "may significantly restrict" subsistence uses, with the potential to affect Kaktovik due to the potential decrease in the community's access to fish, marine mammals, and caribou.

ANILCA Section 810(a) provides that no "withdrawal, reservation, lease, permit, or other use, occupancy or disposition of the public lands which would significantly restrict subsistence uses shall be effected" until the federal agency gives the required notice and holds a hearing in accordance with Section 810(a)(1) and (2), and makes the three determinations required by Section 810(a)(3)(A), (B), and (C). The BLM has found in this subsistence evaluation that all the action alternatives (Alternatives B, C, D1, and D2) considered in the Leasing EIS, when considered together with all the past, present, and reasonably foreseeable future cumulative effects of the hypothetical development scenario discussed in the Leasing EIS, may significantly restrict subsistence uses for the community of Kaktovik; therefore, the BLM undertook the notice and hearing procedures required by ANILCA Section 810(a)(1) and (2), as described above, including a subsistence hearing held in Kaktovik in conjunction with the public meeting on the Draft Leasing EIS, and now must make the three determinations required by Section 810(a)(3)(A), (B), and (C) (16 U.S.C. Section 3120(a)(3)(A), (B), and (C)).

The BLM has determined that the program adopted in this ROD meets the following requirements (16 U.S.C. Section 3120(a)(3)(A), (B), and (C)) for federal actions that may result in a significant restriction on subsistence uses:

1. The significant restriction of subsistence uses is necessary, consistent with sound management principles for the utilization of the public lands.

The BLM undertook the Leasing EIS to fulfill the Secretary of the Interior's responsibilities under Section 20001 of PL 115-97, including the requirement to establish and administer an oil and gas program for the Coastal Plain, and to hold not fewer than two lease sales in the program area before December 22, 2024, each sale offering not fewer than 400,000 acres in areas with the highest hydrocarbon potential.

Alternative B, selected by this ROD, will provide the opportunity, subject to appropriate conditions developed through the NEPA process, to conduct at least two lease sales in the program area meeting the requirements of Section 20001 of PL 115-97. These conditions include lease stipulations and ROPs, attached as **Appendix A** of this ROD, that incorporate protective measures that would minimize potential impacts on important subsistence resources and subsistence use areas.

The cumulative case, in conjunction with Alternative B, could significantly restrict subsistence uses for the community of Kaktovik. The BLM has determined that such a significant restriction is necessary, consistent with sound management principles for the use of the public lands, and for the BLM to fulfill the Secretary of the Interior's responsibilities under PL 115-97, described above.

2. The proposed activity will involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition.

The BLM has determined that Alternative B involves the minimal amount of public lands necessary to accomplish the purposes of the oil and gas leasing program required by Section 20001 of PL 115-97. Under all alternatives analyzed in the Leasing EIS, including Alternative B, no more than 2,000 acres of public lands would be covered by production and support facilities during the oil and gas program mandated by the law. In this regard, the alternatives do not vary with respect to the amount of public lands that would be covered by production and support facilities. An alternative that allowed less than 2,000 acres to be covered by production and support facilities would be inconsistent with the mandate contained in PL 115-97. In this regard, Section 20001(c)(3) states "the Secretary *shall* authorize up to 2,000 surface acres to be covered by production and support facilities."

The BLM cannot administratively modify this explicit statutory directive. Alternative B includes numerous lease stipulations and ROPs that apply across the Coastal Plain for protection of specific habitats and site-specific resources and uses, while allowing reasonable opportunity for necessary infrastructure to support oil and gas exploration and development. Important subsistence habitats along rivers and streams, as well as nearshore marine, lagoon, and barrier island habitats contain no surface occupancy restrictions, to ensure the habitat is protected for the important subsistence uses and resources.

More restrictive alternatives that varied and offered less acreage for leasing were analyzed, and it was determined Alternative B best meets the purpose and need of the oil and gas program required by the law. As discussed in **Section 3.1** of this ROD, having the entire Coastal Plain program area available for leasing provides maximum flexibility for future decision-making and innovation for project proposals by potential lessees. This is particularly the case given that unless and until exploration drilling occurs, the BLM cannot be reasonably certain as to which areas of the Coastal Plain have the highest prospects for oil and gas discoveries. Furthermore, given the limited geophysical information that currently exists for the Coastal Plain, the BLM has determined that making the entire program area available for leasing is the only way to ensure that the areas having the highest potential for the discovery of oil and gas can be offered in the first two leases sales, as required by Section 20001(c)(1)(B)(i)(II) of PL 115-97.

3. Reasonable steps will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions.

When the BLM began its NEPA scoping process, it internally identified subsistence as one of the major issues to be addressed. The information found within the Leasing EIS's analysis of impacts on subsistence were used to craft Alternative B. This information included access, harvests, and traditional use patterns, as well as the results of workshops with the cooperating agencies, public scoping meetings in the villages, and meetings with tribal and local governments.

This information resulted in the development of strict mitigation measures similar to those used on BLM-administered lands in the NPR-A. Several protective measures specifically minimize adverse impacts on subsistence uses and resources, such as, but not limited to:

- Lease Stipulation 1 minimizes impacts on subsistence cabins and campsites, as well as the disruption of subsistence activities.
- Lease Stipulation 4 protects fish and wildlife habitat and minimizes impacts on subsistence activities.
- Lease Stipulation 9 protects nearshore marine subsistence resources and activities.

- ROP 18 protects subsistence uses and access to subsistence hunting and fishing areas and minimizes the impact of oil and gas activities on air, land, water, fish, and wildlife resources.
- ROP 20 protects subsistence use and access to subsistence hunting and fishing and anadromous fish.
- ROP 23 minimizes disruption of caribou movement and subsistence use.
- ROP 34 minimizes impacts of aircraft activity on subsistence use.
- ROP 36 and ROP 37 require coordination and consultation with subsistence users.
- ROP 38 minimizes impacts on subsistence resources from non-local hunting, trapping, and fishing.
- ROP 39 minimizes impacts on subsistence access.

Based on these and several other lease stipulations and ROPs (see **Appendix A**) that serve to protect various subsistence resources or their habitat, and subsistence uses generally, including access to subsistence resources, the BLM has determined that the Decision presented in this ROD includes reasonable steps to minimize adverse impacts on subsistence uses and resources resulting from the Coastal Plain program. In addition to the lease stipulations and ROPs, the BLM will consider alternatives to avoid adverse effects and incompatible development to subsistence resources and uses and subsistence access before any on-the-ground activities are approved. This will be done through subsequent NEPA analysis, which will be conducted before any construction or operation permits or approvals are issued. Compliance with ANILCA Section 810(a) will be undertaken at these subsequent stages through project-specific ANILCA Section 810 evaluations.

3.7 Environmental Justice

Executive Order 12898 requires that an agency identify and address "as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." Section 3.4.5 of the Leasing EIS identifies direct and indirect impacts that may affect the communities of Arctic Village, Kaktovik, Nuiqsut, and Venetie. The residents of these communities qualify as low-income and minority populations and could potentially be disproportionately impacted by this Decision.

This Decision avoids, minimizes, and mitigates potential adverse impacts on these populations. It accomplishes this primarily through adopting measures that protect subsistence resources, access to those resources, and public health; and by monitoring operators' activities to ensure compliance with requirements and other monitoring to assess the effectiveness of lease stipulations and ROPs and help adapt management to better meet resource and use objectives.

The following are examples of some of the mitigation measures that accomplish this:

- Lease Stipulation 1 minimizes impacts on subsistence habitat and resources, as well as cultural and paleontological sites, by requiring setbacks for specific rivers and creeks that contain these important resources and sites.
- Lease Stipulation 4 protects fish and wildlife habitat and minimizes impacts on subsistence activities, by limiting development activities in nearshore marine, lagoon, and barrier island habitats, as well as requiring development and implementation of an impact and conflict avoidance and monitoring plan.
- Lease Stipulation 7 minimizes disturbance and hindrance of caribou or alteration of their movements in the areas identified as important for calving.
- ROP 6 contains specific requirements related to avoiding, minimizing, or mitigating impacts on air quality for various phases of development to prevent unnecessary or undue degradation of the air and lands and to protect health.

- ROP 18 requires design of roads, as well as construction, operation, and maintenance to be done in consultation with affected subsistence users, to protect subsistence use and access to subsistence hunting and fishing areas.
- ROP 36 requires the lessee/operator/contractor to coordinate directly with affected communities to provide opportunities for subsistence users to participate in planning and decision-making to prevent unreasonable conflicts between subsistence uses and other activities.
- ROP 38 prohibits lessees/operators/contractors in work status from hunting, trapping and fishing to minimize impacts from non-local hunting, trapping and fishing activities on subsistence resources.

Based on these and other lease stipulations and ROPs that serve to protect various cultural resources, subsistence resources and their habitat, and human health and the environment generally, the BLM has determined that this Decision includes reasonable measures to minimize adverse impacts on these populations. In addition to these and other lease stipulations and ROPs, the BLM will consider alternatives to avoid adverse effects and incompatible development to protect the various cultural resources, subsistence resources and their habitat, and human health and the environment, before any on-the-ground activities are approved. This will be done through subsequent NEPA analysis, which will be conducted before any construction or operation permits or approvals are issued. Compliance with Executive Order 12898 will be undertaken at these subsequent stages through consideration of all practicable alternatives and additional mitigation, as appropriate.

3.8 Floodplain Management and Protection of Wetlands

The following findings are based on a comprehensive impact analysis completed in compliance with Executive Orders 11988 and 11990 in the Leasing EIS (see Sections 3.2.4, 3.2.10, and 3.3.1).

Executive Order 11988—Floodplain Management

Executive Order 11988, concerning the protection of floodplains, requires an agency to provide leadership and to take action to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities. Pursuant to the order, the agency has a responsibility to:

1. Evaluate the potential effects of any actions that may take place in a floodplain;
2. Ensure that its planning programs and budget requests reflect consideration of flood hazards and floodplain management; and
3. Prescribe procedures to implement the policies and requirements of Executive Order 11988.

Additional requirements are as follows:

1. Before taking an action, each agency shall determine whether the proposed action will occur in a floodplain and the evaluation required will be included in any statement prepared under Section 102(2)(C) of the NEPA (42 U.S.C. 4332(2)(C)).
2. If an agency has determined to, or proposes to conduct, support, or allow an action to be located in a floodplain, the agency shall consider alternatives to avoid adverse effects and incompatible development in the floodplains. If the head of the agency finds that the only practicable alternative consistent with the law and with the policy presented in this order requires siting in a floodplain, the agency shall, prior to taking action,
    a. design or modify its action in order to minimize potential harm to or within the floodplain, consistent with regulations and

b. prepare documentation explaining why the action is proposed to be located in the floodplain.

The following discussion summarizes methods under the alternative adopted by this Decision, Alternative B, to avoid to the extent possible potential impacts on floodplains at the leasing stage, recognizing additional requirements may be required if the NEPA analysis for project-specific activities identifies the need for site-specific mitigation measures.

River floodplains and deltas encompass approximately 24.6 percent of the Coastal Plain program area. Floodplains will be protected to the greatest extent practicable, primarily through lease stipulations and ROPs incorporated into this ROD (see **Appendix A**), including but not limited to:

- Lease Stipulation 1 minimizes the disruption of natural flow patterns and changes to water quality and the disruption of natural functions resulting from the loss or change to vegetative and physical characteristics of floodplain and riparian areas, springs, and aufeis.
- ROP 3 prohibits refueling equipment within 100 feet of the active floodplain of any waterbody.
- ROP 16 prohibits exploratory drilling in fish-bearing rivers and streams and other fish-bearing waterbodies. On a case-by-case basis, the BLM Authorized Officer may consider exploratory drilling in floodplains of fish-bearing rivers and streams.
- ROP 22 requires single-span bridges if technically feasible, to allow for sheet flow and floodplain dynamics and to ensure passage of fish and other organisms.
- ROP 24 requires gravel mine site design, construction, and reclamation be done in accordance with a plan approved by the BLM Authorized Officer. The plan must take into consideration locations inside or outside the active floodplain, depending on potential site-specific impacts. It must also consider the design and construction of gravel mine sites in active floodplains to serve as water reservoirs for future use.

In addition to these and other lease stipulations and ROPs, the BLM will consider alternatives to avoid adverse effects and incompatible development in the floodplains before any on-the-ground activities are approved. This will be done through subsequent project-specific NEPA analysis, which will be conducted before any construction or operation permits or approvals are issued. Compliance with Executive Order 11988 will be undertaken at these subsequent stages through consideration of all practicable alternatives and additional mitigation in order to ensure that all possible protection is provided for floodplain functions and values.

Executive Order 11990—Protection of Wetlands

Executive Order 11990, concerning the protection of wetlands, requires that the BLM consider factors relevant to the proposal's effect on the survival and quality of wetlands. Factors to be considered include the following:

1. Public health, safety, and welfare; including water supply, quality, recharge and discharge, pollution; flood and storm hazards; and sediment and erosion;
2. Maintenance of natural systems; including conservation and long-term productivity of existing flora and fauna, species and habitat diversity and stability, hydrologic utility, fish, wildlife, timber, and food and fiber resources; and,
3. Other uses of wetlands in the public interest, including recreation, scientific, and cultural uses.

Under the order, in furtherance of the NEPA (42 U.S.C. 4331(b)(3)), to improve and coordinate federal plans, functions, programs, and resources so that the nation may attain the widest range of beneficial uses of the environment without degradation and risk to health or safety, the agency, to the extent permitted by law, shall

avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds:

1. There is no practicable alternative to such construction, and
2. The proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. In making this finding the head of the agency may take into account economic, environmental and other pertinent factors.

The following discussion summarizes the evaluation of impacts and findings to wetlands as presented in the Leasing EIS for Alternative B, as applicable to this Decision. It also identifies protective mitigation measures developed to avoid to the extent possible potential impacts on wetlands.

Most of the landscape in the Coastal Plain program area is considered wetlands, and National Wetlands Inventory data indicate that at least 96 percent of the program area is classified as wetlands or waters of the U.S. The program area is largely undisturbed, and wetland structure and function are intact.

Potential impacts on vegetation and wetlands from seismic exploration include changes in plant community composition and structure, altered hydrology, compacted soil, and by direct damage to aboveground structures, such as tussocks or woody stems and branches. The most susceptible vegetation types to seismic impacts correspond to drier tundra types, typically saturated wetlands or possibly uplands. Potential effects on vegetation and wetlands from seismic operations are avoided, minimized, and mitigated through ROPs 11, 12, and 15 (see **Appendix A**).

Compaction of the soil and surface organic layers is also a potential effect of ice-road construction. ROP 11 requires operational and design criteria for the protection of stream banks and freshwater resources, by minimizing soil compaction and the breakage, abrasion, compaction, or displacement of vegetation.

The primary impact on vegetation and wetland types from development activities is permanent loss of those types due to the placement of fill for the construction of roads, pads, vertical support members for pipeline footings, and gravel excavation. The removal of surface layers for gravel extraction in material sites may also result in loss of vegetation and wetlands that may be recovered through reclamation. The potential loss as a result of these types of activities would be limited to a small fraction of the Coastal Plain.

During construction, vegetation and wetland plant community composition can be altered through the deposition of dust and gravel spray from vehicle traffic, alterations to drainage patterns from drifted snow, impounded drainages, the potential for introduction of invasive or noxious nonnative plants, and the potential for oil, water, and drilling mud spills to the tundra surface.

After construction is complete, gravel from roads, pads, and airstrips would be the main dust source; dust fallout from vehicle traffic could increase turbidity and contaminant loads in ponds, lakes, creeks, streams and rivers, and wetlands that are next to roads and construction areas. Dust particles may reduce plant growth by smothering the vegetation and may reduce wetland function by introducing pollutants. Many of the ROPs provide protections for water resources, and are designed to minimize disruptions to natural flow patterns and impacts on water quality, such as: ROPs 2, 3, 8, 9, 11, 12, 15, 17, and 21. ROP 43 was specifically designed to prevent the introduction or spread of nonnative, invasive species in the Coastal Plain.

Due to continuous permafrost, pipelines on the North Slope of Alaska are typically constructed above ground, which introduces the potential for damage due to oil spills and less severe long-term effects of shading and snow accumulation on vegetation and wetlands below the pipeline. Spill effects would range in severity and

impacts would be evaluated on a case-by-case basis. Lease Stipulations 4 and 9 and ROP 33 require operators to develop adequate spill response plans before construction begins.

Wetter vegetation types tend to provide important wildlife habitat function; thus, the NSO protections preferentially preserve some high functioning wetlands from impacts of road and pad construction in many riparian areas. Furthermore, the NSO areas in the high hydrocarbon potential zone includes 31,800 acres, or 22 percent of Herbaceous (Wet), which is the most common vegetation type within that land use category. The high hydrocarbon potential zone includes a large area in the Staines and Canning River deltas and the wettest terrain in the program area.

Placement and construction of gravel pads, roads, air access facilities, culverts, and bridges could affect natural drainage patterns. This would come about by creating new channels, inundating dry areas, causing ground surface subsidence under some seismic trails, and starving wetlands of water on the downstream side of roads. Also, gravel roads and pads tend to increase the occurrence of thermokarst next to the footprint edge, with ponded areas extending into the adjacent tundra and altering the vegetation and wetland plant community structure. Additionally, water withdrawals to support components of oil and gas activities under Alternative B would affect the water levels of lakes used as water sources and any connected waterbody, such as streams or wetlands.

Wetlands would be protected to the greatest extent practicable, primarily through lease stipulations and ROPs (see **Appendix A**) incorporated into this ROD. In addition to the lease stipulations and ROPs, the BLM will consider alternatives to avoid adverse effects and incompatible development in the wetlands before any on-the-ground activities are approved. This will be done through subsequent project-specific NEPA analysis, which will be conducted before any construction or operation permits or approvals are issued. Compliance with Executive Order 11990 will be undertaken at these subsequent stages through consideration of all practicable alternatives and mitigation measures in order to ensure that harm to wetland functions and values is minimized.

4. PUBLIC INVOLVEMENT

The BLM considered public comments throughout the Leasing EIS process. The following list highlights major steps in the public involvement process (for more information on public involvement, see Appendix C in the Leasing EIS):

- Scoping: Public scoping occurred from April 20 to June 19, 2018. The BLM held 6 public meetings in Alaska and one in Washington, DC, and received more than 760,000 scoping comment submissions, which contained 4,546 substantive comments.
- Public Review of the Draft Leasing EIS: The comment period for the Draft Leasing EIS occurred from December 28, 2018 through March 13, 2019. The BLM held 7 public meetings in Alaska and one in Washington, DC and received more than 1 million comment submissions, of which 3,709 were considered unique submissions.
- Comments received after the Final Leasing EIS was released: In reaching this Decision, the BLM reviewed and considered comments received after distribution of the Final Leasing EIS on September 12, 2019.

In addition to the above, the Leasing EIS benefited from suggestions and review of the analysis in the Leasing EIS by the eight cooperating agencies: Arctic Village Council, EPA, USFWS, Native Village of Kaktovik, Native Village of Venetie Tribal Government, Venetie Village Council, NSB, and the State of Alaska.

Formal (i.e., legally required) consultation occurred during the Leasing EIS process with:

- Tribes, as required by a Presidential Executive Memorandum dated April 29, 1994, and Executive Order 13175 (November 6, 2000), and in accordance with the Department of the Interior Policy on Consultation with Indian Tribes (December 1, 2011);
- ANCSA corporations, as required by Executive Order 13175 (November 6, 2000), as amended, and the Department of the Interior Policy on Consultation with ANCSA Corporations (August 10, 2012);
- The USFWS and NMFS, pursuant to the ESA; and
- Alaska's State Historic Preservation Office, pursuant to the NHPA.

Pursuant to ANILCA Section 810(a)(1) and (2), the BLM also conducted a hearing in the potentially affected community of Kaktovik to gather comments regarding potential impacts on subsistence uses resulting from the alternatives considered in the Draft Leasing EIS.

Additionally, the BLM met with representatives of a broad range of stakeholders, including local and state governments, tribes, Canadian government, ANCSA corporations, and industry and environmental organizations.

4.1 Comments Prior to Final Leasing EIS

While there were comments on a large number of topics and resources pertaining to an oil and gas leasing program in the ANWR, all of which were considered in the development of the Leasing EIS, throughout the NEPA process there were consistent concerns expressed regarding: 1) Timeline (the speed of development of the EIS); 2) data gaps or missing information and; 3) the fiscal purpose of PL 115-97.

1) Timeline: In accordance with 40 CFR 1501.8, and consistent with CEQ's Forty Most Frequently Asked Questions Concerning CEQ's National Environmental Act Regulations, Question 35; DOI Secretarial Order 3355 sets a goal of 12 months as the time limit for completing an EIS. Though there were dedicated staff working on the Leasing EIS, to include over 70 specialists that contributed in excess of 30,000 hours to its development, it took 21 months from implementation of PL 115-97, and 17 months from issuance of the Notice of Intent to publish the FEIS.
2) Data gaps or missing information: Prior to issuance of a Notice of Intent for preparation of the Leasing EIS, Rapid Response Resource Assessments were compiled by the USFWS and the BLM in order to inform decision-making related to successful implementation of an oil and gas program in the Coastal Plain, from leasing through production and reclamation. In addition, recommendations were made through the public process on potential data gaps and missing information. To ensure consistency with 40 CFR 1502.22, the BLM reviewed each item of "incomplete or unavailable" information that had been identified, which is included as Appendix Q in the Leasing EIS.
3) Fiscal purpose of PL 115-97: Comments were received regarding the Congressional Budget Office's 2017 fiscal estimate for the total revenue that would be generated by a leasing program within the Coastal Plain, suggesting the analysis in the EIS is not consistent with that estimate. PL 115-97 does not direct the Secretary, acting through the BLM, to generate specific amounts of revenue from an oil and gas leasing program in the Coastal Plain, and an analysis was included in the EIS of the total revenue that could be generated based on best available information.

4.2 Comments Received After Final Leasing EIS

After the Final Leasing EIS was distributed (September 12, 2019), the BLM received and considered several comments and additional information from the public and various stakeholders. Over 10,000 form letter style

comments were received opposed to an oil and gas program within the ANWR. These comments were generally similar to and consistent with the comments received during the development of the Leasing EIS. Some comment submissions were substantive and provided specific input, including recent studies, regarding the Final Leasing EIS and/or the ROD, which the BLM has included in the administrative record and considered prior to executing this ROD.

The BLM reviewed the submissions to determine if the information presents significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts, consistent with 40 CFR 1502.9(c)(1)(ii). The BLM's review is outlined below.

Trustees for Alaska provided four documents with a September 17, 2019, letter:

- U.S. Department of the Interior, Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment, Report and Recommendation to the Congress of the United States and Final Legislative Environmental Impact Statement, Plate 1, Plate 2, and Plate 3 (Apr. 1987);
- George M. Durner, David C. Douglas, and Todd C. Atwood, "Are polar bear habitat resource selection functions developed from 1985–1995 data still useful?" *Ecology and Evolution* (May 28, 2019);
- Matthew Strum, Charles Parr, and Chris Larsen, A Report on the Snow Cover of the 1002 Area of the Arctic National Wildlife Refuge, 2014–2019, University of Alaska Fairbanks, Geophysical Institute (Aug. 28, 2019); and
- Viktoriia Radchuk, Adaptive responses of animals to climate change are most likely insufficient, Nature Communications (2019).

Comment Response: The U.S. Department of the Interior, Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment, Report and Recommendation to the Congress of the United States and Final Legislative Environmental Impact Statement, was cited and referenced in the Leasing EIS. No further review of this document is necessary. The existing analysis is valid in light of the additional information provided in the other documents referenced above. All of the information contributes to further understanding of the Arctic and specifically the Coastal Plain but does not change the overall analysis.

The Sierra Club's September 18, 2019, letter included a letter from Dr. Steven Amstrup, Chief Scientist for Polar Bears International, dated September 17, 2019.

Comment Response: The Leasing EIS discusses real-world conditions associated with aerial forward-looking infrared radiometry den detection for polar bear and acknowledges its limitations (see Section 3.3.5 of Leasing EIS). The letter does not change the overall analysis in the EIS.

World Wildlife Fund provided two documents with a September 20, 2019, letter:

- Benjamin J. Laurel, et al., Embryonic Crude Oil Exposure Impairs Growth and Lipid Allocation in a Keystone Arctic Forage Fish, 19 ISCIENCE 1101 (Sept. 27, 2019); and
- NOAA Fisheries, New Study Shows Arctic Cod Development, Growth, Survival Impacted by Oil Exposure (Sept. 17, 2019).

Comment Response: The existing analysis is valid in light of the additional information provided in the documents referenced above. All of the information contributes to further understanding of the Arctic and specifically the Coastal Plain but does not change the overall analysis.

Audubon Alaska provided four documents with an October 3, 2019, letter via email:

- Kenneth V. Rosenberg, Adriaan M. Dokter, Peter J. Blancher, John R. Sauer, Adam C. Smith, Paul A. Smith, Jessica C. Stanton, Arvind Panjabi, Laura Helft, Michael Parr, Peter P. Marra, "Decline of the North American avifauna," *Science* (September 19, 2019).
- Moreno Di Marco, Simon Ferrier, Tom D. Harwood, Andrew J. Hoskins, and James E. M. Watson, "Wilderness areas halve the extinction risk of terrestrial biodiversity," *Nature* (2019).
- Vojtěch Kubelka, Miroslav Šálek, Pavel Tomkovich, Zsolt Végvári, Robert P. Freckleton, Tamás Székely, Response to Comment on "Global pattern of nest predation is disrupted by climate change in shorebirds," *Science* (June 14, 2019).
- S. G. Hamilton & A. E. Derocher, "Assessment of global polar bear abundance and vulnerability," *Animal Conservation* (2018).

Comment Response: The existing analysis is valid in light of the additional information provided in the documents referenced above. All of the information contributes to further understanding of the Arctic and specifically the Coastal Plain but does not change the overall analysis.

USFWS sent an email on October 3, 2019, with concern regarding language in the Final Leasing EIS regarding springs and the potential impacts of exploration or development, suggesting that well drilling and fracking would be unlikely to contact groundwater flow to the springs because the flow paths of the springs are above the impenetrable permafrost layer. This statement is in contrast with Kane et al. (2013), who discuss with certainty that the flow paths come from deep below the permafrost layer with unclear pathways to the surface. They further suggest that the warmer the spring, the deeper the flow path.

Comment Response: The text USFWS references in the Final EIS is specific to EPA's requirement that underground injection control wells be used to dispose of pumpable wastes as incorporated into ROP 2c. The text does not discuss any unknown future oil exploration practices concerning fracking which would be addressed in any future development EISs.

USFWS's comment that "This statement is in contrast with Kane et al. (2013; attached), who discuss with certainty that the flow paths come from deep below the permafrost layer with unclear pathways to the surface (see page 43 of the attached reference)" is incorrect.

The reference actually states:

- In the Abstract "The transmission zone is beneath the permafrost, with discharge occurring through the springs via taliks through the permafrost (where faults are present) and also likely at the northern edge of the permafrost along the Beaufort Sea coast."
- In the caption to Figure 2: ". . . that groundwater recharges through permafrost-free areas of limestone on the south side of the Brooks Range and discharges through taliks (probably coinciding with faults), extending through the permafrost north of the Brooks Range. Some discharge is apt to discharge along the northern boundary of the permafrost and the coast."
- On page 44 of the reference "Hall and Roswell (1981) and others suggest that faults may represent the most likely pathway for groundwater discharge in this permafrost environment."
- On page 45 of the reference "Also, Beikman and Lathram (1976) and others have mapped the distribution of faults across northern Alaska. They show that there are many more faults in northeastern Alaska than in the northwestern sector; this also matches the distribution of major icing

formations. Finally, Hall and Roswell (1981) have produced a map that shows the colocation of springs and faults in northeastern Alaska."

Additionally, the USFWS comment, "They further suggest that the warmer the spring, the deeper the flow path," is an incorrect interpretation of the referenced article. It states, "The two warmest springs are located the farthest away from the recharge area; this fits the concept of geothermal heating of deeper groundwater flow." Being the farthest away from the recharge area indicates that this groundwater travels the farthest/longest time in the sub-permafrost or warmer/deeper ground conditions, not that the groundwater flow is deeper for these warmer springs.

The comment was thoroughly considered, and based on the above review, the BLM determined the existing analysis is valid as is.

Trustees for Alaska transmitted the USFWS water rights application maps with an October 8, 2019, transmittal letter:

Comment Response: Trustees for Alaska did not reference any specific study or new information, as the USFWS water rights applications were referenced in the analysis of the Leasing EIS. No further review of these documents is necessary.

The EPA submitted a letter via email on October 21, 2019 with several recommendations, though did not provide new information to consider. Some of their comments were previously responded to during review of the Draft EIS or Preliminary Final EIS (see Appendix S of the Leasing EIS); however, the following recommendations were specific to the ROD:

1. The BLM should commit in the ROD to develop a cumulative, quantitative analysis prior to authorizing any future development, and use this analysis to identify whether additional mitigation measures are necessary to protect air quality or air quality related values. In addition, the BLM should commit to begin development of an ambient air quality monitoring program to determine baseline air quality conditions at Kaktovik and at lease block locations on the Coastal Plain where development is most likely to occur.

Comment Response: ROP 6 requires all projects to comply with all applicable National and State Ambient Air Quality Standards and notes it may be required to provide a minimum of 1 year of baseline ambient air monitoring data for pollutants of concern.

2. Define successful reclamation in the ROD and adopt Alternative D's ROP 35 and modify to specify how the BLM will ensure that reclamation has been successful prior to authorizing additional land disturbance to include specific criteria on how reclamation has been achieved.

Comment Response: Alternative B's ROP 35 adequately describes requirement (i.e., . . . rehabilitation to the land's previous hydrological, vegetation, and habitat functions . . .) and allows for the specific details of reclamation to be developed and implemented through a BLM-approved abandonment and reclamation plan, based on the site-specific project requirements.

3. Communicate with potentially affected environmental justice communities regarding the BLM's final environmental justice determination and mitigation strategies in the selected alternative as well as include ROP 7 under Alternative D, to further minimize impacts.

Comment Response: The BLM has ensured the Final EIS was widely distributed and shared with potentially affected parties and will continue to reach out to potentially affected communities throughout implementation of the oil and gas leasing program. ROP 7 was not retained in Alternative B as this condition has not been practical to implement in the NPR-A nor has it resulted in meaningful mitigation to meet the objective identified in the ROP.

The Government of Canada sent a letter on October 25, 2019, via email, requesting several ROPs be revised to explicitly allow for Canadian management agencies to have access to data collected that is germane to the management of shared wildlife, including Porcupine caribou, polar bears, and migratory birds.

Comment Response: The BLM agrees there is value in continuing to share data with Canadian management agencies, however, because the ROPs are an agreement/requirement between the leaseholder and the BLM, it would not be the appropriate mechanism in which to do so. Formal data sharing should continue between the Department of the Interior and Canadian management agencies through established agreements, and/or the respective agencies should develop new data sharing agreements as appropriate. The letter was forwarded through the Department of the Interior to the State Department for formal response.

The Porcupine Caribou Management Board sent a letter on October 30, 2019, regarding impacts on the Porcupine Caribou herd with three main points, as follows:

1. Lack of quantitative analysis and proof of effectiveness of mitigation

Comment Response: The comment was thoroughly considered, and based on the above review, the BLM determined the existing analysis is valid as is.

2. Lack of consultation with Canadian user groups

Comment Response: The Leasing EIS gives consideration of transboundary impacts throughout the EIS. As stated in Appendix S of the Final EIS, the EIS gives due consideration to the International Porcupine Caribou Agreement, and Department of the Interior conducted consultation with the International Porcupine Caribou Board and with Canadian officials.

3. Emphasis on the need for future data-sharing and international collaborative study of the effectiveness of the mitigation measures

Comment Response: The BLM agrees there is value in continuing to share data with Canadian management agencies. Formal data sharing should continue between the Department of the Interior and Canadian management agencies through established agreements, and/or the respective agencies should develop new data sharing agreements as appropriate.

Natural Resources Defense Council provided two letters on November 8, 2019. One was specific to climate change as described below.

This comment asserts that the BLM must account for changes in foreign energy consumption that could result under the Proposed Action and No Action alternatives, and provides the documents listed below, which purportedly illustrate how the BLM could model such changes. This comment also suggests that the BLM use a social cost of carbon calculation or a comparable technique to quantify the economic impacts associated with those marginal changes in foreign energy consumption, in order to more fully account for the benefits and detriments associated with the Proposed Program.

- Jason Bordoff and Trevor Houser, Center on Global Energy Policy, Navigating the U.S. Oil Export Debate (2015);
- Bureau of Ocean Energy Management, U.S. Department of the Interior, OCS Oil and Natural Gas: Potential Lifecycle Greenhouse Gas Emissions and Social Cost of Carbon (2016);
- Peter Erickson and Michael Lazarus, "Impact of the Keystone XL Pipeline on global oil markets and greenhouse gas emissions," 4 *Nature Climate Change* 778, 788-81 (2014);
- ICF International, The Impacts of U.S. Crude Oil Exports on Domestic Crude Production, GDP, Employment, Trade, and Consumer Costs (2014); and
- IHS Energy, U.S. Crude Oil Export Decision: Assessing the Impact of the Export Ban and Free Trade on the U.S. Economy (2014).

Comment Response: This comment largely reiterates prior comments concerning potential changes in foreign consumption that were submitted in response to the DEIS (see Comment Letter, Alaska Wilderness League et al., Comments re: Notice of Availability of the Draft Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program and Announcement of Public Subsistence Related Hearings, 83 Fed. Reg. 67,337 (Dec. 28, 2018) at 105-11 (Mar. 13, 2019)). The BLM responded to those prior comments in Appendix S to the Final EIS, pages S-591-92, and those responses are again applicable here. This comment also cites several documents not referenced in prior comments on the Draft EIS. These additional documents do not provide a sufficiently reliable method to calculate marginal changes in foreign consumption attributable to the Proposed Action.

The majority of sources referenced in the comment advocate for or simply analyze the hypothetical effects of lifting the U.S. crude oil export ban on the domestic U.S. economy. They do not address emissions. Only two of the papers actually propose analyses quantifying how increases in domestic production or supply will lead to increased global consumption of oil. They then estimate the changes in global greenhouse gas (GHG) emissions likely to result from the oil consumption changes, but none of the studies acknowledge(s) the increased consumption of energy substitutes for oil and attempt(s) to estimate the overall net change in GHG emissions. None provides any useful guidance to the BLM as to how to account for the varied consumption responses across local or national energy markets to an increase in oil production (which lowers prices) and then to increased global GHG emissions. Notably, the comment submits Bureau of Ocean Energy Management's GHG emission analysis for the 2017-2022 National Program, which supports the BLM's approach.

Even if the BLM could reliably calculate marginal differences in foreign energy consumption under the Proposed Action and No Action alternatives, it would still lack the information needed to calculate the relevant concern here, which is the associated changes in foreign GHG emissions. Every country in the global energy market meets its energy demand through a different mix of energy sources, and each particular energy source emits different types of GHG emissions at different rates. In order to predict how changes in foreign consumption will translate into changes in foreign GHG emissions, one must understand the particular energy sources that each country would consume more or less of as its energy consumption increases or decreases. If a given country replaces oil with solar, for instance, its emissions would decrease by a certain factor, whereas if that same country replaced oil with coal, its emissions would increase by a certain factor. The BLM simply lacks sufficient information to conduct credible modelling of foreign energy markets and emissions rates, and the comment has not provided any such information.

The rigorous modeling that informed the Final EIS's quantitative analysis of GHG impacts already constitutes a hard look at the Proposed Action's potential contributions to GHG emissions and adequately informs decision-making. The slight reduction in global oil prices that could result from the Proposed Action and action alternatives—which the Final EIS acknowledged and the decision-maker is aware of—cannot reasonably be expected to increase foreign energy consumption and associated GHG emissions to an extent that fundamentally alters the results of the Final EIS's analysis. It follows that additional information about marginal changes in foreign energy consumption and associated GHG emissions is simply not essential to making a reasoned choice amongst Final EIS alternatives. The fact that (1) the BLM is statutorily required to implement an oil and gas leasing program, and (2) estimated GHG emissions are the same under each action alternative also render such information not essential to a choice amongst Final EIS alternatives.

Meanwhile, Appendix F, Section F.2.1 of the Final EIS explains the BLM's rationale for not conducting a cost-benefit analysis, social cost of carbon analyses, or similar analyses recommended by this comment.

The second letter from the Natural Resources Defense Council dated November 8, 2019, was regarding conducting seismic exploration, and included an attached Memorandum from Dr. Cameron Wobus, Lynker Technologies.

The memorandum states:

1. The snow conditions that have been experienced in the past 5 years have not been conducive to the requirements of ROP 11 which says the snow depth must be an average of 9 inches with a minimum of 3 inches over the highest tussock. While average conditions may be met, there are large areas where wind scour could result in no to minimum snow depths.
2. If a seismic survey were to be conducted over the entire 1002 area, there would be areas where damage to the tundra vegetation would occur due to the snow conditions not being met.
3. Tundra vegetation damage will lead to increased permafrost thaw, thermokarst, and drainage changes.

Comment Response: The comment was thoroughly considered, and based on the above review, the BLM has determined the existing analysis is valid as is. ROP 11 is clarified to include language, stating "average snow depth along the line of vehicle travel," which is consistent with the analysis. See **Appendix A**.

Defenders of Wildlife sent a letter via email on November 19, 2019, regarding the applicability of ANILCA Title XI to oil and gas development in the Coastal Plain.

Comment Response: The Final EIS acknowledges the applicability of Title XI in Appendix D and in the response to comments in Appendix S.

Dr. Martha K. Raynolds, University of Alaska Fairbanks, submitted a copy of an article via email on May 27, 2020: Raynolds, M. K., J. C. Jorgenson, M. T. Jorgenson, M. Kanevskiy, A. K. Liljedahl, M. Nolan, M. Sturm, and D. A. Walker. 2020. *Landscape impacts of 3D-seismic surveys in the Arctic National Wildlife Refuge, Alaska.* Ecological Applications 00(00):e02143. 10.1002/eap.2143

Comment Response: The existing analysis is valid in light of the additional information provided in the document referenced above. The information in the article contributes to further understanding of the Arctic and specifically the Coastal Plain but does not change the overall analysis.

The Natural Resource Defense Council sent a letter on May 28, 2020, referencing recent comments provided to the U.S. Fish and Wildlife Service, relating to the impacts on denning polar bears of industrial activity in the Coastal Plain of the Arctic National Wildlife Refuge.

Comment Response: The existing analysis is valid in light of the information provided in the document referenced above. To ensure compliance with the ESA and MMPA, BLM has included Lease Notices 1 and 2.

Appendix A

Lease Stipulations and Required Operating Procedures

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Appendix A. Lease Stipulations and Required Operating Procedures

A.1 DEFINITIONS

The following definitions apply to the stipulations and required operating procedures listed in this appendix. The Glossary of the Final Environmental Impact Statement (EIS) has additional definitions.

- **Active floodplain:** The flat area along a waterbody where sediments are deposited by seasonal or annual flooding; generally demarcated by a visible high-water mark.
- **Authorized Officer (BLM):** Designated Bureau of Land Management (BLM) personnel responsible for a certain area of a project; for the Leasing EIS, generally this would be the BLM State Director.
- **Buffer area:** A spatial zone created to enhance the protection of a specific conservation area, often peripheral to the area.
- **Class I air quality area:** One of 156 protected areas, such as national parks over 6,000 acres, wilderness areas over 5,000 acres, national memorial parks over 5,000 acres, and international parks that were in existence as of August 1977, where air quality should be given special protection. Federal Class I areas are subject to maximum limits on air quality degradation called air quality increments (often referred to as prevention of significant deterioration increments). All areas of the United States not designated as Class I are Class II areas. The air quality standards in Class I areas are more stringent than national ambient air quality standards.
- **Consultation:** Exchange of information and interactive discussion; when capitalized it refers to consultation mandated by statute or regulation that has prescribed parties, procedures, and timelines, such as Consultation under the National Environmental Policy Act (NEPA) or Section 7 of the Endangered Species Act (ESA).
- **Criteria air pollutants:** The six most common air pollutants in the U.S.: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (both PM_{10} and $PM_{2.5}$ inhalable and respirable particulates), and sulfur dioxide (SO_2). Congress has focused regulatory attention on these six pollutants because they endanger public health and the environment, are widespread throughout the U.S., and come from a variety of sources. Criteria air pollutants are typically emitted from many sources in industry, mining, transportation, electricity generation, energy production, and agriculture.
- **Development:** The phase of petroleum operations that occurs after exploration has proven successful and before full-scale production. The newly discovered oil or gas field is assessed during an appraisal phase, a plan to fully and efficiently exploit it is created, and additional wells are usually drilled.
- **Exception:** A one-time exemption to a lease stipulation, determined on a case-by-case basis.
- **Greenhouse gas (GHG):** A gas that absorbs and emits thermal radiation in the lowest layers of the atmosphere. This process is the fundamental cause of the greenhouse effect. The primary greenhouse gases that are considered air pollutants are carbon dioxide, (CO_2), methane (CH_4), nitrous oxide (N_2O), and chlorofluorocarbons (CFCs).
- **Hazardous air pollutants (HAPs):** Also known as toxic air pollutants, those that cause or may cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental and ecological effects. The Environmental Protection Agency (EPA) is required to

control 187 hazardous air pollutants. Examples of HAPs are benzene (found in gasoline), perchloroethylene (emitted from dry cleaning facilities), and methylene chloride (used as a solvent).

- **Major construction activity:** Creation or construction of infrastructure, causing surface disturbance.
- **Modification:** A change to a lease stipulation either temporarily or for the life of the lease.
- **No surface occupancy (NSO):** An area that is open for mineral leasing but does not allow the construction of surface oil and gas facilities in order to protect other resource values. Facilities such as essential roads and pipelines would be allowed in these areas in accordance with Public Law (PL) 115-97. Facilities such as a dock and a seawater treatment/desalinization plant may be allowed in these areas on a case-by-case basis.
- **NO_x:** Mono-nitrogen oxides, including nitric oxide (NO) and NO_2. It is formed when naturally occurring atmospheric nitrogen and oxygen are combusted with fuels in automobiles, power plants, industrial processes, and home and office heating units.
- **Offshore:** (1) In beach terminology, the comparatively flat zone of variable width, extending from the shoreface to the edge of the continental shelf. It is continually submerged. (2) The direction seaward from the shore. (3) The zone beyond the nearshore zone where sediment motion induced by waves alone effectively ceases and where the influence of the seabed on wave action is small in comparison with the effect of wind. (4) The breaker zone directly seaward of the low tide line.
- **Ordinary high-water mark:** The line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.
- **Permanent oil and gas facilities:** Production facilities, pipelines, roads, airstrips, production pads, docks, seawater treatment plants, and other structures associated with oil and gas production that occupy land for more than one winter season. Material sites and seasonal facilities, such as ice roads, are excluded, even when the pads are designed for use in successive winters. Gravel mines are also excluded from this definition.
- **Reclamation:** Reclamation helps to ensure that any effects of oil and gas development on the land and on other resources and uses are not permanent. The ultimate objective of reclamation is ecosystem restoration, including restoration of any natural vegetation, hydrology, and wildlife habitats affected by surface disturbances from construction and operating activities at an oil and gas site. In most cases, this means a condition equal to or closely approximating that which existed before the land was disturbed.
- **Required operating procedures (ROPs):** Procedures carried out during proposal implementation that are based on laws, regulations, executive orders, BLM planning manuals, policies, instruction memoranda, and applicable planning documents.
- **Setback:** A distance by which a structure or other feature is set back from a designated line.
- **SO_x:** Sulfur oxides, including SO_2. A product of vehicle tailpipe emissions.
- **Spill prevention control and countermeasure plan (SPCC):** A plan that the EPA requires to be on file within six months of project inception. It is a contingency plan for avoidance of, containment of, and response to spills or leaks of hazardous materials.
- **Standard:** A model, example, or goal established by authority, custom, or general consent as a rule for the measurement of quantity, weight, extent, value, or quality.

- **Stipulation:** A requirement or condition placed by the BLM on the leaseholder for operations the leaseholder might carry out within that lease. The BLM develops stipulations that apply to all future leases within the Arctic Refuge Coastal Plain.
- **Timing limitation (TL):** This stipulation, a moderate constraint, is applicable to fluid mineral leasing, all activities associated with fluid mineral leasing (e.g., truck-mounted drilling and geophysical exploration equipment off designated routes, and construction of wells and pads) and other surface-disturbing activities (i.e., those not related to fluid mineral leasing). Areas identified for TL are closed to fluid mineral exploration and development, surface-disturbing activities, and intensive human activity during identified time frames. This stipulation does not apply to operation and basic maintenance, including associated vehicle travel, unless otherwise specified. Construction, drilling, completions, and other operations considered to be intensive are not allowed. Intensive maintenance, such as workovers on wells, is not permitted. TLs can overlap spatially with no surface occupancy and controlled surface use, as well as with areas that have no other restrictions.
- **Unavailable:** When referring to oil and gas leasing, unavailable lands would not be offered for oil and gas leasing.
- **Volatile organic compounds (VOCs):** A group of chemicals that react in the atmosphere with nitrogen oxides in the presence of sunlight and heat to form ozone. VOCs contribute significantly to photochemical smog production and certain health problems. Examples of VOCs are gasoline fumes and oil-based paints.
- **Waiver:** A permanent exemption to a stipulation or lease.

A.2 APPLICABILITY OF REQUIREMENTS/STANDARDS

A.2.1 Lease Stipulations

Appropriate stipulations will be attached to the lease when the BLM issues it. As part of a lease contract, stipulations are specific to the lease. All oil and gas activity permits issued to a lessee must comply with the lease stipulations appropriate to the activity under review, such as exploratory drilling or production pad construction.

A stipulation included in an oil and gas lease will be subject to a waiver, exception, or modification, as appropriate. The objective of a stipulation must be met before a waiver, exception, or modification would be granted. Waivers, exceptions, and modifications are:

- A waiver—A permanent exemption to a stipulation on a lease;
- An exception—A one-time exemption to a lease stipulation, determined on a case-by-case basis; and
- A modification—A change attached to a lease stipulation, either temporarily or for the life of the lease.

The BLM Authorized Officer may authorize a modification to a lease stipulation only if they determine that the factors leading to the stipulation have changed sufficiently to make the stipulation no longer justified; the proposed operation would still have to meet the objective stated for the stipulation.

While the BLM may grant a waiver, exception, or modification of a stipulation through the permitting process, it may also impose additional requirements through permitting terms and conditions to meet the objectives of any stipulation. This would be the case if the BLM Authorized Officer considers that such requirements are

warranted to protect the land and resources, in accordance with the BLM's responsibility under relevant laws and regulations. Note that PL 115-97 requires that the BLM authorize rights-of-way (ROWs) for essential roads and pipeline crossings and other necessary access, even in areas closed to leasing or with an NSO stipulation.

A.2.2 Required Operating Procedures

The ROPs describe the protective measures that the BLM will impose on applicants during the permitting process. Similar to lease stipulations, the objective of a ROP must be met in order for exceptions, modifications, or waivers to be granted.

Any applicant requesting authorization for an activity from the BLM will have to address the applicable ROPs in one of the following ways:

- Before submitting the application (e.g., performing and documenting subsistence consultation or surveys);
- As part of the application proposal (e.g., including in the proposal statements that the applicant will meet the objective of the ROP and how the applicant intends to achieve that objective); and
- As a term imposed by the BLM in a permit.

At the permitting stage, the BLM Authorized Officer will not include those ROPs that, because of their location or other inapplicability, are not relevant to a specific permit application. Note also that at the permit stage, the BLM Authorized Officer may establish additional requirements as warranted to protect the land, resources, and uses in accordance with the BLM's responsibilities under relevant laws and regulations.

A.3 Lease Stipulations, Required Operating Procedures and Lease Notices

While the language below refers only to the BLM or its Authorized Officer, it is understood that all activities, including plan development, study development, and consideration of exceptions, modifications, or waivers will include appropriate coordination with the U.S. Fish and Wildlife Service (USFWS) as the surface management agency, and, if necessary, consultation under the ESA. In addition, the BLM will coordinate with other appropriate federal, state, and North Slope Borough (NSB) agencies, tribes, Alaska Native Claims Settlement Act corporations, and other Native organizations as appropriate.

A.3.1 Lease Stipulations

PROTECTIONS THAT APPLY IN SELECT BIOLOGICALLY SENSITIVE AREAS

Lease Stipulation 1—Rivers and Streams (Map 1-3)

Objective: Minimize the disruption of natural flow patterns and changes to water quality; the disruption of natural functions resulting from the loss or change to vegetative and physical characteristics of floodplain and riparian areas, springs, and aufeis; the loss of spawning, rearing, or overwintering fish habitat; the loss of cultural and paleontological resources; the loss of raptor habitat; impacts on subsistence cabins and campsites; and the disruption of subsistence activities.

Requirement/Standard: (NSO) Permanent oil and gas facilities, including gravel pads, roads, airstrips, and pipelines, are prohibited in the streambed and within the described setback distances outlined below, from the southern boundary of the Coastal Plain to the stream mouth. For streams that are entirely in the Coastal Plain, the setback extends to the head of the stream, as identified in the National Hydrography Dataset. Essential pipelines and road crossings will be permitted through setback areas in accordance with Section 20001(c)(2)

of PL 115-97, which requires issuance of rights-of-way or easements across the Coastal Plain, including access to private land used in support of the federal oil and gas leasing program, for the exploration, development, production, or transportation necessary to carry out Section 20001. Gravel mines can be permitted in setback areas. Setbacks may not be practical in river deltas; in these situations, an exception may be granted by the Authorized Officer if the operator can demonstrate: (1) there are no practical alternatives to locating facilities in these areas; (2) the proposed actions would maintain or enhance resource functions; and (3) permanent facilities are designed to withstand a 100-year flood.

a. Canning River: from the western boundary of the Coastal Plain to 1 mile east of the eastern edge of the active floodplain;
b. Hulahula River: 1 mile in all directions from the active floodplain;
c. Aichilik River: 1 mile from the eastern edge of the Coastal Plain boundary;
d. Okpilak River: 1 mile from the banks' ordinary high-water mark;
e. Jago River: 1 mile from the banks' ordinary high-water mark;
f. The following rivers and creeks will have a 0.5-mile setback from the banks' ordinary high-water mark:
    i. Sadlerochit River
    ii. Tamayariak River
    iii. Okerokovik River
    iv. Katakturuk River
    v. Marsh Creek

Lease Stipulation 2—Canning River Delta and Lakes

Objective: Protect and minimize adverse effects on the water quality, quantity, and diversity of fish and wildlife habitats and populations, subsistence resources, and cultural resources; protect and minimize the disruption of natural flow patterns and changes to water quality, the disruption of natural functions resulting from the loss or change to vegetation and physical characteristics of floodplain and riparian areas; the loss of passage, spawning, rearing, or overwintering habitat for fish; the loss of cultural and paleontological resources; and adverse effects on migratory birds.

Requirement/Standard: See **ROP 9** for requirements/standards.

Lease Stipulation 3—Springs/Aufeis

Objective: Protect the water quality, quantity, and diversity of fish and wildlife habitats and populations associated with springs and aufeis across the Coastal Plain. River systems with springs provide year-round habitat and host the most diverse and largest populations of fish, aquatic invertebrates, and wildlife; they are associated with major subsistence activity and cultural resources. An aufeis is a unique feature associated with perennial springs. It helps sustain river flow during summer and provides insect relief for caribou. Because the subsurface flow paths to perennial springs are unknown and could be disturbed by drilling, use buffer areas around the major perennial springs that support fish populations in which no leasing is permitted.

Requirement/Standard: Before drilling, the lessee/operator/permittee will conduct studies to ensure drilling would not disrupt flow to or from the perennial springs and waste injection wells would not contaminate any

perennial springs. Study plans will be developed in consultation with the BLM, USFWS, and other agencies, as appropriate.

See **Lease Stipulation 1** for additional requirements/standards.

Lease Stipulation 4—Nearshore marine, lagoon, and barrier island habitats of the Southern Beaufort Sea within the boundary of the Arctic Refuge (Map 1-3)

Objective: Protect fish and wildlife habitat, including that for waterfowl and shorebirds, caribou insect relief, marine mammals, and polar bear summer and winter coastal habitat; preserve air and water quality; and minimize impacts on subsistence activities, recreation, historic travel routes, and cultural resources in the nearshore marine area.

Requirement/Standard: (NSO) Exploratory well drill pads, production well drill pads, or a central processing facility (CPF) for oil or gas will not be permitted in nearshore marine waters, lagoons, or barrier islands within the boundaries of the Coastal Plain.

a. The BLM Authorized Officer may approve infrastructure for oil and gas activities necessary to be located in these critical and sensitive habitats, such as barge landing, docks, spill response staging and storage areas, and pipelines.
b. Before conducting open water activities, the lessee/operator/contractor will consult with the Alaska Eskimo Whaling Commission, the NSB, and local whaling captains' associations to minimize impacts on subsistence whaling and other subsistence activities of the communities of the North Slope. In a case in which the BLM authorizes permanent oil and gas infrastructure in the nearshore marine area, the lessee/operator/contractor will develop and implement an impact and conflict avoidance and monitoring plan. This would be used to assess, minimize, and mitigate the effects of the infrastructure and its use on these nearshore marine area habitats and their use by wildlife and people, including the following:
    i. Design and construct facilities to minimize impacts on subsistence uses, travel corridors, and seasonally concentrated fish and wildlife resources.
    ii. Daily operations, including use of support vehicles, watercraft, and aircraft, alone or in combination with other past, present, and reasonably foreseeable activities, will be conducted to minimize impacts on subsistence and other public uses, travel corridors, and seasonally concentrated fish and wildlife resources.
    iii. The location of oil and gas facilities, including artificial islands, platforms, associated pipelines, ice or other roads, and bridges or causeways, will be sited and constructed to not pose a hazard to public navigation, using traditional high-use subsistence-related travel routes into and through the major coastal lagoons and bays, as identified by the community of Kaktovik and the NSB.
    iv. Operators will be responsible for developing comprehensive prevention and response plans, including Oil Discharge Prevention and Contingency Plans and SPCC plans and maintain adequate oil spill response capability to effectively respond during periods of ice, broken ice, or open water, based on the statutes, regulations, and guidelines of the USFWS, EPA, Alaska Department of Environmental Conservation (ADEC), and the Bureau of Safety and Environmental Enforcement (BSEE), as well as ROPs, stipulations, and policy guidelines of the BLM.

Lease Stipulation 5—Coastal Polar Bear Denning River Habitat

Objective: Minimize disturbance to denning polar bears, and disturbance or alteration of key river and creek maternal denning habitat areas.

Requirement/Standard: Comply with ESA and Marine Mammal Protection Act (MMPA) requirements.

Lease Stipulation 6—Caribou Summer Habitat

Note: *All lands in the Arctic Refuge Coastal Plain are recognized as habitat of the Porcupine Caribou Herd (PCH) and Central Arctic Herd (CAH) and would be managed to allow for unhindered movement of caribou through the area.*

Objective: Minimize disturbance and hindrance of caribou or alteration of caribou movements.

Requirement/Standard: See **ROP 23** for requirements/standards.

Lease Stipulation 7—Porcupine Caribou Primary Calving Habitat Area (Map 1-3)

Note: *PCH primary calving habitat area is defined as the area used for calving (based on annual 95 percent contours calculated using kernel density estimation of parturient female caribou locations May 26–June 10) during more than 40 percent of the years surveyed.*

Objective: Minimize disturbance and hindrance of caribou or alteration of their movements in the south-southeast portion of the Coastal Plain, which has been identified as important caribou habitat during calving.

Requirement/Standard: (TL) Construction activities using heavy equipment, excluding drilling from existing production pads, will be suspended in the PCH primary calving habitat area from May 20 through June 20. These areas encompass approximately 721,200 acres. If caribou arrive on the Coastal Plain before May 20, construction activities using heavy equipment will be suspended. The lessee shall submit with the development proposal a stop work plan that considers this, and any other mitigation related to caribou early arrival. The intent of this latter requirement is to provide flexibility to adapt to changing climate conditions that may occur during the life of fields in the region. The Authorized Officer may waive this stipulation if the operator, through coordination with appropriate federal, state, and local regulatory agencies can demonstrate calving is not occurring in the lease area; or may grant an exception if the operator can demonstrate their action would not hinder caribou or alter their movements.

a. The following ground and air traffic restrictions will apply to permanent oil and gas-related roads in the areas and time periods indicated:
    i. Within the calving habitat area, from May 20 through June 20, traffic speed shall not exceed 15 miles per hour when caribou are within 0.5 miles of the road. Additional strategies may include limiting trips and using convoys and different vehicle types, to the extent practicable. The lessee will submit with the development proposal a vehicle use plan that considers these and any other mitigation. The plan shall include a vehicle-use monitoring plan. The BLM Authorized Officer will require adjustments if resulting disturbance is determined to be unacceptable.
        a. Major equipment, materials, and supplies to be used at oil and gas work sites in the calving habitat area shall be stockpiled prior to the period of May 20 through June 20 to minimize road traffic during that period.

ii. Operators of aircraft used for permitted activities will maintain an altitude of at least 1,500 feet above ground level (except for takeoffs and landings) over caribou calving range, unless doing so would endanger human life or violate safe flying practices. See **ROP 34** for additional conditions.

Lease Stipulation 8—Porcupine Caribou Post-Calving Habitat Area

Note: *The PCH post-calving area is defined as the area used by female caribou (based on annual 95 percent contours calculated using kernel density estimation of female caribou locations June 11-30) during more than 40 percent of the years surveyed.*

Objective: To protect key surface resources and subsistence resources/activities from permanent oil and gas development and associated activities in areas used by caribou during post-calving and insect-relief periods.

Requirement/Standard: See **ROP 23** for requirements/standards.

Lease Stipulation 9—Coastal Area

Objective: Protect nearshore marine waters, lagoons, barrier islands, coastlines, and their value as fish and wildlife habitat, including for waterfowl, shorebirds, and marine mammals; minimize the hindrance or alteration of caribou movement in caribou coastal insect-relief areas; minimize hindrance or alteration of polar bear use and movement in coastal habitats; protect and minimize disturbance from oil and gas activities to nearshore marine habitats for polar bears and seals; prevent loss and alteration of important coastal bird habitat; and prevent impacts on nearshore marine subsistence resources and activities.

Requirement/Standard: Before beginning exploration or development within 2 miles inland of the coastline, the lessee/operator/contractor will develop and implement an impact and conflict avoidance and monitoring plan to assess, minimize, and mitigate the effects of the infrastructure and its use on these coastal habitats and their use by wildlife and people. Operators will be responsible for developing comprehensive prevention and response plans, including Oil Discharge Prevention and Contingency Plans and SPCC plans and maintain adequate oil spill response capability to effectively respond during periods of broken ice or open water, based on the statutes, regulations, and guidelines of the EPA, ADEC, and the BSEE, as well as ROPs, stipulations, and policy guidelines of the BLM.

Lease Stipulation 10— [Not applicable under Alternative B]

Lease Stipulation 11

Objective: Ensure Native allotment owners maintain control over use of their land.

Requirement/Standard: Use of the surface of Native allotments for the construction and maintenance of improvements is prohibited unless written consent is obtained from the allotment owner.

A.3.2 Required Operating Procedures

WASTE PREVENTION, HANDLING, DISPOSAL, SPILLS, AND PUBLIC SAFETY

Required Operating Procedure 1

Objective: Protect public health, safety, and the environment by disposing of solid waste and garbage, in accordance with applicable federal, state, and local laws and regulations.

Requirement/Standard: Areas of operation will be left clean of all debris.

Required Operating Procedure 2

Objective: Minimize impacts on the environment from nonhazardous and hazardous waste generation. Encourage continuous environmental improvement. Protect the health and safety of oil and gas field workers, local communities, Coastal Plain subsistence users, Coastal Plain recreationists, and the general public. Avoid human-caused changes in predator populations. Minimize attracting predators, particularly bears, to human use areas.

Requirement/Standard: The lessee/operator/contractor will prepare and implement a comprehensive waste management plan for all phases of exploration, development, and production, including seismic activities. The plan will include methods and procedures to use bear resistant containers for all waste materials and classes. The plan will be submitted to the BLM Authorized Officer for approval, in consultation with federal, state, and NSB regulatory and resource agencies, as appropriate (based on agency legal authority and jurisdictional responsibility), as part of a plan of operations or other similar permit application.

Management decisions affecting waste generation will be addressed in the following order of priority: (1) prevention and reduction, (2) recycling, (3) treatment, and (4) disposal. The plan will consider and take into account the following requirements:

a. Methods to avoid attracting wildlife to food and garbage: The plan will identify precautions that are to be taken to avoid attracting wildlife to food and garbage. The use of bear-resistant containers for all waste will be required.
b. Disposal of rotting waste: Requirements prohibit burying garbage. Lessees/operators/contractors will have a written procedure to ensure that rotting waste will be handled and disposed of in a manner that prevents the attraction of wildlife. All rotting waste will be incinerated, backhauled, or composted in a manner approved by the BLM Authorized Officer. All solid waste, including incinerator ash, will be disposed of in an approved waste-disposal facility, in accordance with EPA and ADEC regulations and procedures. Burying human waste is prohibited, except as authorized by the BLM Authorized Officer. The use of bear-resistant containers for all waste will be required.
c. Disposal of pumpable waste products: Except as specifically provided, the BLM requires that all pumpable solid, liquid, and sludge waste be disposed of by injection, in accordance with the applicable regulations and procedures. On-pad temporary muds and cuttings storage, as approved by the ADEC, will be allowed as necessary to facilitate annular injection and backhaul operations.
d. Disposal of wastewater and domestic wastewater: The BLM prohibits wastewater discharges or disposal of domestic wastewater into bodies of fresh, estuarine, and marine water, including wetlands, unless authorized by an Alaska Pollutant Discharge Elimination System or State permit.
e. Prevention of the release of poly- and perfluoroalkyl substances: At facilities where fire-fighting foam is required, use fluorine-free foam unless other state or federal regulations require aqueous film-forming foam (AFFF) use. If AFFF use is required, contain, collect, treat, and properly dispose of all runoff, wastewater from training events, and, to the greatest extent possible, from any emergency response events. All discharges must be reported to the ADEC Spill Response Division, Contaminated Sites Program. Measures shall also be taken to fully inform workers/trainees of the potential health risks of fluorinated foams and to specify appropriate personal protective equipment to limit exposure during training and use. Training events shall be conducted in lined areas or basins to prevent the release of poly- and perfluoroalkyl substances associated with AFFF.

Required Operating Procedure 3

Objective: Minimize the impact of contaminants from refueling operations on fish, wildlife, and the environment.

Requirement/Standard: Refueling equipment within 100 feet of the active floodplain of any waterbody[1] is prohibited. Fuel storage stations will be located at least 100 feet from any waterbody, except for small caches (up to 210 gallons) for motorboats, float planes, and ski planes, and for small equipment, such as portable generators and water pumps. The BLM Authorized Officer may allow storage and operations at areas closer than the stated distances if properly designed and maintained to account for local hydrologic conditions.

Required Operating Procedure 4

Objective: Minimize conflicts from the interaction between humans and bears during oil and gas activities.

Requirement/Standard:

a. Implement policies and procedures to conduct activities in a manner that minimizes adverse impacts on polar bears, their habitat, and their availability for subsistence uses.
b. Implement adaptive management practices, such as temporal or spatial activity restrictions, in response to the presence of polar bears or polar bears engaged in a biologically significant activity; must be used to avoid interactions with and minimize impacts on them and their availability for subsistence uses.
c. Cooperate with the USFWS and other designated federal, state, and local agencies to monitor and mitigate the impacts of Industry activities on polar bears.
d. Designate trained and qualified personnel to monitor for the presence of polar bears, initiate mitigation measures, and monitor, record, and report the effects of Industry activities on polar bears.
e. Provide polar bear awareness training to personnel.
f. Contact affected subsistence communities and hunter organizations to discuss potential conflicts.
g. Polar bears: The lessee/operator/contractor, as a part of lease operation planning, will prepare and implement polar bear interaction plans to minimize conflicts between polar bears and humans. These polar bear interaction plans will be developed in consultation with and approved by the USFWS and the Alaska Department of Fish and Game (ADFG). The plans will include specific measures identified by the USFWS for petroleum activities on the Coastal Plain, which may include updated measures and/or may include similar measures identified in the current USFWS Incidental Take Regulations (81 CFR 52318 §18.128) that have been promulgated and applied to petroleum activities to the west of the Coastal Plain. If the USFWS issues Incidental Take Regulations for petroleum activities in the Coastal Plain, those will be followed instead. These plans must include:
    i. The type of activity and where and when the activity will occur (i.e., a plan of operation);
    ii. A food, waste, and other ‘‘bear attractants’’ management plan;
    iii. Personnel training policies, procedures, and materials;
    iv. Site-specific polar bear interaction risk evaluation and mitigation measures;

[1]For the purposes of this document, waterbody is defined as any feature included in the National Hydrography Dataset. This is a feature-based database that interconnects and uniquely identifies the stream segments or reaches that make up the nation’s surface water drainage system.

v. Polar bear avoidance and encounter procedures; and

vi. Polar bear observation and reporting procedures.

h. Grizzly bears: The lessee/operator/contractor will prepare and implement a grizzly bear interaction plan as necessary, in consultation with and approved by the ADFG.

Required Operating Procedure 5

Objective: Reduce air quality impacts.

Requirement/Standard: All oil and gas operations (vehicles and equipment) that burn diesel fuels must use ultra-low sulfur diesel, as defined by the EPA.

Required Operating Procedure 6

Objective: Prevent unnecessary or undue degradation of the air and lands and protect health.

Requirement/Standard:

a. All projects and permitted uses will comply with all applicable National Ambient Air Quality Standards (NAAQS) and Alaska Ambient Air Quality Standards (AAAQS) and ensure Air Quality Related Values are protected under the Clean Air Act or other applicable statutes.

b. Prior to initiation of a NEPA analysis for an application to develop a CPF, production pad/well, airstrip, road, gas compressor station, or other potential air pollutant emission source (hereafter called project), the BLM Authorized Officer may require the project proponent to provide a minimum of 1 year of baseline ambient air monitoring data for pollutants of concern, as determined by the BLM. This will apply if no representative air monitoring data are available for the project area or if existing representative ambient air monitoring data are insufficient, incomplete, or do not meet minimum air monitoring standards set by the ADEC or the EPA. If the BLM determines that baseline monitoring is required, this pre-analysis data must meet ADEC and EPA air monitoring standards and cover the year before the submittal. Pre-project monitoring may not be appropriate where the life of the project is less than 1 year.

c. For an application to develop a CPF, production pad/well, airstrip, road, gas compressor station, or other potential substantial air pollutant emission source:

i. The project proponent shall prepare and submit for BLM approval an emissions inventory that includes quantified emissions of regulated air pollutants from all direct and indirect sources related to the proposed project, including reasonably foreseeable air pollutant emissions of criteria air pollutants, VOCs, HAPs, and GHGs estimated for each year for the life of the project. The BLM uses this estimated emissions inventory to identify pollutants of concern and to determine the appropriate form of air analysis to be conducted for the proposed project.

ii. The BLM may require air quality modeling for purposes of analyzing project direct, indirect, or cumulative impacts on air quality. The BLM may require air quality modeling depending on:

a. The magnitude of potential air emissions from the project;

b. Proximity to a federally mandated Class I area;

c. Proximity to a population center;

d. Location within or proximity to a nonattainment or maintenance area;

e. Meteorological or geographic conditions;

f. Existing air quality conditions;

g. Magnitude of existing development in the area; or

h. Issues identified during the NEPA process.

The BLM will determine the information required for a project-specific modeling analysis through the development of a modeling protocol for each analysis. The BLM will consult with appropriate federal (including federal land managers), state, and/or local agencies regarding modeling to inform its modeling decision and avoid duplication of effort. The modeling shall compare predicted impacts on all applicable local, state, and federal air quality standards and increments, as well as other scientifically defensible significance thresholds (such as impacts on air quality related values and incremental cancer risks).

iii. The BLM may require the proponent to provide an emissions reduction plan that includes a detailed description of operator-committed measures to reduce project-related air pollutant emissions, including, but not limited to, criteria pollutants, GHGs, heavy metals, mercury, and fugitive dust.

d. Air monitoring or air modeling reports will be provided to the BLM; federal land managers; federal, state, local community, or Tribal governments; and other interested parties, as appropriate.

e. The BLM may require monitoring for the life of the project depending on:

i. The magnitude of potential air emissions from the project;

ii. Proximity to a federally mandated Class I area;

iii. Proximity to a population center;

iv. Location within or proximity to a nonattainment or maintenance area;

v. Meteorological or geographic conditions;

vi. Existing air quality conditions;

vii. Magnitude of existing development in the area; or

viii. Issues identified during the NEPA process.

f. If ambient air monitoring or air quality modeling indicates that project-related emissions cause or contribute to impacts, unnecessary or undue degradation of the lands, exceedances of the NAAQS/AAAQS, or fails to protect health (either directly or through use of subsistence resources), then the BLM may require changes or additional emission control strategies. To reduce or minimize emissions from proposed activities, in order to comply with the NAAQS/AAAQS and/or minimize impacts on Air Quality Related Values, the BLM shall consider air quality mitigation measure(s) within its authority in addition to regulatory requirements and proponent-committed emission reduction measures, and also for emission sources not otherwise regulated by ADEC or EPA. Mitigation measures will be analyzed through the appropriate form of NEPA analysis to determine effectiveness. The BLM will consult with the federal land managers and other appropriate federal, state, and/or local agencies to determine potential mitigation options for any predicted significant impacts from the proposed project development.

g. Publicly available reports on air quality baseline monitoring, emissions inventory, and modeling results developed in conformance with this ROP shall be provided by the project proponent to the NSB and to local communities and tribes in a timely manner.

WATER USE FOR PERMITTED ACTIVITIES

Required Operating Procedure 7—[Not applicable under Alternative B]

Required Operating Procedure 8

Objective: In flowing waters (rivers, springs, and streams), ensure water of sufficient quality and quantity to conserve fish, waterbirds, and wildlife populations and habitats in their natural diversity.

Requirement/Standard: Withdrawal of unfrozen water from springs, rivers, and streams during winter (onset of freeze-up to break-up) is prohibited. The removal of ice aggregate from grounded areas 4 feet deep or less may be authorized from rivers on a site-specific basis.

Required Operating Procedure 9

Objective: Maintain natural hydrologic regimes in soils surrounding lakes and ponds, and maintain populations of, and adequate habitat for, fish, birds, and aquatic invertebrates.

Requirement/Standard: Withdrawal of unfrozen water from lakes and the removal of ice aggregate from grounded areas 4 feet deep or less during winter (onset of freeze up to breakup) and withdrawal of water from lakes during the summer may be authorized on a site-specific basis, depending on water volume and depth, the fish community, and connectivity to other lakes or streams and adjacent bird nesting sites. Current water use guidelines are as follows:

<u>Winter Water Use</u>

a. Lakes with fish except ninespine stickleback or Alaska blackfish: unfrozen water available for withdrawal is limited to 15 percent of calculated volume deeper than 7 feet; only ice aggregate may be removed from lakes that are 7 feet deep or less.
b. Lakes with only ninespine stickleback or Alaska blackfish: unfrozen water available for withdrawal is limited to 30 percent of calculated volume deeper than 5 feet; only ice aggregate may be removed from lakes that are 5 feet deep or less.
c. Lakes with no fish, regardless of depth: water available for use is limited to 20 percent of total lake volume.
d. In lakes where unfrozen water and ice aggregate are both removed, the total use will not exceed the respective 15 percent, 20 percent, or 30 percent volume calculations above, unless recharge calculations, river overbank flooding, or a connection to a stream or river indicate recharge will replenish full water withdrawal plus additional ice aggregate withdrawal amounts above these limits.
e. Compacting snow cover or removing snow from fish-bearing waterbodies will be prohibited, except at approved ice road crossings, water pumping stations on lakes, or areas of grounded ice.

<u>Summer Water Use</u>

f. Requests for summer water use must be made separately, and the volume allowance will be evaluated on a case-by-case basis. Approval from the BLM Authorized Officer is required.

All Water Use

g. Any water intake structures in fish-bearing or non-fish-bearing waters will be designed, operated, and maintained to prevent fish entrapment, entrainment, or injury. Note: All water withdrawal equipment must be equipped with and use fish screening devices approved by the ADFG, Division of Habitat.
h. Additional modeling or monitoring may be required to assess water level and water quality conditions before, during, and after water use from any fish-bearing lake or lake of special concern

WINTER OVERLAND MOVES AND SEISMIC WORK

The following ROPs apply to overland and over-ice moves, seismic work, and any similar cross-country vehicle use and heavy equipment on surfaces without roads during winter. These restrictions do not apply to the use of such equipment on ice roads after they are constructed.

Required Operating Procedure 10

Objective: Protect grizzly bear, polar bear, and seal denning and birthing locations.

Requirement/Standard:

a. Grizzly bear dens: Cross-country use of all vehicles, equipment, and oil and gas activity is prohibited within 0.5 miles of occupied grizzly bear dens identified by the ADFG or the USFWS, unless alternative protective measures are approved by the BLM Authorized Officer, in consultation with the ADFG.
b. Polar bear dens: Cross-country use of vehicles, equipment, oil and gas activity, and seismic survey activity is prohibited within 1 mile of known or observed polar bear dens, unless alternative protective measures are approved by the BLM Authorized Officer and are consistent with the MMPA and the ESA.

Polar bear and seal mitigation measures for onshore activities.

c. In order to limit disturbance around known polar bear dens:
    i. Attempt to locate polar bear dens. Operators seeking to carry out onshore activities in known or suspected polar bear denning habitat during the denning season (approximately November–April) must make efforts to locate occupied polar bear dens within and near areas of operation, utilizing appropriate tools, such as infrared imagery and/or polar bear scent-trained dogs. All observed or suspected polar bear dens must be reported to the USFWS prior to the initiation of activities.
    ii. Observe the exclusion zone around known polar bear dens. Operators must observe a 1.6-kilometer (km) (1-mile) operational exclusion zone around all known polar bear dens during the denning season (approximately November–April, or until the female and cubs leave the areas). Should previously unknown occupied dens be discovered within 1 mile of activities, work must cease and the USFWS contacted for guidance. The USFWS will evaluate these instances on a case-by-case basis to recommend the appropriate action. Potential actions may range from cessation or modification of work to conducting additional monitoring, and the holder of the authorization must comply with any additional measures specified.

iii. Use the den habitat map developed by the U.S. Geological Survey. This measure ensures that the location of potential polar bear dens is considered when conducting activities in the coastal areas of the Beaufort Sea.

iv. Polar bear den restrictions. Restrict the timing of the activity to limit disturbance around dens.

d. In order to limit disturbance of activities to seal lairs in the nearshore area (<3 meters) water depth:

Specific to seismic operations:

v. Before the seismic survey begins, the operator will conduct a sound source verification test to measure the distance of vibroseis sound levels through grounded ice to the 120 decibels (dB) re 1 µPa threshold in open water and water within ungrounded ice. Once that distance is determined, it will be shared with the BLM and National Marine Fisheries Service (NMFS). The distance will be used to buffer all on-ice seismic survey activity operations from any open water or ungrounded ice throughout the project area. The operator will draft a formal study proposal that will be submitted to the BLM and NMFS for review and approval before the activity begins.

For all activities:

vi. Maintain airborne sound levels of equipment below 100 dB re 20 µPa at 66 feet. If different equipment will be used than was originally proposed, the applicant must inform the BLM Authorized Officer and share sound levels and air and water attenuation information for the new equipment.

vii. On-ice operations after May 1 will employ a full-time trained protected species observer (PSO) on vehicles to ensure all basking seals are avoided by vehicles by at least 500 feet and will ensure that all equipment with airborne noise levels above 100 dB re 20 µPa were operating at distances from observed seals that allowed for the attenuation of noise to levels below 100 dB. All sightings of seals will be reported to the BLM using a NMFS-approved observation form.

viii. Ice paths must not be greater than 12 feet wide. No driving beyond the shoulder of the ice path or off planned routes unless necessary to avoid ungrounded ice or for other human or marine mammal safety reasons. On-ice driving routes shall minimize travel over snow/ice/topographical features that lead to birthing lair development.

ix. No unnecessary equipment or operations (e.g., camps) will be placed or used on sea ice.

Required Operating Procedure 11

Objective: Protect stream banks and freshwater sources, minimize soils compaction and the breakage, abrasion, compaction, or displacement of vegetation.

Requirement/Standard:

a. Ground operation will be allowed when soil temperatures at 12 inches below the tundra surface (defined as the top of the organic layer) reaches 23 degrees Fahrenheit (°F) and snow depths are an average of 9 inches, or 3 inches over the highest tussocks along the line of vehicle travel. Ground operations will cease when the spring snowmelt begins. The dates will be determined by the BLM Authorized Officer.

b. Low ground pressure vehicles used for off-road travel will be defined by the BLM Authorized Officer. These vehicles will be selected and operated in a manner that eliminates direct impacts on

the tundra caused by shearing, scraping, or excessively compacting the tundra. **Note:** This provision does not include the use of heavy equipment required during ice road construction; however, heavy equipment will not be allowed on the tundra until conditions in "a," above, are met.

c. Bulldozing tundra mat and vegetation, trails, or seismic lines is prohibited. Clearing or smoothing drifted snow is allowed to the extent that the tundra mat is not disturbed. Only smooth pipe snow drags will be allowed for smoothing drifted snow.

d. To reduce the possibility of excessive compaction, vehicle operators will avoid using the same routes for multiple trips, unless necessitated by serious safety or environmental concerns and approved by the BLM Authorized Officer. This provision does not apply to hardened snow trails or ice roads.

e. Ice roads will be designed and located to avoid the most sensitive and easily damaged tundra types as much as practicable. Ice roads may not use the same route each year; offsets may be required to avoid using the same route or track in subsequent years.

f. Conventional ice road construction may not begin until off-road travel conditions are met (as described in "a," above) within the ice road route and approval to begin construction is given by the BLM Authorized Officer.

g. Snow fences may be used in areas of low snow to increase snow depths within an ice road or snow trail route. Excess snow accumulated by snow fences must be excavated or pushed to decrease snow depths to that found in surrounding tundra at the end of road use.

h. Seismic operations and winter overland travel may be monitored by agency representatives, and the operator may be required to accommodate the representative during operations.

i. Incidents of damage to the tundra will be reported to the BLM Authorized Officer within 72 hours of occurrence. Follow-up corrective actions will be determined in consultation with and approved by the BLM Authorized Officer.

Required Operating Procedure 12—[Not applicable under Alternative B]

Required Operating Procedure 13

Objective: Avoid additional freeze-down of aquatic habitat harboring overwintering fish and aquatic invertebrates that fish prey on.

Requirement/Standard: Travel up and down streambeds is prohibited unless it can be demonstrated that there will be no additional impacts from such travel on overwintering fish, the aquatic invertebrates they prey on, and water quality. Rivers, streams, and lakes will be crossed at areas of grounded ice or with the approval of the BLM Authorized Officer and when it has been demonstrated that no additional impacts will occur on fish or aquatic invertebrates.

Required Operating Procedure 14

Objective: Minimize the effects of high-intensity acoustic energy from seismic surveys on fish.

Requirement/Standard: When conducting vibroseis-based surveys above potential fish overwintering areas (water 6 feet deep or greater, ice plus liquid depth), lessees/operators/contractors will follow recommendations by Morris and Winters (2005):[2] only a single set of vibroseis shots will be conducted if possible; if multiple

[2]W. Morris and J. Winters. 2005. Fish Behavioral and Physical Responses to Vibroseis Noise, Prudhoe Bay, Alaska 2003. Alaska Department of Fish and Game Technical Report 05-02. March 2005.

shot locations are required, these will be conducted with minimal delay; multiple days of vibroseis activity above the same overwintering area will be avoided, if possible.

Required Operating Procedure 15

Objective: Reduce changes in snow distribution associated with the use of snow fences to protect water quantity and wildlife habitat, including snow drifts used by denning polar bears.

Requirement/Standard: The use of snow fences to reduce or increase snow depth requires permitting by the BLM Authorized Officer.

Oil and Gas Exploratory Drilling

Required Operating Procedure 16

Objective: Protect water quality in fish-bearing waterbodies and minimize alteration of riparian habitat.

Requirement/Standard: Exploratory drilling is prohibited in fish-bearing rivers and streams and other fish-bearing waterbodies. On a case-by-case basis, the BLM Authorized Officer may consider exploratory drilling in floodplains of fish-bearing rivers and streams.

Required Operating Procedure 17

Objective: Minimize surface impacts from exploratory drilling.

Requirement/Standard: Construction of gravel roads and pads will be prohibited for exploratory drilling. Use of a previously constructed road or pad may be permitted if it is environmentally preferred.

Required Operating Procedure 18

Objective: Protect subsistence use and access to subsistence hunting and fishing areas.

Requirement/Standard: All roads must be designed, constructed, maintained, and operated to create minimal environmental impacts and to avoid or minimize impacts on subsistence use and access to subsistence hunting and fishing areas. The BLM Authorized Officer will consult with appropriate entities before approving construction of roads. Subject to approval by the BLM Authorized Officer, the construction, operation, and maintenance of oil and gas field roads is the responsibility of the lessee/operator/contractor, unless the construction, operation, and maintenance of roads are assumed by the appropriate governing entity.

Required Operating Procedure 19

Objective: Protect water quality and the diversity of fish, aquatic invertebrates, and wildlife populations and habitats.

Requirement/Standard:

a. Permanent oil and gas facilities, including roads, airstrips, and pipelines, are prohibited within 500 feet, as measured from the ordinary high-water mark, of fish-bearing waterbodies, unless further setbacks are stipulated under **Lease Stipulations 1**, **2**, or **3**. Pipeline and road crossings will be permitted by the BLM Authorized Officer in accordance with PL 115-97, following coordination with the appropriate entities. Temporary winter exploration and construction camps are prohibited on frozen lakes and river ice.

b. Siting temporary winter exploration and construction camps on river sand and gravel bars is allowed and encouraged. Where trailers or modules must be leveled and the surface is vegetation, they will be leveled using blocking in a way that preserves the vegetation.

Required Operating Procedure 20

Objective: Maintain free passage of marine and anadromous fish, protect subsistence use and access to subsistence hunting and fishing and anadromous fish, and protect subsistence use and access to subsistence and non-subsistence hunting and fishing.

Requirement/Standard:

a. Causeways and docks are prohibited in river mouths and deltas. Artificial gravel islands and permanent bottom-founded structures are prohibited in river mouths and active stream channels on river deltas.
b. Causeways, docks, artificial islands, and bottom-founded drilling structures will be designed to ensure free passage of marine and anadromous fish and to prevent significant changes to nearshore oceanographic circulation patterns and water quality characteristics. A monitoring program, developed in coordination with appropriate entities (e.g., USFWS, NMFS, State of Alaska, or NSB), will be required to address the objectives of water quality and free passage of fish.

Required Operating Procedure 21

Objective: Minimize impacts of the development footprint.

Requirement/Standard: Facilities will be designed and located to minimize the development footprint and impacts on other purposes of the Arctic Refuge. Issues and methods that are to be considered, as appropriate, are as follows:

a. Using extended-reach drilling for production drilling to minimize the number of pads and the network of roads between pads;
b. Sharing facilities with existing development;
c. Collocating all oil and gas facilities with drill pads, except airstrips, docks, base camps, and STPs;
d. Using gravel-reduction technologies, e.g., insulated or pile-supported pads;
e. Using approved impermeable liners under gravel infrastructure to minimize the potential for hydrocarbon and other hazardous materials spills to migrate to underlying ground;
f. Harvesting the tundra organic layer within gravel pad footprints for use in rehabilitation;
g. Coordinating facilities with infrastructure in support of adjacent development;
h. Locating facilities and other infrastructure outside areas identified as important for wildlife habitat, subsistence uses, and recreation;
i. Where aircraft traffic is a concern, balancing gravel pad size and available supply storage capacity with potential reductions in the use of aircraft to support oil and gas operations;
j. Facilities and infrastructure will be designed to minimize alteration of sheet flow/overland flow; and
k. Where gravel is brought in from outside of the Coastal Plain, require the use of certified weed-free gravel.

Required Operating Procedure 22

Objective: Reduce the potential for ice-jam flooding, damage from aufeis, impacts on wetlands and floodplains, erosion, alteration of natural drainage patterns, and restriction of fish passage.

Requirement/Standard:

a. To allow for sheet flow and floodplain dynamics and to ensure passage of fish and other organisms, single-span bridges are preferred over culverts, if technically feasible. When necessary, culverts can be constructed on smaller streams, if they are large enough to avoid restricting fish passage or adversely affecting natural stream flow.

b. To ensure that crossings provide for fish passage, all proposed crossing designs will adhere to the best management practices outlined in Fish Passage Design Guidelines, developed by the USFWS Alaska Fish Passage Program, McDonald & Associates (1994),[3] Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream Crossings (USFS 2008),[4] and other generally accepted best management procedures prescribed by the BLM Authorized Officer, in consultation with the USFWS.

c. In addition to the best management practices outlined in the aforementioned documents for stream simulation design, the design engineer will ensure that crossing structures are designed for aufeis, permafrost, sheet flow, additional freeboard during breakup, and other unique conditions of the arctic environment.

Required Operating Procedure 23

Objective: Minimize disruption of caribou movement and subsistence use.

Requirement/Standard: Pipelines and roads will be designed to allow the free movement of caribou and the safe, unimpeded passage of those participating in subsistence activities. Listed below are the accepted design practices.

a. Aboveground pipelines will be elevated a minimum of 7 feet, as measured from the ground to the bottom of the pipeline at vertical support members (VSMs).

b. In areas where facilities or terrain would funnel caribou movement or impede subsistence or public access, ramps of appropriate angle and design over pipelines, buried pipelines, or pipelines buried under roads may be required by the BLM Authorized Officer, in coordination with the appropriate entity.

c. A minimum distance of 500 feet between pipelines and roads will be maintained. Where it is not feasible, alternative pipeline routes, designs, and possible burial under the road for pipeline road crossings will be considered by the BLM Authorized Officer.

d. Aboveground pipelines will have a nonreflective finish.

[3]G. N. McDonald & Associates. 1994. Stream Crossing Design Procedure for Fish Streams on the North Slope Coastal Plain. Prepared by G. N. McDonald & Associates, Anchorage, Alaska. Prepared for BP Exploration (Alaska) Inc., Anchorage, Alaska, and Alaska Department of Environmental Conservation, Juneau.
[4]U.S. Forest Service. 2008. Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream Crossings. U.S. Department of Agriculture, Forest Service National Technology and Development Program. 7700—Transportation Management 0877 1801—SDTDC. San Dimas, California.

e. When laying out oil and gas field developments, lessees will orient infrastructure to avoid impeding caribou migration and to avoid corralling effects.

f. Before the construction of permanent facilities is authorized, the lessee will design and implement and report a study of caribou movement, unless an acceptable study specific to the PCH and CAH has been completed within the last 10 years and approved by the BLM Authorized Officer.

g. A vehicle use management plan will be developed by the lessee/operator/contractor and approved by the BLM Authorized Officer, in consultation with the appropriate federal, state, and NSB regulatory and resource agencies. The management plan will minimize or mitigate displacement during calving and would avoid, to the extent feasible, delays to caribou movements and vehicle collisions during the midsummer insect season, with traffic management following industry practices. By direction of the BLM Authorized Officer, traffic may be stopped throughout a defined area for up to 4 weeks, to prevent displacement of calving caribou. If required, a monitoring plan can include collection of data on vehicle counts and caribou interaction.

Required Operating Procedure 24

Objective: Minimize the impact of mineral materials mining on air, land, water, fish, and wildlife resources.

Requirement/Standard: Gravel mine site design, construction, and reclamation will be done in accordance with a plan approved by the BLM Authorized Officer. The plan will take into consideration the following:

a. Locations inside or outside the active floodplain, depending on potential site-specific impacts;

b. Design and construction of gravel mine sites in active floodplains to serve as water reservoirs for future use;

c. Potential use of the site for enhancing fish and wildlife habitat; and

d. Potential storage and reuse of sod/overburden for the mine site or at other disturbed sites on the North Slope.

Required Operating Procedure 25

Objective: Avoid human-caused changes in predator populations on ground-nesting birds.

Requirement/Standard:

a. Lessee/operator/contractor will use best available technology to prevent facilities from providing nesting, denning, or shelter sites for ravens, raptors, and foxes. The lessee/operator/contractor will provide the BLM Authorized Officer with an annual report on the use of oil and gas facilities by ravens, raptors, and foxes as nesting, denning, and shelter sites.

b. Feeding of wildlife and allowing wildlife to access human food or odor-emitting waste is prohibited.

Required Operating Procedure 26

Objective: Reduction of risk of attraction and collisions between migrating birds and oil and gas and related facilities during low light conditions.

Requirement/Standard: All structures will be designed to direct artificial exterior lighting, from August 1 to October 31, inward and downward, rather than upward and outward, unless otherwise required by the Federal Aviation Administration.

Required Operating Procedure 27

Objective: Minimize the impacts on bird species from direct interaction with oil and gas facilities.

Requirement/Standard:

a. To reduce the possibility of birds colliding with aboveground utility lines (power and communication), such lines will either be buried in access roads or will be suspended on VSMs, except in rare cases, limited in extent. Exceptions are limited to the following situations:
   i. Overhead power or communication lines may be allowed when located entirely within the boundaries of a facility pad;
   ii. Overhead power or communication lines may be allowed when engineering constraints at the specific and limited location make it infeasible to bury or connect the lines to a VSM; or
   iii. Overhead power or communication lines may be allowed in situations when human safety would be compromised by other methods.

   If exceptions are granted allowing overhead wires, overhead wires will be clearly marked along their entire length to improve visibility to low-flying birds. Such markings will be developed through consultation with the USFWS.
b. To reduce the likelihood of birds colliding with them, communication towers will be located, to the extent practicable, on existing pads and as close as possible to buildings or other structures and on the east or west side of buildings or other structures. Towers will be designed to reduce bird strikes and raptor nesting. Support wires associated with communication towers, radio antennas, and other similar facilities, will be avoided to the extent practicable. If support wires are necessary, they will be clearly marked along their entire length to improve visibility to low-flying birds. Such markings will be developed through consultation with the USFWS.

Required Operating Procedure 28

Objective: Use ecological mapping as a tool to assess wildlife habitat before developing permanent facilities to conserve important habitat types.

Requirement/Standard: An ecological land classification map of the area will be developed before approval of facility construction. The map will integrate geomorphology, surface form, and vegetation at a scale and level of resolution and position accuracy adequate for detailed analysis of development alternatives. The map will be prepared in time to plan an adequate number of seasons of ground-based wildlife surveys needed, if deemed necessary by the BLM Authorized Officer, before the exact facility location and facility construction is approved.

Required Operating Procedure 29

Objective: Protect cultural and paleontological resources.

Requirement/Standard: The lessee/operator/contractor will conduct a cultural and paleontological resources survey before any ground-disturbing activity, based on a study designed by the lessee/operator/contractor and approved by the BLM Authorized Officer. If any potential cultural or paleontological resource is found, the lessee/operator/contractor will notify the BLM Authorized Officer and will suspend all operations in the immediate area until she or he issues a written authorization to proceed.

Required Operating Procedure 30

Objective: Prevent or minimize the loss of nesting habitat for cliff-nesting raptors.

Requirement/Standard:

a. Removing greater than 100 cubic yards of bedrock outcrops, sand, or gravel from cliffs shall be prohibited.
b. Any extraction of sand or gravel from an active river or stream channel will be prohibited, unless preceded by a hydrological study that indicates no potential impact on the integrity of the river bluffs.

Required Operating Procedure 31

Objective: Prevent or minimize the loss of raptors due to electrocution by power lines.

Requirement/Standard: Comply with the most up-to-date, industry-accepted, suggested practices for raptor protection on power lines. Current accepted standards were published in Reducing Avian Collisions with Power Lines: The State of the Art in 2012, by the Avian Power Line Interaction Committee (APLIC 2012)[5] and are updated as needed.

Required Operating Procedure 32

Objective: Avoid and reduce temporary impacts on productivity from disturbance near Steller's or spectacled eider nests.

Requirement/Standard: Ground-level vehicle or foot traffic within 200 meters (656 feet) of occupied Steller's or spectacled eider nests, from June 1 through July 31, will be restricted to existing thoroughfares, such as pads and roads. Construction of permanent facilities, placement of fill, alteration of habitat, and introduction of high noise levels within 200 meters (656 feet) of occupied Steller's or spectacled eider nests will be prohibited. Between June 1 and August 15, support/construction activity must occur off existing thoroughfares, and USFWS-approved nest surveys must be conducted during mid-June before the activity is approved.

Collected data will be used to evaluate whether the action could occur based on a 200-meter (656-foot) buffer around nests or if the activity will be delayed until after mid-August once ducklings are mobile and have left the nest site.

The BLM will also work with the USFWS to conduct nest surveys or oil spill response training in riverine, marine, and intertidal areas that is within 200 meters (656 feet) of shore outside sensitive nesting/brood-rearing periods. The protocol and timing of nest surveys for Steller's or spectacled eiders will be determined in cooperation with and must be approved by the USFWS. Surveys will be supervised by biologists who have previous experience with Steller's or spectacled eider nest surveys.

Required Operating Procedure 33

Objective: Provide information to be used in monitoring and assessing wildlife movements during and after construction.

[5]Avian Power Line Interaction Committee. 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC. Washington, DC.

Requirement/Standard: A representation, in the form of ArcGIS-compatible shapefiles, of the footprint of all new infrastructure construction will be provided to the BLM Authorized Officer, the USFWS Arctic Refuge Manager, State of Alaska, and NSB by the operator. During the planning and permitting phase, GIS shape files representing proposed footprint locations will be provided. Within 6 months of construction completion, shapefiles of all new infrastructure footprints will be provided.

Infrastructure includes all gravel roads and pads, facilities built on pads, pipelines, and independently constructed power lines (as opposed to those incorporated in pipeline design). Gravel pads will be included as polygon features. Roads, pipelines, and power lines may be represented as line features but must include ancillary data to denote such data as width and number of pipes. Poles for power lines may be represented as point features. Ancillary data will include construction beginning and ending dates.

USE OF AIRCRAFT FOR PERMITTED ACTIVITIES

Required Operating Procedure 34

Objective: Minimize the effects of low-flying aircraft on wildlife, subsistence activities, local communities, and recreationists of the area, including hunters and anglers.

Requirement/Standard: The operator will ensure that operators of aircraft used for permitted oil and gas activities and associated studies maintain altitudes according to the following guidelines (**Note:** This ROP is not intended to restrict flights necessary to survey wildlife to gain information necessary to meet the stated objectives of the lease stipulations and ROPs; however, such flights will be restricted to the minimum necessary to collect such data and should consider other technologies, such as remote sensing and drones, in order to minimize impacts from aircraft):

a. Land users will submit an aircraft use plan as part of an oil and gas exploration or development proposal, which includes a plan to monitor flights and includes a reporting system for subsistence hunters to easily report flights that disturb subsistence harvest. The plan will address strategies to minimize impacts on subsistence hunting and associated activities, including the number of flights, type of aircraft, and flight altitudes and routes, and will also include a plan to monitor flights. Proposed aircraft use plans will be reviewed by the appropriate Alaska Native or subsistence organization. Consultations with these same agencies will be required if unacceptable disturbance is identified by subsistence users. Adjustments, including possible suspension of all flights, may be required by the BLM Authorized Officer, if resulting disturbance is determined to be unacceptable. The number of takeoffs and landings to support oil and gas operations with necessary materials and supplies will be limited to the maximum extent practical.
b. Use of aircraft, especially rotary wing aircraft, will be kept to a minimum near known subsistence camps and cabins or during sensitive subsistence hunting periods (e.g., spring goose hunting and summer caribou) and when recreationists are present.
c. Operators of aircraft used for permitted activities will maintain an altitude of at least 1,500 feet above ground level (except for takeoffs and landings) within 0.5 miles of cliffs identified as raptor nesting sites, and over caribou calving range, unless doing so would endanger human life or violate safe flying practices. An exception to flight altitudes may be approved by the Authorized Officer after coordination and review of the aircraft use plan to accommodate requirements to fly lower for some required activities (e.g., archaeological clearance).
d. Minimize the number of helicopter landings in caribou calving ranges from May 20 through June 20.

e. Pursuing running wildlife is hazing. Hazing wildlife by aircraft pilots is prohibited, unless otherwise authorized. If wildlife begins to run as an aircraft approaches, the aircraft is too close, and the operator must break away.

f. Avoid operation of aircraft over snow goose staging areas between August 15 and September 30. Necessary overflights during this timeframe shall avoid areas of heavy snow goose concentrations.

g. When polar bears are present:

   i. Operators of support aircraft shall conduct their activities at the maximum distance possible from concentrations of polar bears.

   ii. Aircraft will not operate at an altitude lower than 457 meters (1,500 feet) within 805 meters (0.5 miles) of polar bears observed on ice or land. Helicopters may not hover or circle above such areas or within 805 meters (0.5 miles) of such areas. When weather conditions do not allow a 457-meter (1,500-foot) flying altitude, operators will take precautions to avoid flying directly over or within 805 meters (0.5 miles) of these areas.

   iii. Plan all aircraft routes to minimize any potential conflict with known subsistence polar bear hunting activity.

Oil and Gas Field Abandonment

Required Operating Procedure 35

Objective: Ensure ongoing and long-term reclamation of land to its previous condition and use.

Requirement/Standard: Before final abandonment, land used for oil and gas infrastructure—including well pads, production facilities, access roads, and airstrips—will be reclaimed. The leaseholder will develop and implement a BLM-approved abandonment and reclamation plan. The plan will describe short-term stability, visual, hydrological, and productivity objectives and steps to be taken to ensure eventual rehabilitation to the land's previous hydrological, vegetation, and habitat functions. The BLM Authorized Officer may grant exceptions to satisfy stated environmental or public purposes.

Subsistence Consultation for Permitted Activities

Required Operating Procedure 36

Objective: Provide opportunities for subsistence users to participate in planning and decision-making to prevent unreasonable conflicts between subsistence uses and other activities.

Requirement/Standard: The lessee/operator/contractor will coordinate directly with affected communities, using the following guidelines:

a. Before submitting an application to the BLM, the applicant will work with directly affected subsistence communities, the Native Village of Kaktovik, NSB, and the North Slope and Eastern Interior Alaska Subsistence Regional Advisory Councils. They will discuss the siting, timing, and methods of their proposed operations to help discover local traditional and scientific knowledge. This is to minimize impacts on subsistence uses. Through this coordination, the applicant will make every reasonable effort, including such mechanisms as conflict avoidance agreements and mitigating measures, to ensure that proposed activities will not result in unreasonable interference with subsistence activities. In the event that no agreement is reached between the parties, the BLM

Authorized Officer will work with the involved parties and determine which activities would occur, including the time frames.

b. Applicants will submit documentation of coordination as part of operation plans to the North Slope and Eastern Interior Alaska Subsistence Regional Advisory Councils for review and comment. Applicants must allow time for the BLM to conduct formal government-to-government consultation with Native Tribal governments if the proposed action requires it.

c. A plan will be developed that shows how the activity, in combination with other activities in the area, will be scheduled and located to prevent unreasonable conflicts with subsistence activities. The plan will also describe the methods used to monitor the effects of the activity on subsistence use. The plan will be submitted to the BLM Authorized Officer as part of the plan of operations. The plan will address the following items:

   i. A detailed description of the activities to take place (including the use of aircraft);

   ii. A description of how the applicant will minimize or address any potential impacts identified by the BLM Authorized Officer during the coordination process;

   iii. A detailed description of the monitoring to take place, including process, procedures, personnel involved, and points of contact both at the work site and in the local community;

   iv. Communication elements to provide information on how the applicant will keep potentially affected individuals and communities up-to-date on the progress of the activities and locations of possible, short-term conflicts (if any) with subsistence activities; communication methods can include holding community open house meetings, workshops, newsletters, and radio and television announcements;

   v. Procedures necessary to facilitate access by subsistence users to conduct their activities;

   vi. Barge operators requiring a BLM permit are required to demonstrate that barging activities will not have unmitigable adverse impacts, as determined by NMFS, on the availability of marine mammals to subsistence hunters; and

   vii. All operators of vessels over 50 feet in length engaged in operations requiring a BLM permit must have an automatic identification system transponder system on the vessel.

d. Permittees who propose transporting facilities, equipment, supplies, or other materials by barge to the Coastal Plain in support of oil and gas activities in the Arctic Refuge will notify and coordinate with the Alaska Eskimo Whaling Commission, the appropriate local community whaling captains' associations, and the NSB to minimize impacts from the proposed barging on subsistence whaling.

e. For polar bears:

   Operators must minimize adverse impacts on the availability of polar bears for subsistence uses.

   viii. Community consultation. Applicants must consult with potentially affected communities and appropriate subsistence user organizations to discuss potential conflicts with subsistence polar bear hunting caused by the location, timing, and methods of operations and support activities.

   ix. Plan of Cooperation (POC). If conflicts arise, the applicant must address conflict avoidance issues through a POC, where an operator will be required to develop and implement a USFWS-approved POC.

Required Operating Procedure 37

Objective: Avoid conflicts between subsistence activities and seismic exploration.

Requirement/Standard: In addition to the coordination process described in **ROP 36** for permitted activities, before seismic exploration begins, applicants will notify the local search and rescue organizations in proposed seismic survey locations for that operational season. For the purpose of this standard, a potentially affected cabin or campsite is defined as one used for subsistence purposes and located within the boundary of the area subject to proposed geophysical exploration or within 1 mile of actual or planned travel routes used to supply the seismic operations.

a. Because of the large land area covered by typical geophysical operations and the potential to affect a large number of subsistence users during the exploration season, the permittee/operator will notify all potentially affected subsistence use cabin and campsite users.
b. The official recognized list of subsistence users of cabins and campsites is the NSB's most current inventory of cabins and campsites, which have been identified by the subsistence users' names.
c. A copy of the notification letter, a map of the proposed exploration area, and the list of potentially affected users will also be provided to the office of the appropriate Native Tribal government.
d. The BLM Authorized Officer will prohibit seismic work within 1 mile of any known subsistence use cabin or campsite, unless an alternate agreement between the owner or user is reached through the consultation process and presented to the BLM Authorized Officer.
e. Each week, the permittee will notify the appropriate local search and rescue of the operational location in the Coastal Plain. This notification will include a map indicating the extent of surface use and occupation, as well as areas previously used or occupied during the operation. The purpose of this notification is to give hunters up-to-date information regarding where seismic exploration is occurring and has occurred, so that they can plan their hunting trips and access routes accordingly. A list of the appropriate search and rescue offices to be contacted can be obtained from the coordinator of the North Slope and Eastern Interior Alaska Subsistence Regional Advisory Councils in the BLM's Arctic District Office.

Required Operating Procedure 38

Objective: Minimize impacts from non-local hunting, trapping, and fishing activities on subsistence resources.

Requirement/Standard: Hunting, trapping, and fishing by lessees/operators/contractors are prohibited when persons are on work status. This is defined as the period during which an individual is under the control and supervision of an employer. Work status is terminated when workers' shifts ends, and they return to a public airport or community (e.g., Kaktovik, Utqiaġvik, or Deadhorse). Use of operator/permittee facilities, equipment, or transport for personnel access or aid in hunting, trapping, and fishing is prohibited.

Required Operating Procedure 39

Objective: Prevent disruption of subsistence use and access.

Requirement/Standard: Before starting exploration or development, lessees/operators/contractors are required to develop a subsistence access plan, in coordination with the Native Village of Kaktovik and the City of Kaktovik, to be approved by the BLM Authorized Officer.

ORIENTATION PROGRAMS ASSOCIATED WITH PERMITTED ACTIVITIES

Required Operating Procedure 40

Objective: Minimize cultural and resource conflicts.

Requirement/Standard: All personnel involved in oil and gas and related activities will be provided with information concerning applicable lease stipulations, ROPs, standards, and specific types of environmental, social, traditional, and cultural concerns that relate to the region. The operator will ensure that all personnel involved in permitted activities will attend an orientation program at least once a year. The proposed orientation program will be submitted to the BLM Authorized Officer for review and approval and will accomplish the following:

a. Provide sufficient detail to notify personnel of applicable lease stipulations and ROPs and to inform individuals working on the project of specific types of environmental, social, traditional, and cultural concerns that relate to the region.
b. Address the importance of not disturbing archaeological and biological resources and habitats, including endangered species, fisheries, bird colonies, and marine mammals, and provide guidance on how to avoid disturbance, including on the preparation, production, and distribution of information cards on endangered or threatened species.
c. Be designed to increase sensitivity and understanding of personnel to community values, customs, and lifestyles in areas in which personnel would be operating.
d. Include information concerning avoidance of conflicts with subsistence and pertinent mitigation.
e. Include information for aircraft personnel concerning subsistence activities and areas and seasons that are particularly sensitive to disturbance by low-flying aircraft; of special concern is aircraft use near traditional subsistence cabins and campsites, flights during spring goose hunting and fall caribou and moose hunting seasons, and flights near potentially affected communities.
f. Provide that individual training is transferable from one facility to another, except for elements of the training specific to a site.
g. Include on-site records of all personnel who attend the program for so long as the site is active, though not to exceed the 5 most recent years of operations; this record will include the name and dates of attendance of each attendee.
h. Include a module discussing bear interaction plans to minimize conflicts between bears and humans.
i. Provide a copy of 43 CFR 3163 regarding noncompliance assessment and penalties to on-site personnel.
j. Include training designed to ensure strict compliance with local and corporate drug and alcohol policies; this training will be offered to the NSB Health Department for review and comment.
k. Include employee training on how to prevent transmission of communicable diseases, including sexually transmitted diseases, to the local communities; this training will be offered to the NSB Health Department for review and comment.

In order to limit disturbance around known polar bear dens:

Monitoring requirements.

a. Develop and implement a site-specific, USFWS-approved marine mammal monitoring and mitigation plan to monitor and evaluate the effectiveness of mitigation measures and the effects of activities on polar bears, and the subsistence use of this species.
b. Provide trained, qualified, and USFWS-approved onsite observers to carry out monitoring and mitigation activities identified in the marine mammal monitoring and mitigation plan.
c. For offshore activities, provide trained, qualified, and USFWS-approved observers on board all operational and support vessels to carry out monitoring and mitigation activities identified in the marine mammal monitoring and mitigation plan.
d. Cooperate with the USFWS and other designated federal, state, and local agencies to monitor the impacts of Industry activities on polar bears. Where information is insufficient to evaluate the potential effects of activities on polar bears, and the subsistence use of this species, operators may be required to participate in joint monitoring and/or research efforts to address these information needs and ensure the least practicable impact on these resources.

Reporting requirements. Operators must report the results of monitoring and mitigation activities to the USFWS.

a. In-season monitoring reports
    i. Activity progress reports. Notify the USFWS at least 48 hours prior to the onset of activities; provide the USFWS weekly progress reports of any significant changes in activities and/or locations; and notify the USFWS within 48 hours after ending of activities.
    ii. Polar bear observation reports. Report all observations of polar bears and potential polar bear dens, during any Industry activity. Information in the observation report must include, but is not limited to: (1) Date, time, and location of observation; (2) Number of bears; (3) Sex and age; (4) Observer name and contact information; (5) Weather, visibility, sea state, and sea-ice conditions at the time of observation; (6) Estimated closest distance of bears from personnel and facilities; (7) Industry activity at time of sighting; (8) Possible attractants present; (9) Bear behavior; (10) Description of the encounter; (11) Duration of the encounter; and (12) Mitigation actions taken.
b. Notification of Letters of Authorization incident report. Report all bear incidents during any Industry activity. Reports must include: (1) All information specified for an observation report; (2) A complete detailed description of the incident; and (3) Any other actions taken.
c. Final report. The results of monitoring and mitigation efforts identified in the marine mammal monitoring and mitigation plan must be submitted to the USFWS for review within 90 days of the expiration of an authorization. Information in the final report must include: (1) Copies of all observation reports submitted under an authorization; (2) A summary of the observation reports; (3) A summary of monitoring and mitigation efforts, including areas, total hours, total distances, and distribution; (4) Analysis of factors affecting the visibility and detectability of polar bears during monitoring; (5) Analysis of the effectiveness of mitigation measures; (6) Analysis of the distribution, abundance, and behavior of polar bears observed; and (7) Estimates of take in relation to the specified activities.

SUMMER VEHICLE TUNDRA ACCESS

Required Operating Procedure 41

Objective: Protect stream banks and water quality; minimize compaction and displacement of soils; minimize the breakage, abrasion, compaction, or displacement of vegetation; protect cultural and paleontological resources; maintain populations of and adequate habitat for birds, fish, and caribou and other terrestrial mammals; and minimize impacts on subsistence activities.

Requirement/Standard: On a case-by-case basis, the BLM Authorized Officer, in consultation with the USFWS, may permit low-ground-pressure vehicles to travel off gravel pads and roads during times other than those identified in ROP 11. Permission for such use will be granted only after an applicant has completed the following:

a. Submitted studies satisfactory to the BLM Authorized Officer of the impacts on soils and vegetation of the specific low-ground-pressure vehicles to be used; these studies will reflect use of such vehicles under conditions like those of the route proposed and will demonstrate that the proposed use will have no more than minimal impacts on soils and vegetation. Alternatively, the most current list of summer off-road vehicles approved by the State may be used to fulfill this requirement.
b. Submitted surveys satisfactory to the BLM Authorized Officer of subsistence uses of the area as well as of the soils, vegetation, hydrology, wildlife, and fish (and their habitats), paleontological and archaeological resources, and other resources, as required by the BLM Authorized Officer.
c. Designed or modified the use proposal to minimize impacts to the BLM Authorized Officer's satisfaction; design steps to achieve the objectives and based on the studies and surveys may include timing restrictions (generally it is considered inadvisable to conduct tundra travel before August 1 to protect ground-nesting birds), shifting work to winter, rerouting, and not proceeding when certain wildlife are present or subsistence activities are occurring.

GENERAL WILDLIFE AND HABITAT PROTECTION

Required Operating Procedure 42

Objective: Minimize disturbance of wildlife or alteration and hinderance of wildlife movements through the Coastal Plain.

Requirement/Standard:

a. Following wildlife with ground vehicles or aircraft is prohibited. Particular attention will be given to avoid disturbing caribou.
b. Avoid and minimize the disturbance to loafing and nesting birds to the extent practicable.

Required Operating Procedure 43

Objective: Prevent the introduction or spread of nonnative, invasive species in the Coastal Plain.

Requirement/Standard:

a. Certify that all equipment, supplies (including gravel, lumber, erosion control material), and vehicles (including helicopters, planes, boats, off-road vehicles, trucks, tracked vehicles, and barges) intended for use either off or on roads are free of invasive species before transiting into the Coastal Plain.

b. Survey annually along roads, drilling platforms, and barge access points for invasive species and begin effective eradication measures on evidence of their introduction.
c. Before beginning operations into the Coastal Plain, submit a plan, for BLM approval, detailing the methods for 1) cleaning equipment, supplies, and vehicles, including off-site disposal of cleaning fluids or materials and detected organisms, and 2) early detection surveys, and eradication response measures (including post treatment monitoring) for all invasive species, noxious plants and animals, and weeds.

Required Operating Procedure 44

Objective: Minimize loss of populations and habitat for plant species designated as sensitive by the BLM in Alaska.

Requirement/Standard: If a development is proposed in an area that provides potential habitat for a BLM sensitive plant species, the development proponent will conduct surveys at appropriate times of the summer season and in appropriate habitats for the sensitive plant species. The results of these surveys and plans to minimize impacts will be submitted to the BLM with the application for development.

Required Operating Procedure 45

Objective: Minimize loss of individuals and habitat for mammalian, avian, fish, and invertebrate species designated as sensitive by the BLM in Alaska.

Requirement/Standard: If a development is proposed in an area that provides potential habitat for BLM sensitive species, the development proponent will conduct surveys at appropriate times of the year and in appropriate habitats to detect the presence of BLM sensitive species. The results of these surveys and plans to minimize impacts will be submitted to the BLM with the application for development.

MARINE VESSEL TRAFFIC-ASSOCIATED ACTIVITIES

Required Operating Procedure 46

Objective: Minimize impacts on marine mammals from vessel traffic.

Requirement/Standard:

<u>General vessel traffic</u>

a. Operational and support vessels will be staffed with dedicated PSOs to alert crew of the presence of marine mammals and to initiate adaptive mitigation responses.
b. When weather conditions require, such as when visibility drops, support vessel operators must reduce speed and change direction, as necessary (and as operationally practicable), to avoid the likelihood of injuring marine mammals.
c. The transit of operational and support vessels is not authorized before July 1. This operating condition is intended to allow marine mammals the opportunity to disperse from the confines of the spring lead system and minimize interactions with subsistence hunters. Exemption waivers to this operating condition may be issued by the NMFS and USFWS on a case-by-case basis, based on a review of seasonal ice conditions and available information on marine mammal distributions in the area of interest.

d. Vessels may not be operated in such a way as to separate members of a group of marine mammals from other members of the group.

e. Operators shall take reasonable steps to alert other vessel operators in the vicinity of marine mammals.

f. Operators shall report any dead or injured listed marine mammals to NMFS and the USFWS.

g. Vessels will not allow tow lines to remain in the water when not towing, all closed lops will be cut, and all trash will be retained on board for disposal in secure landfills, thereby reducing the potential for marine mammal entanglement.

h. The lessees will implement measures to minimize risk of spilling hazardous substances. These measures will include avoiding operation of watercraft in the presence of sea ice to the extent practicable and using fully operational vessel navigation systems composed of radar, chart plotter, sonar, marine communication systems, and satellite navigation receivers, as well as Automatic Identification System for vessel tracking.

<u>Vessels in vicinity of whales</u>

a. Vessel operators will avoid groups of three or more whales by staying at least 1 mile away. A group is defined as being three or more whales observed within a 1,641-foot (500-meter) area and displaying behaviors of directed or coordinated activity (e.g., group feeding).

b. All boat and barge traffic will be scheduled to avoid periods when bowhead whales are migrating through the area. Boat, hovercraft, barge, and aircraft will remain at least 12 miles from Cross Island during the bowhead whale subsistence hunting consistent with the conflict avoidance agreement.

c. The transit of operational and support vessels through the North Slope region is not authorized prior to July 1. This operating condition is intended to allow marine mammals the opportunity to disperse from the confines of the spring lead system and minimize interactions with subsistence hunters. Exemption waivers to this operating condition may be issued by NMFS and USFWS on a case-by-case basis, based upon a review of seasonal ice conditions and available information on marine mammal distributions in the area of interest.

d. If the vessel approaches within 1 mile of observed whales, except when providing emergency assistance to whalers or in other emergency situations, the operator will take reasonable precautions to avoid potential interaction with the whales by taking one or more of the following actions, as appropriate:

   i. Reducing vessel speed to less than 5 knots within 900 feet of the whale;

   ii. Steering around the whale if possible;

   iii. Operating the vessel to avoid causing a whale to make multiple changes in direction, avoiding sudden or multiple course changes;

   iv. Checking the waters around the vessel to ensure that no whales are within 164 feet of the vessel prior to engaging the propellers;

   v. Reducing vessel speed to 9 knots or less when weather conditions reduce visibility to avoid the likelihood of injury to whales;

   vi. Vessels shall not exceed speeds of 10 knots in order to reduce potential whale strikes; and

   vii. If a whale approaches the vessel and if maritime conditions safely allow, the engine will be put in neutral and the whale will be allowed to pass beyond the vessel. if the vessel is taken out of gear, vessel crew will ensure that no whales are within 50 meters of the vessel when propellers are re-engaged, thus minimizing risk of marine mammal injury.

e. Vessels will stay at least 984 feet away from cow-calf pairs, feeding aggregations, or whales that are engaged in breeding behavior. If the vessel is approached by cow-calf pairs, it will remain out of gear a long as whales are within 984 feet of the vessel (consistent with safe operations).

f. Consistent with NMFS marine mammal viewing guidelines (https://alaskafisheries.noaa.gov/pr/mm-viewing-guide), operators of vessels will, at all times, avoid approaching marine mammals within 300 feet. Operators will observe direction of travel and attempt to maintain a distance of 300 feet or greater between the animal and the vessel by working to alter course or slowing the vessel.

g. Special consideration of North Pacific right whale and their critical habitat:

   i. Vessel operators will avoid transit through North Pacific right whale critical habitat. If such transit cannot be avoided, operators must post a dedicated PSO on the bridge and reduce speed to 10 knots while in the North Pacific right whale critical habitat. Alternately, vessels may transit at no more than 5 knots without the need for a dedicated PSO.

   ii. Vessel operators will remain at least 800 meters from all North Pacific right whales and avoid approaching whales head-on, consistent with vessel safety.

   iii. Operators will maintain a ship log indicating the time and geographic coordinates at which vessels enter and exit North Pacific right whale critical habitat.

<u>Vessels in vicinity of pacific walruses and polar bears</u>

a. Operators shall take all reasonable precautions, such as reduce speed or change course heading, to maintain a minimum operational exclusion zone of 0.5 mile around groups of feeding walruses.

b. Except in an emergency, vessel operators will not approach within 0.5 mile of observed polar bears, within 0.5 mile of walrus observed on ice, or within 1 mile of walrus observed on land.

c. For polar bears:

   i. Operational and support vessels must be staffed with dedicated marine mammal observers to alert crew of the presence of polar bears and initiate mitigation responses.

   ii. Vessels must maintain the maximum distance possible from concentrations of polar bears. No vessel shall approach within an 805-meter (0.5-mile) radius of polar bears observed on land or ice.

   iii. Vessels must avoid areas of active or anticipated polar bear subsistence hunting activity as determined through community consultations.

   iv. The USFWS may require trained marine mammal monitors on the site of the activity or on board any vessel or vehicles to monitor the impacts of Industry's activity on polar bear.

<u>Vessels in vicinity of seals</u>

a. Vessels used as part of a BLM-authorized activity will be operated in a manner that minimizes disturbance to wildlife in the coastal area. Vessel operators will maintain a 1-mile buffer from the shore when transiting past an aggregation of seals (primarily spotted seals) when they have hauled out on land, unless doing so would endanger human life or violate safe boating practices.

<u>Vessel transit through steller sea lion critical habitat/near major rookeries and haul outs</u>

a. Vessels will remain 3 nautical miles (5.5 kilometers) from all Steller sea lion rookery sites listed in paragraph 50 CFR 224.103 (d)(1)(iii). The vessel operator will not purposely approach within 3

nautical miles of any major Steller sea lion rookery or haul out unless doing so is necessary to maintain safe conditions.

A.3.3 Lease Notices

ENDANGERED SPECIES ACT SECTION 7 CONSULTATION AND MARINE MAMMAL PROTECTION ACT

Lease Notice 1. The lease areas may now or hereafter contain plants, animals, or their habitats determined to be threatened or endangered. The BLM will not approve any activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the ESA, as amended (16 United States Code 1531 et seq.), including completion of any required procedure for conference or consultation.[6]

Lease Notice 2. The lease area and/or potential project areas may now or hereafter contain marine mammals. The BLM may require modifications to exploration and development proposals to ensure compliance with Federal laws, including the MMPA. The BLM would not approve any exploration or development activity absent documentation of compliance under the MMPA. Such documentation shall consist of a Letter of Authorization, Incidental Harassment Authorization, and/or written communication from USFWS and/or NMFS confirming that a take authorization is not warranted.

[6] Lease Notice 1 was developed through the ESA Section 7 Consultation process and has been adjusted to more accurately reflect the requirements of the ESA.

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Appendix B

Maps

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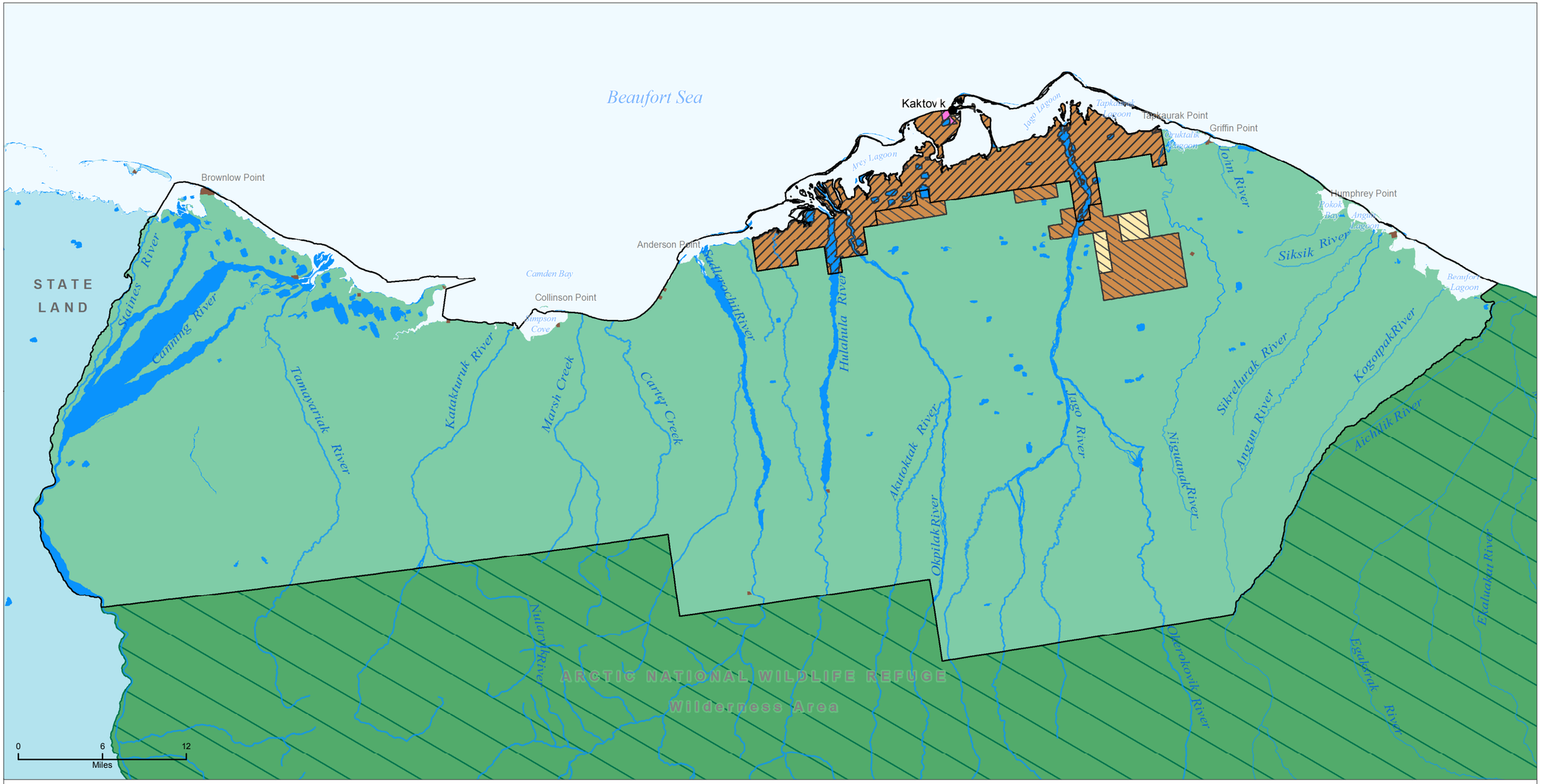


- U.S. Fish and Wildlife Service
- U.S. Fish and Wildlife Service, wilderness area
- Native-conveyed
- Native-selected
- State
- Native allotment
- Air Force

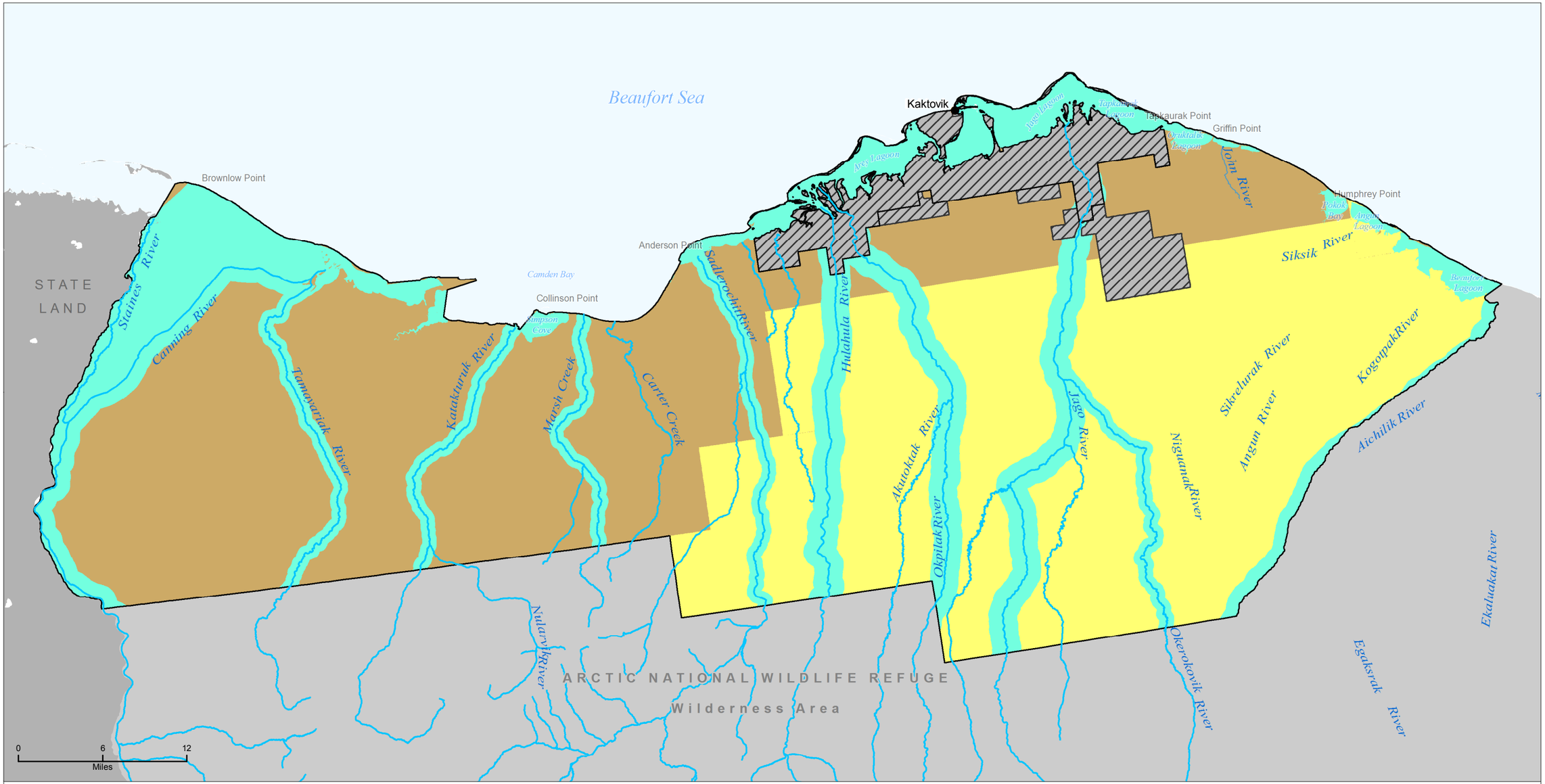
- Public Law 115-97 Coastal Plain

Outside BLM's oil and gas leasing authority:

- Excluded from Public Law 115-97 Coastal Plain
- Native or other mineral ownership

Data Source: BLM GIS 2018
Print Date: 10/21/2019

Map 1-1



Not offered for lease sale (none)

Available for lease sale:

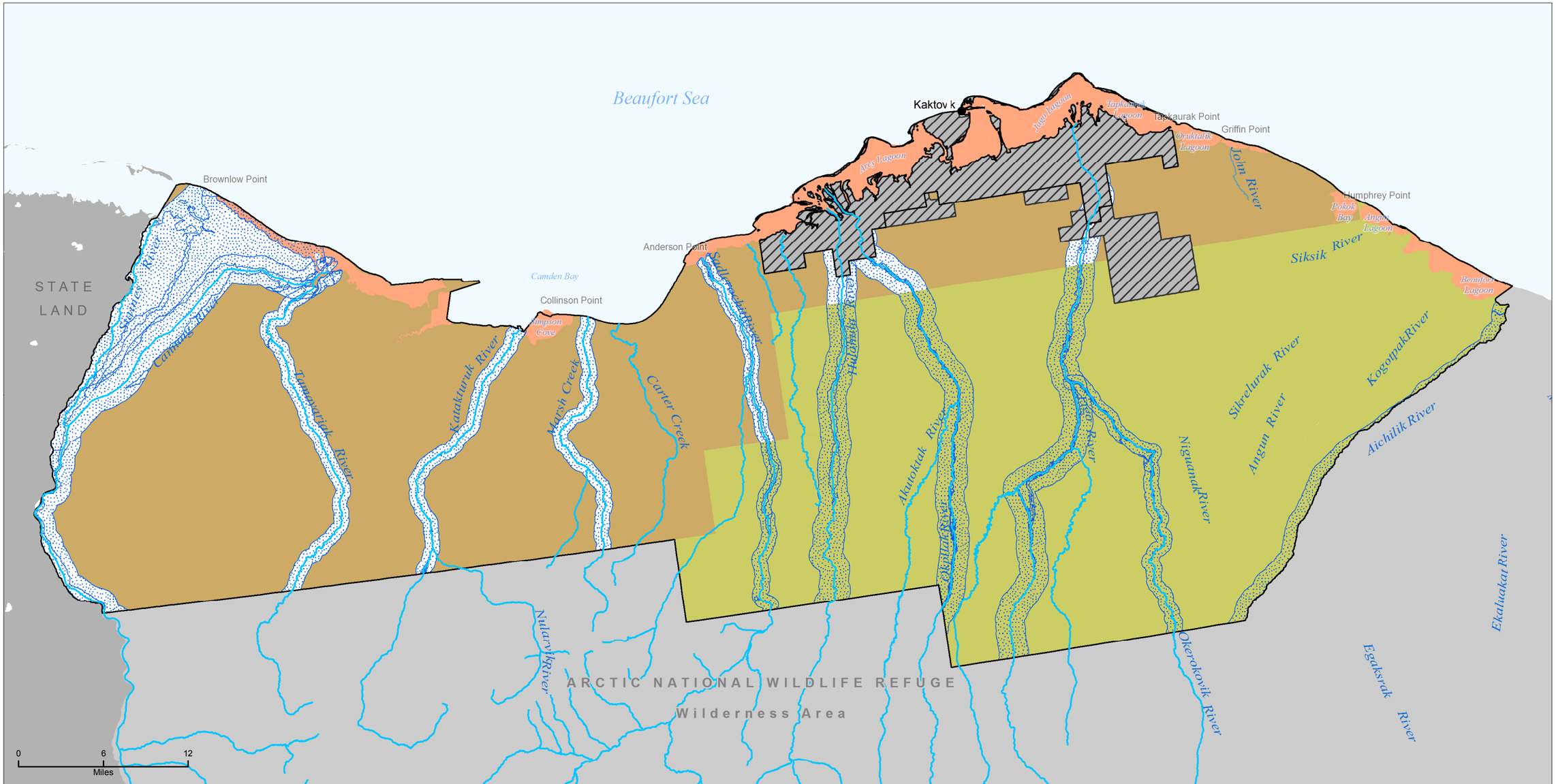
- Subject to no surface occupancy
- Subject to controlled surface use (none)
- Subject to timing limitations
- Subject to only standard terms and conditions

Public Law 115-97 Coastal Plain

Excluded from Public Law 115-97 Coastal Plain or outside the BLM's oil and gas leasing authority

Data Source: BLM GIS 2018, FWS GIS 2018
Print Date: 10/21/2019

Map 1-2



Available for lease sale, subject to no surface occupancy

- Lease stipulation 1—rivers and streams
- Lease stipulation 4—nearshore marine, lagoon, and barrier island habitat, exploration

Available for lease sale, subject to timing limitations

- Lease stipulation 7—Porcupine Caribou calving habitat

Available for lease sale

- Subject to only standard terms and conditions

- Public Law 115-97 Coastal Plain
- Excluded from Public Law 115-97 Coastal Plain or outside the BLM's oil and gas leasing authority

Data Source: BLM GIS 2018, FWS GIS 2018
Print Date: 10/21/2019

Map 1-3

United States Department of the Interior

U.S. FISH AND WILDLIFE SERVICE
1011 East Tudor Road
Anchorage, Alaska 99503

In Reply Refer to:
FWS/IR11/FES

MAR 1 3 2020

Memorandum

To: Mr. Chad Padgett, Alaska State Director - Bureau of Land Management

From: Ms. Mary Colligan, Assistant Regional Director for Fisheries and Ecological Services, U.S. Fish and Wildlife Service Mary Colligan

Subject: Biological Opinion for the Proposed Coastal Plain Oil and Gas Leasing Program in the Arctic National Wildlife Refuge Administered by the Bureau of Land Management

This document transmits the final Biological Opinion (BO) on the proposed Coastal Plain Oil and Gas Leasing Program in the Arctic National Wildlife Refuge administered by the Bureau of Land Management (BLM).

This BO was developed in accordance with section 7(a)(2) of the Endangered Species Act (ESA; 16 U.S.C. 1536 (a)(2)), associated implementing regulations (50 C.F.R. §§401-16), and the U.S. Fish and Wildlife Service (Service) policies and guidance. The BO addresses potential effects of the proposed Program on threatened spectacled eiders (*Somateria fischeri*), Alaska-breeding Steller's eiders (*Polysticta stelleri*), polar bears (*Ursus maritimus*), and the southwest Alaska distinct population segment of northern sea otters (*Enhydra lutris kenyoni;* northern sea otters), and areas designated as critical habitat for these four species. This BO is based on information provided in the May 24, 2019 Biological Assessment (modified by BLM's emails of August 26 and September 3, 2019 revising Table 5, and February 25, 2020 and March 3, 2020 which clarify the scope and provisions of the BLM's proposed action relative to Section 20001(c)3 of PL 115-97), the draft environmental impact statement (DEIS), the June 24, 2019 revision of the DEIS Appendix B revising the RFD Scenario, the BLM's July 3, 2019 Memorandum regarding the Service's ESA and MMPA recommendations, other Service documents, and published and unpublished literature. A complete administrative record of this consultation is on file at the Fish and Wildlife Conservation Office, Fairbanks, Alaska.

We conducted a framework programmatic consultation for the following reasons: 1) the proposed Program is projected to last decades, 2) it may include several stages (exploration, development, production, and abandonment) that will differ in their impacts and for which the likelihood, location, and specifics are currently uncertain, and 3) precisely evaluating impacts is complicated by possible future changes in the abundance, distribution and status of listed species (particularly polar bears).

This approach required the Service and the BLM to develop project design criteria (PDCs) which will be applicable to all future projects and activities implemented under the Program. These PDCs form the basis of the analysis and must be implemented by the BLM in full for the conclusions of the BO to remain valid.

The PDCs are:

PDC 1. Section 7 Consultation on Future Activities – The lease areas may now or hereafter contain plants, animals, or their habitats determined to be threatened or endangered. The BLM may require modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activities that would contribute to the need to list such a species or designate critical habitat for listed species. The BLM would not approve any activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the ESA, as amended (16 United States Code [USC] 1531 et seq.), including completion of any required procedure for conference or consultation.

PDC 2. The lease area and/or potential project areas may now or hereafter contain marine mammals. The BLM may require modifications to exploration and development proposals to ensure compliance with Federal laws, including the Marine Mammal Protection Act (MMPA). The BLM would not approve any exploration or development activity absent documentation of compliance under the MMPA. Such documentation shall consist of a Letter of Authorization, Incidental Harassment Authorization, and/or written communication from USFWS and/or NMFS confirming that a take authorization is not warranted.

PDC 3. The Service and the BLM will conduct programmatic reviews by meeting at least annually beginning one year after the first Lease Sale. These reviews will evaluate, among other things, 1) whether activities proposed are consistent with the Reasonably Foreseeable Development Scenario, as described, for the proposed Program, 2) whether the nature and scale of predicted effects remain valid, and 3) whether the programmatic consultation, including the PDCs and determinations reached, remain adequate and appropriate. In addition, these meetings will provide a venue where any new information on the status of species, their critical habitat, or new methods to avoid or minimize impacts can be shared.

PDC 4. All activities, including plan development, study development, and consideration of exceptions, modifications, or waivers would include coordination with the Service as the surface management agency and would comply with the ESA. In addition, the BLM would coordinate with other appropriate Federal, state, and North Slope Borough agencies, tribes, and Alaska Native Claims Settlement Act corporations.

Section 7(a)(2) of the ESA states that Federal agencies must ensure that their activities are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat.

Based on our analysis of the proposed Program, we conclude that the action is not likely to adversely affect northern sea otters or designated critical habitat of northern sea otters, spectacled eiders, or Alaska-breeding Steller's eiders. Based on our analysis of the status of species, the environmental baseline, the effects of the proposed Program, and cumulative effects, coupled with the commitments outlined in the PDCs, we conclude that the proposed Program is not likely to jeopardize the continued existence of spectacled eiders, Alaska-breeding Steller's eiders, or polar bears, and is not likely to destroy or adversely modify critical habitat of polar bears.

If you have comments or concerns regarding this BO, please contact Mr. Ted Swem, Consultation Branch Chief, Fairbanks Fish and Wildlife Field Office, at 907-456-0441.

Attachment

BIOLOGICAL OPINION

For

Coastal Plain Oil and Gas Leasing Program
Arctic National Wildlife Refuge

Consultation with the
Bureau of Land Management

Prepared by:
Fairbanks Fish and Wildlife Field Office
U. S. Fish and Wildlife Service
101 12th Ave, Room 110
Fairbanks, AK 99701

March 13, 2020

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LIST OF ABBREVIATIONS USED IN THIS DOCUMENT

ABR	Alaska Biological Research, Inc.
ACP	Arctic Coastal Plain
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
AO	Authorized Official
AOGCC	Alaska Oil and Gas Conservation Commission
BA	Biological Assessment
BMP	Best Management Practice
BLM	Bureau of Land Management
BO	Biological Opinion
BOEM	Bureau of Ocean Energy Management
CI	Confidence Interval
CPF	Central Processing Facility
CRD	Colville River Delta
CS	Chukchi Sea Subpopulation of Polar Bears
DEIS	Draft Environmental Impact Statement
DMA	Division of Management Authority
DOI	Department of Interior
DPS	Distinct Population Segment
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FR	Federal Register
GIS	Geographic Information System
IPCC	Intergovernmental Panel on Climate Change
ITRs	Incidental Take Regulations
ITS	Incidental Take Statement
IUCN	International Union for Conservation of Nature and Natural Resources
LBCHU	Ledyard Bay Critical Habitat Unit
LOA	Letter of Authorization
MLLW	Mean Lower Low Water
MMPA	Marine Mammal Protection Act
MTR	Marine Transit Route
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NPR-A	National Petroleum Reserve Alaska
NSE	North Slope Eider Survey
NSIDC	National Snow and Ice Data Center
NSO	No Surface Occupancy
OC	Organochlorine Compound
OSR	Oil Spill Response Plan
PBCMP	Polar Bear Conservation Management Plan
PBF	Physical or Biological Features
PBSG	Polar Bear Specialist Group

PCB	Polychlorinated Biphenyls
PCE	Primary Constituent Element
PCH	Porcupine Caribou Herd
PDC	Project Design Criteria
POP	Persistent Organic Pollutant
RFD	Reasonably Foreseeable Development
ROD	Record of Decision
ROP	Required Operating Procedure
RPM	Reasonable and Prudent Measure
SBS	Southern Beaufort Sea Subpopulation of Polar Bears
SE	Standard Error
SD	Standard Deviation
SPCCP	Spill Prevention, Control, and Countermeasure Plans
STP	Seawater Treatment Plant
TAPS	Trans-Alaska Pipeline System
TL	Timing Limitations
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USGS	U.S. Geological Survey
USFWS	U.S. Fish and Wildlife Service
VSM	Vertical Support Member

1. INTRODUCTION

This document transmits the U.S. Fish and Wildlife Service's (Service's or USFWS') biological opinion (BO) in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq*.), on the effects of the Bureau of Land Management's (BLM's) proposed oil and gas leasing program on the Arctic Coastal Plain of the Arctic National Wildlife Refuge (hereafter, Coastal Plain of Arctic Refuge). This BO evaluates the potential effects of oil and gas leasing, development, production, and transportation in and from this area on species under the Service's jurisdiction that are listed as threatened or endangered, and designated critical habitat pursuant to the ESA.

The ESA establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitats on which they depend. Section 7(a)(2) of the ESA states that Federal agencies must ensure that their activities are not likely to:

- Jeopardize the continued existence of any listed species, or
- Result in the destruction or adverse modification of designated critical habitat.

Federal agencies fulfill this obligation by consulting with the Service or National Marine Fisheries Service (NMFS), depending on the species potentially affected (50 C.F.R. §402.14(a)). If a Federal action agency determines that an action "may affect, but is not likely to adversely affect" endangered species, threatened species, or designated critical habitat and the consulting agency (the Service or NMFS, as appropriate) concurs, consultation concludes informally (50 C.F.R. §402.14(b)). In the event of a determination that one or more listed species or designated critical habitat are "likely to be adversely affected" by the action, formal consultation is conducted. In this case, the BLM determined (BLM 2019) that one or more listed species would likely be adversely affected by the proposed oil and gas leasing program (Program), so formal consultation was conducted.

Section 7(b)(3) of the ESA requires that at the conclusion of formal consultation, the consulting agency provides an opinion stating whether the Federal agency's action is likely to jeopardize ESA-listed species or destroy or adversely modify designated critical habitat. If the action is likely to jeopardize ESA-listed species or destroy or adversely modify designated critical habitat, the consulting agency provides reasonable and prudent alternatives that can be taken by the Federal agency or the applicant that allow the action to proceed in compliance with section 7(a)(2) of the ESA.

This BO, related to the effects of the BLM's proposed oil and gas leasing program on the Coastal Plain of Arctic refuge, was developed in accordance with section 7(a)(2) of the ESA (16 U.S.C. 1536 (a)(2)), associated implementing regulations (50 C.F.R. §§401-17), and Service policies and guidance. Updates to the regulations governing interagency consultation (50 CFR part 402) became effective on October 28, 2019 [84 FR 44976]. As the preamble to the final rule adopting the new regulations noted, "[t]his final rule does not lower or raise the bar on section 7 consultations, and it does not alter what is required or analyzed during a consultation. Instead, it improves clarity and consistency, streamlines consultations, and codifies existing practice."

Thus, even though the Service primarily developed this BO while the prior regulations were in effect, none of the revisions effected by the new regulations necessitated any modifications to the scope, analysis, or determinations of this BO, which complies with both sets of regulations. The consultation addresses potential effects of the Program on threatened spectacled eiders (*Somateria fischeri*), Alaska-breeding Steller's eiders (*Polysticta stelleri*), polar bears (*Ursus maritimus*), and northern sea otters (*Enhydra lutris kenyoni*), and areas designated as critical habitat for these four species, as appropriate.

Programmatic Consultations
The Service and the NMFS have developed techniques to streamline the procedures and time involved in consultations for broad agency programs or numerous similar activities with predictable effects on listed species and critical habitat. Some of the more common of these techniques and the requirements for ensuring that streamlined consultation procedures comply with section 7 of the ESA and its implementing regulations are discussed in a memorandum jointly issued by the NMFS and the Service on October 11, 2002 (see also, 68 FR 1628-01 [January 13, 2003] for the notice of availability of the memorandum).

Programmatic consultations can be used to evaluate potential effects of 1) multiple similar, frequently occurring or routine actions expected to be implemented in particular geographic areas, 2) a proposed program, plan, policy, or regulation providing a framework for future actions, and 3) incremental step actions expected to be implemented in the future, where specifics of individual activities are not definitively known at the time of the initial consultation. The programmatic approach is well suited for the proposed Program because the Program is projected to last decades, it may include several stages (exploration, development, production, and abandonment) that will differ in their impacts and for which the likelihood, location, and specifics are currently uncertain, and precisely evaluating impacts is complicated by possible future changes in the abundance, distribution and status of listed species (particularly polar bears).

A programmatic consultation should identify project design criteria (PDCs) or standards that will be applicable to future projects implemented under the program. The PDCs serve to prevent adverse effects to listed species, or to limit adverse effects to predictable levels to ensure the action will not jeopardize the continued existence of listed species or destroy or adversely modify critical habitat, whether actions are considered individually or collectively at the program level. Under a programmatic consultation, step-down consultations are needed for actions that cannot be specifically described at the time of initial consultation and for those that cannot meet the PDCs.

The following elements should be included in a programmatic consultation to ensure its consistency with ESA section 7, and its implementing regulations:

1. PDCs to prevent or limit future adverse effects on listed species and designated critical habitat;
2. Description of the manner in which activities to be implemented under the programmatic consultation may adversely affect listed species and critical habitat and evaluation of expected level of adverse effects from covered projects;

3. Process for evaluating and tracking expected and actual aggregate (net) additive effects of all projects expected to be implemented under the programmatic consultation. The programmatic consultation document must demonstrate that when the PDCs are applied to each project, the aggregate effect of all projects would not jeopardize listed species or destroy or adversely modify critical habitat;
4. Procedures for streamlined step-down consultation. As discussed above, if an approved programmatic consultation document is sufficiently detailed, step-down consultations ideally will consist of certifications and concurrences between action agency biologists and consulting agency biologists. An action agency biologist or team will provide a description of a proposed project and a certification that it will be implemented in accordance with the PDCs. The action agency also provides a description of anticipated project-specific effects and a tallying of net effects to date resulting from projects implemented under the program, and certification that these effects are consistent with those anticipated in the programmatic consultation. The consultation agency biologist reviews the submission and provides concurrence, or adjustments to the project necessary to bring it into compliance with the programmatic consultation. The project-specific consultation process must also identify any effects not considered in the programmatic consultation. Finally, project-specific consultation procedures must provide contingencies for proposed projects that cannot be implemented in accordance with the PDCs; full stand-alone consultation may be performed on these projects if they are too dissimilar in nature or in expected effects from those projected in the programmatic consultation document;
5. Procedures for monitoring projects and validating effects predictions; and,
6. Comprehensive review of the program, generally conducted annually.

In a tiered approach, this programmatic consultation establishes a framework of analysis and standards that allow future step-down consultations (as needed) at the stage of implementing or authorizing individual activities to be more effective and efficient. The Services promulgated changes to the section 7(a)(2) implementing regulations (80 FR 26832, May 11, 2015; ITS rule) that define two types of programmatic actions addressing certain types of policies, plans, regulations, and programs. Under a framework programmatic action such as the Proposed Program evaluated here, take of ESA-listed species would not occur unless and until those future actions are authorized, funded, or carried out and subject to step-down consultation, which may include an incidental take statement (ITS), as appropriate. This is in contrast to a mixed programmatic action and consultation, which combines approval of actions that will not be subject to further ESA section 7(a)(2) consultation and approval of a framework for the development of future actions that are authorized, funded, or carried out at a later time.

2. ASSESSMENT FRAMEWORK

Section 7(a)(2) of the ESA requires Federal agencies, in consultation with the Service, to ensure their actions are not likely to jeopardize the continued existence of endangered or threatened species; or adversely modify or destroy their designated critical habitat.

"Jeopardize the continued existence of" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of an ESA-listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 C.F.R. §402.02).

"Destruction or Adverse Modification" means a direct or indirect alteration that appreciably diminishes the value of designated critical habitat for the conservation of an ESA-listed species. Such alterations may include, but are not limited to, those that alter the physical or biological features essential to the conservation of a species or that preclude or significantly delay development of such features (50 C.F.R. §402.02).

This assessment involves the following steps:

Description of the Proposed Action: We describe the Reasonably Foreseeable Development Scenario (RFD), including those activities expected to be implemented in the future for which step-down consultations will be required because the specifics are not known at this time. This section also includes the PDCs for avoidance and minimization of impacts to ESA-listed species and designated critical habitat, and information regarding the procedures for submitting step-down consultation requests and conducting regular reviews under the programmatic consultation.

Action Area: We describe the proposed action and those aspects of the proposed action that may have direct or indirect effects on the physical, chemical, and biotic environment. We describe the Action Area within the spatial extent of effects from those actions. Therefore, we include the marine transit route (MTR) proposed in the RFD in the described Action Area.

Effect Determinations for Species Not Likely to Be Adversely Affected: We identify those species and designated critical habitats that are "not likely to be adversely affected" and detail our effects analyses for these species and critical habitats.

Status of Species and Designated Critical Habitat: We identify the ESA-listed species and designated critical habitats that are "likely to be adversely affected" by the proposed action and evaluate the status of those species and habitats.

Environmental Baseline: We provide an analysis of the condition of the listed species or its designated critical habitat in the Action Area, without the consequences to the listed species or designated critical habitat cause by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the Action Area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. Consequences from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the baseline.

Effects of the Action: We provide an analysis of the effects of the action on listed species and critical habitat. Effects of the action are all consequences to listed species or designated critical habitat that are caused by the proposed action. A consequence is caused by the proposed action

if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action.

Because the proposed action is long-term and some details that may influence potential effects to ESA-listed species are currently unknown, the effects analyses herein is conducted at a broad scale. The effects analyses for those activities that are likely to adversely affect ESA-listed species or designated critical habitat are general because many of these activities will require step-down consultations as details are provided by the BLM, as new lease sales are held within the Action Area, and as Marine Mammal Protection Act (MMPA) authorizations are requested by lessees.

Cumulative Effects: Cumulative effects considered in this section include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the Action Area. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA. When analyzing cumulative effects of a proposed action, we define both the spatial (geographic), and temporal (time) boundaries.

Conclusion: With full consideration of the status of the species and the designated critical habitat, we consider the effects of the action within the Action Area on populations or subpopulations and on essential habitat features when added to the environmental baseline and the cumulative effects to determine whether the action could reasonably be expected to:

- Reduce appreciably the likelihood of survival and recovery of ESA-listed species in the wild by reducing its numbers, reproduction, or distribution, and state our conclusion as to whether the action is likely to jeopardize the continued existence of such species; or,

- Appreciably diminish the value of designated critical habitat for the conservation of an ESA-listed species, and state our conclusion as to whether the action is likely to destroy or adversely modify designated critical habitat.

If, in completing the last step in the analysis, we determine that the action under consultation is likely to jeopardize the continued existence of ESA-listed species or destroy or adversely modify designated critical habitat, then we must identify reasonable and prudent alternative(s) to the action, if any, or indicate that to the best of our knowledge there are no reasonable and prudent alternatives. See 50 C.F.R. §402.14(h)(3).

Incidental Take Statement: Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. “Harm” is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. “Harass” is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns that

include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action, is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of the ITS.

Incidental take is not authorized for any species through this framework programmatic consultation or BO. Any incidental take resulting from any action subsequently authorized, funded, or carried out under the Proposed Program will be addressed in subsequent section 7 consultation, as appropriate. ITSs included in future step-down formal consultations would enumerate take, and include reasonable and prudent measures (RPMs), and terms and conditions to implement RPMs, to minimize impacts of take (ESA section 7 (b)(4); 50 C.F.R. §402.14(i)).

3. DESCRIPTION OF THE PROPOSED ACTION

3.1 Proposed Action

Programmatic framework consultation allows the BLM and the Service to conduct formal consultation in stages to maximize the opportunity for both agencies to more accurately evaluate potential effects of this Program on listed species and critical habitat by considering specific details of activities when they are proposed (e.g., through submission of a specific development plan to the BLM).

The first phase of this consultation includes the proposed Lease Sale and one or more additional lease sales held under the Proposed Program, and all on-lease activities associated with exploration and delineation of a first hypothetical anchor field, up to and including a commercially viable oil and gas discovery. The BLM describes that all on-lease activities that would occur after the initial anchor field discovery are components of future Program phases and would be subject to ESA section 7 consultation in future project-specific proposed development plans. These future Program activities could include development and production of additional anchor fields, further exploration, development, and production of satellite fields, and their decommissioning.

In order to assess potential impacts to listed species that may result from the proposed Lease Sale, the BLM developed a hypothetical Reasonably Foreseeable Development (RFD; BLM 2018a). This RFD, described in the Biological Assessment (BA), and Environmental Impact Statement (EIS) for the lease sale as Alternative B, with associated lease stipulations and Required Operating Procedures (ROPs), is summarized below. The reader should refer to the BLM's BA and EIS for complete details.

3.1.1 Leasing

The Tax Cuts and Jobs Act of 2017 (Public Law 115-97) mandates that at least two oil and gas lease sales will occur within a portion of the Coastal Plain of Arctic Refuge. The first is to occur within 4 years, and the second within 7 years. It is assumed the first sale will occur within a year of publication of the Record of Decision (ROD) for the Leasing EIS. It is also assumed industry

would lease the areas offered, and proceed with exploration and development schedule as quickly as the process allows.

Issuance of an oil and gas lease would not authorize ground disturbing activities; however, a lease would grant the lessee certain rights to drill and extract oil and/or gas subject to applicable regulations and lease stipulations. Therefore, the proposed Lease Sale is a prerequisite for subsequent permitting, and it is these subsequent actions, which require separate action by BLM, which have the potential for impacts to listed species and designated critical habitat. The BLM would not permit a lessee's subsequent on-lease activities until: 1) the lessee applies for appropriate BLM authorizations (e.g., application for permit to drill), 2) the lessee files a plan with site-specific details, and demonstrates compliance with the BLM stipulations and ROPs, 3) the BLM completes subsequent National Environmental Policy Act (NEPA) Analysis and ESA section 7 consultation for the proposed on-lease activity, and 4) the lessee demonstrates compliance with the MMPA, Clean Water Act, and/or other applicable requirements.

Subsequent to the first proposed Lease Sale, a sequence of activities could take place, each dependent on the success of the previous phase. These phases would include: 1) exploration for oil and gas resources (exploration), 2) construction of infrastructure (development), 3) extraction, processing, and transportation of resources (production), and 4) end of field life with decommissioning of wells, production facilities, and other infrastructure (abandonment). These phases are discussed in further detail under the hypothetical RFD below.

Surface Disturbance Limitations
Section 20001(c)(3) of PL 115-97 states that in administering this section, the Secretary shall authorize up to 2,000 surface acres of Federal land within the Program Area (i.e., the lands subject to the BLM's oil and gas leasing authority) to be covered by production and support facilities during the term of the leases under the Program.

3.1.2 Reasonably Foreseeable Development

The BLM has selected Alternative B from the Draft EIS as a hypothetical RFD (BLM 2018a). Under this alternative, the entire Program Area could be offered for lease sale (Figure 4.1). To minimize the chance that the impact analysis will understate potential impacts, the RFD assumes successful discovery and development, and optimistic high-production in a situation of favorable market prices. The BLM developed the proposed RFD based on assumptions from 1) previous two-dimensional seismic exploration of the Program Area, 2) the history of development in the National Petroleum Reserve Area (NPR-A) and other North Slope developments, 3) the BLM's knowledge of the almost entirely unexplored petroleum endowment of the Program Area, 4) current industry practices, and 5) professional judgment.

3.1.3 RFD Phase 1 – Exploration

The first project phase would include activities associated with exploration and delineation of an anchor field. Seismic surveys, exploratory drilling, and support activities associated with this phase are described in further detail below.

Seismic Surveys
The BLM assumes that the entire Program Area would be subject to a 3D seismic survey (BLM 2019b).[1] The BLM also assumes that after the first sale, lessees would conduct a smaller scale 3D survey on their own lease blocks (BLM 2019b). The area-wide and lease block-specific seismic surveys would be conducted via the same general methods. They would require travel by vibroseis seismic vehicles and smaller support vehicles. The vibroseis trucks are mounted on rubber tracks to minimize ground pressure. No air-guns or dynamite are expected to be used. Multiple vehicles could be used simultaneously miles apart to conduct vibroseis exploration, or convoys of four to five trucks could travel in a line, which is less common.

Cable-less geophone receivers (autonomous recording nodes) would be placed in lines perpendicular to source lines. Source and receiver lines would be typically 330 to 1,320 feet apart. Seismic operations would be accompanied by ski-mounted camp buildings towed by bulldozers or other tracked vehicles, such as Steigers. There could be two to three strings with four to eight modular buildings in each string. Camps are assumed to move weekly. Seismic exploration will be further detailed in the seismic environmental assessment, which is in preparation. All seismic operations would be conducted in the winter to minimize impacts on the tundra (BLM 2018a).

Exploratory Drilling
Based on results of the seismic surveys, exploratory wells would be drilled to confirm fields and define stratigraphic columns. Initial exploration wells would be drilled vertically to a depth of approximately 13,000 to 15,000 feet. Exploratory drilling would be conducted during winter months from ice pads constructed to support exploration operations. Exploration ice pads would typically be 1-foot thick and require 500,000 gallons of freshwater (DOI 2005). Freshwater for ice pad construction and drilling muds would likely be drawn from nearby lakes and/or rivers, or from snowmelt. Water demand would vary by the geology of individual sites and the density of drilling mud required.

Exploratory drilling operations would be self-contained (i.e., no reserve pits would be used to store drilling muds or cuttings). Drilling muds and cuttings would be crushed and slurried with seawater, then combined with the remaining drilling muds and reinjected into a confining rock formation 3,000 to 4,000 feet underground in an approved injection well (DOI 2005). Drilling an exploration well in a previously unexplored area may take weeks or months, depending on depth, data collection program, and borehole conditions. Once the well is completed, additional down-well testing and characterization could take up to a month (DOI 2005).

Following promising results with an exploration well, additional delineation wells may be drilled to further characterize the discovery. Delineation wells would require about the same time for drilling as an initial exploration well. After drilling, logging, and other downhole evaluation activities are complete, exploration and delineation wells would either be completed and

[1] While BLM's May 2019 Biological Assessment stated that an area-wide seismic survey would occur prior to the first lease sale, the expected timing of that activity has changed, and BLM subsequently provided the Service with supplemental information (BLM 2019b) expressing its updated assumption that an area-wide seismic survey would occur after the first lease sale.

suspended for future use, or plugged and abandoned according to regulatory requirements, with all wastes removed from the site (DOI 2005).

Transportation
Temporary winter routes, such as ice roads and packed snow trails, would facilitate exploratory activities. Ice roads would be constructed by removing water or ice chips from local permitted lakes and rivers, and spreading in the desired locations. Snow trails require sufficient snow depth for packing, and would generally only be suitable for tracked vehicles or wheeled transport of relatively small loads.

Winter ice roads and trail routes would depend on the location of the exploratory sites in proximity to developed areas (e.g., Point Thomson or Kaktovik) and the project-specific exploration plan. Transportation associated with exploration would be described and evaluated as part of the project-specific NEPA analysis and additional ESA consultation. Transportation of personnel and supplies during exploratory operations at remote locations in the Program Area would likely vary by season and phase of exploration and could include the use of aircraft (fixed-wing and helicopters).

3.1.4 RFD Phase 2 – Development

Following successful exploration and delineation, development and production plans for anchor and satellite fields would be expected. During development, the following activities are likely to occur:

- Construction, use, and maintenance of gravel infrastructure and facilities;
- Gravel mining;
- Pipeline installation;
- Continued exploratory drilling; and,
- Aircraft, vehicle, and vessel traffic.

Development
The RFD assumes development would start following discovery of the first anchor field, which would most likely be in the western half of the Program Area. Development would begin with construction of gravel pads for wells, central processing facility (CPF), airstrip, storage tanks, communications center, waste treatment unit, and worker camp. These facilities would occupy a total of 50 acres (BLM 2012; Table 3.1). See Figure 3.1 for a conceptual layout of a stand-alone oil development with an anchor field and associated facilities.

Construction and operation of up to four CPFs are predicted under the proposed RFD (Table 3.1). Additionally, about 17 satellite pads would be developed (approximately 4 satellite pads per CPF), and approximately 174 total miles of gravel road would connect these facilities (Table 3.1). Gravel roads would be less extensive than winter routes. Additionally, gravel roads would be limited to connecting production wells to CPFs. Precise estimates for gravel roads are unknown, although roads from similar oil and gas developments impact roughly 7.5 acres per mile (BLM 2012; Table 3.1). Up to 1,305 acres of surface disturbance are projected for gravel road construction, and this infrastructure would the greatest source of disturbance associated with the RFD (Table 3.1).

Following completion of the anchor pad, development would begin on satellite pads around the anchor field (Figure 3.1). Satellite pads would include production wells and required equipment to pump produced oil back to the nearest CPF via pipeline. Under the RFD, satellite pads are each anticipated to accommodate approximately 30 wells and impact roughly 12 acres (Table 3.1). Each satellite pad would require approximately 120,000 cubic yards of gravel. Pads would be constructed to a thickness (approximately 5-feet) sufficient to maintain a stable thermal regime, based on data from nearby Point Thomson (USACE 2012).

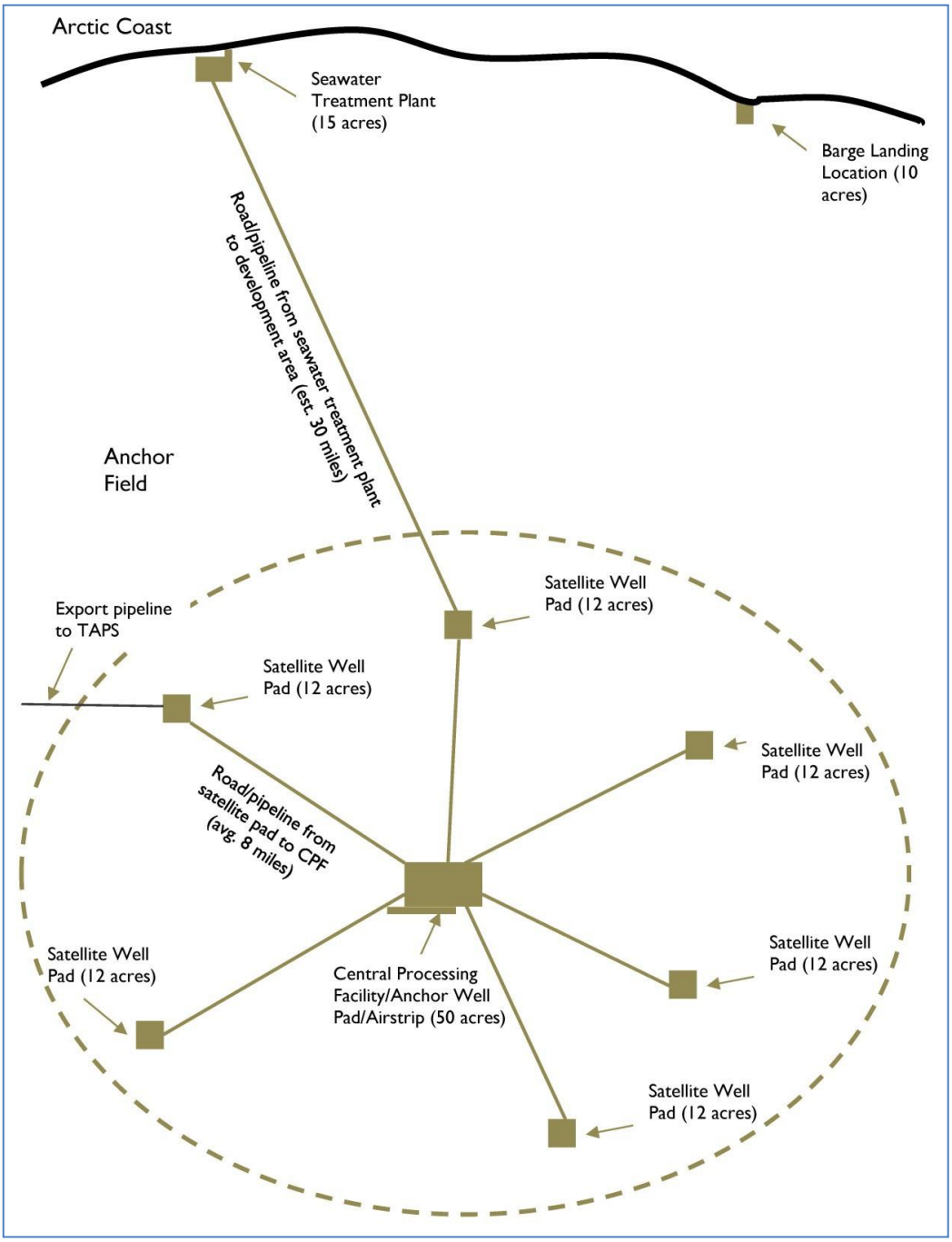

Figure 3.1 Conceptual layout of a hypothetical stand-alone oil development within the Action Area.

If necessary, a seawater treatment plant (STP) may also be constructed along the coast, to source saline water for water flooding, reservoir pressure, or other subsurface uses. The STP pad would be approximately 15 acres and require approximately 150,000 cubic yards of gravel (BLM 2012). A gravel access road and seawater transport pipeline would also be constructed from the STP to the CPF.

Table 3.1. Estimated surface disturbance by facility, and total disturbance area for up to 4 anchor fields projected under the RFD.

Facility Type	Number of Facilities	Disturbance area per single CPF (acres)	Total Federal Surface area disturbance (acres)
CPF, airstrip, anchor well pad	4	50	200
Satellite pads	14	12	168
Roads: CPF to satellites	174 miles	7.5 per mile	1,305
VSMs	212 miles	0.04 per mile	8
Seawater treatment plant	1	15	15
Barge landing and storage	1	10	10
Gravel mines	TBD[2]	TBD	300
Total (approximate)	N/A	480	2,000

Sources: BLM 2004, BLM 2012, USACE 2017
[1]All figures are general estimates and not based on specific project proposals. Acreages are approximate and rounded to the nearest acre.
[2]To be determined.

Material sites would be developed to supply gravel for pads and roads during the development phase. The BLM estimates between 12,600,000 and 12,900,000 cubic yards of gravel would be required to construct roads, airstrips and pads for a variety of purposes. Because a number of potential material sources occur in the Program Area, the BLM expects material sites would be constructed proximal to the infrastructure where it would be used. Therefore, additional gravel roads to access material sites are not expected.

Material sites would be excavated to between 25 and 50 feet in depth. With appropriate side slopes and areas for overburden storage, the BLM estimates approximately 165 to 320 acres of surface disturbance would be required to supply all RFD gravel needs for development.

Construction Access and Transportation
As with Phase 1 – Exploration, temporary winter routes, e.g., ice roads and packed snow trails, would be the primary travel corridors for heavy equipment and conventional vehicles during the development phase. Winter trails would be built within and beyond leased areas connecting work sites with existing infrastructure.

Ice roads would be used to transport supplies, drill rigs, modular units, and other large or heavy equipment for CPFs. Ice roads for development would be constructed by compacting snow using low-ground pressure vehicles (approximately 1 to 2 pounds per square inch). Compacted tracks capture more wind-blown snow and tracks are again compacted after roughly a week. Once accumulation is complete, larger tracked vehicles with higher ground pressure or wheeled

vehicles, such as a water truck or front-end loader, compact the snow to the desired road width. Water is then dispersed on the compacted snow to create ice buildup. Minimum ice road thickness would be 6 inches, and roads are typically 35 feet wide. Ice road construction would require approximately 1 million gallons of water per mile, although use of ice chips could reduce liquid water use substantially. About 1 mile of ice road could be constructed per day (BLM 2012).Ice roads would be constructed each winter to transport larger or heavier supply items to anchor fields. Any equipment or supplies not transported during the winter would be flown in with aircraft. Because the anchor fields would be separated from other North Slope infrastructure, additional flights would be necessary, compared to a road-supported development.

Snow trails could be used for smaller equipment, such as seismic trucks, camps, and maintenance vehicles. Low-ground pressure vehicles would pre-pack snow, groom, and maintain trails when necessary. Snow trails would be thinner than ice roads and wide enough for one vehicle only. Precise estimates of the length of winter routes are unknown.

Barging – The RFD assumes marine transportation would occur during development to facilitate construction. During the open-water season (July – October), lessees would use barges to transport large equipment (e.g., a drilling rig), construction materials, and supplies from Dutch Harbor to a barge landing on the Coastal Plain of Arctic Refuge. An average of two barge transports per year are anticipated (BLM DEIS 2018). The MTR would occur along an established shipping route (Figure 4.2).

Aircraft – Fixed-wing aircraft and helicopters could also be used throughout the Action Area to deliver staff, construction materials, and equipment to work sites. Aircraft use could occur year-round.

3.1.5 RFD Phase 3 – Production

Production drilling

Following construction of gravel pads and thoroughfares, facility construction and production drilling would begin. Each anchor pad, and associated CPF, would be the long-term operational center for production activities in an anchor field, and it would include equipment for processing oil, gas, and water, as follows:

- Separators for oil, gas, and water, with an output of sales-quality oil;
- Filtration of produced oil to extract solids;
- Processing of associated gas to remove water and natural gas liquids, followed by gas compression and reinjection into the reservoir through gas injection wells;
- Reinjection of water into the reservoir; and,
- Compressors for gas and pumps for water injection.

In addition to the CPF, a generator, storage tanks, communications center, waste treatment units, and a maintenance shop would be constructed on the anchor pad. Fuel for equipment operation would be hauled overland. Living quarters and offices may or may not be co-located on the anchor pad. All buildings would be supported aboveground on pilings to accommodate ground settling or frost heaving.

Production wells would extend horizontally in the target formation and approximately eight wells would be drilled per year. Therefore, about 4 years would be required to drill a total of 30 wells on the average pad. Depending on drill rig availability, drilling could take place on multiple well pads at the same time. Drilling each well would require from 420,000 to 1.9 million gallons of water (BLM 2012). Wells would be hydraulically fractured for initial stimulation; however, this process requires less water than the multi-stage hydraulic fracturing used in unconventional reservoirs. Water flooding using parallel injection wells would increase oil recovery by pushing oil toward producer wells and maintain reservoir pressure. Water demand for maintaining reservoir pressure would be proportional to oil production from the field. For example, a field that produces 50,000 barrels of oil per day would require approximately 2 million gallons of water per day.

The anchor pad would also have a Class I and/or Class II injection well to dispose of industrial wastes and fluids associated with oil and gas production (EPA 2018). Solid, unburnable waste would be disposed of in large trash receptacles or other approved containers and hauled to approved, off-site landfills. On-site burial of solid wastes is not anticipated.

Pipeline construction and maintenance
A production pipeline would be constructed to connect each CPF to the Trans-Alaska Pipeline System (TAPS) to move oil to market. Installation of VSMs would impact approximately 0.04 acres of tundra per mile of pipeline (USACE 2017; Table 3.1). Pipelines would also connect satellite pads to the nearest CPF. Pipelines for water, fuel, and electric cables would be run on the same VSMs connecting the CPF to satellite pads. Approximately 250 miles of pipeline would be constructed in the Program Area under the RFP, impacting up to 10 acres of surface area (Table 3.1).

Transportation
Most equipment for the production phase, including CPF modules, would be transported to the anchor field on ice roads from a barge landing. Camden Bay is the most likely location for a barge landing (DOI 1987), although lessees may also use existing landing facilities at Point Thomson. A barge landing and staging pad, impacting roughly 10 acres total, would be constructed to store equipment and modules until ice roads can be constructed (Figure 3.1). During the production phase, winter routes would also be used for pipeline maintenance.

Production
Once all wells in a development are operational, production is anticipated to peak at 100,000 barrels per day from each field, after 3 years. From that point on, production is estimated to decline at a rate of approximately 8 percent per year. Produced oil would be processed at the CPF to separate water and gas from salable oil and natural gas. Water and gas would be reinjected into the formation to enhance oil recovery, and gas would be vented or flared only in emergency situations. Oil would be shipped to market via TAPS.

Production operations would involve resupply of materials and personnel, inspections, maintenance, and repair. Maintenance and repair work would be required to keep production and service wells operational. Well workovers would likely be made at 5-10 year intervals to restore production flow rates. Pipelines would be inspected and cleaned regularly using internal

pipe inspection gauges. Personnel would be rotated at regular intervals. Depending on market forces, the size and number of fields discovered, and the timing of development, ultimate recovery in the Program Area is estimated to be from 1.5 to 10 billion barrels of crude oil. Field production would be expected to last from 10 to 50 years before abandonment (BLM 2012). Assuming a 100,000 barrel-per-day peak production and 8 percent decline per year, it would take an estimated 35 years after reaching peak production reach the point of field abandonment.

Natural Gas Development

Until a transportation system to move gas to market is constructed, it is assumed that comingled gas produced with oil would be separated and reinjected into the formation as part of the reservoir enhanced recovery process. Future installation of a natural gas pipeline along the TAPS corridor, while not part of BLM's proposed action, would be expected to facilitate the production of sales gas from Program Area leases. The RFD thus assumes that natural gas production could occur from leases issued under the Proposed Program. Gas processing and compression facilities would be co-located with existing oil CPFs, and would comprise approximately 13 acres of additional ground disturbance per each of those four assumed CPFs. Two types of natural gas pipelines would be installed in the Program Area: gathering pipelines to convey unprocessed natural gas from wellheads to the four CPFs, and a larger diameter pipeline to convey processed natural gas from the Program Area to the natural gas pipeline along the TAPS corridor. All of the pipelines associated with the Proposed Program would be expected to be installed on the same VSMs as existing oil pipelines, and therefore additional surface area impacts from gas pipelines would not be expected. Meanwhile, BLM has clarified that installation and operation of a natural gas pipeline to Kaktovik is neither part of the proposed action nor otherwise reasonably certain to occur (email from BLM dated October 23, 2019).

3.1.6 RFD Phase 4 – Abandonment and Reclamation

During decommissioning and abandonment, production and injection wells would be plugged with cement to prevent fluid migration between formations, and well casings would be cut, plugged below the surface, and buried. All equipment, facilities, and solid waste would be removed from gravel pads and roads. Pipelines and VSMs would be removed and scrapped or reused in other developments. Gravel from roads and pads would be removed and reused in other areas, or placed back in material sites. Gravel pits that are not refilled would be reclaimed as wildlife ponds.

Before final abandonment, land used for oil and gas infrastructure, including well pads, production facilities, access roads, and airstrips; would be reclaimed. Lessees would develop and implement BLM-approved abandonment and reclamation plans. Reclamation plans would describe short-term stability, visual, hydrological, and productivity objectives and required steps to ensure eventual restoration of previous hydrological, vegetation, and habitat condition.

3.1.7 RFD Schedule

Table 3.2 describes general time frames in which hypothetical exploration, development, and production might occur in the Program Area. Activities projected to occur within 5 years after signing of the ROD are considered short term; activities occurring more than 5 years from ROD signature are considered long term.

Exploration Schedule

Exploration would begin within 2 years of signing of the ROD, with a permit application submitted for the first exploration well. Following successful discovery with the first exploration well, additional seismic exploration and delineation wells would be drilled from years 4 through 6. Continued exploratory activities may be concurrent with formulation of a development plan and an EIS (Table 3.2).

Development Schedule

Development of the first anchor field would begin approximately 7 years post-Lease Sale. Additional anchor and satellite fields would likely continue to be developed in years 11 to 85 and may continue producing through year 85. The BLM assumes most development activities associated with an anchor field and satellite fields would occur in year 7 through year 85 (Table 3.2).

Production Schedule

The BLM anticipates production activities on the first anchor pad would begin in approximately year 8 and continue until year 85, with peak production expected in years 9 to 40 (Table 3.2). Once peak production is reached, production from a field is anticipated to continue for up to another 35 years, depending on resource production, market forces, and operator financial decisions; therefore, it could be 85 years or more after the first Lease Sale before all developments reach the end of field life (Table 3.2). However, just as development is expected to occur in phases, reclamation would occur in phases. The first field to be developed could be reclaimed long before the last field is abandoned.

Abandonment and reclamation schedule

Decommissioning, abandonment, and reclamation would occur from year 19 to 130 after oil and gas reserves at a given development are depleted and/or production income no longer pays operating expenses (Table 3.2). Typically, abandonment and reclamation of oil and gas infrastructure could take from 2 to 5 years, or longer, following termination of production (BLM 2012).

Table 3.2. Estimated hypothetical schedule for the proposed lease sale and RFD within the Program Area (BLM 2018; 2019b).

Project Phase	**Time from ROD Signature**	**Activities**
Initial 3D seismic exploration	Within 2 years of ROD	Area-wise 3D seismic exploration
Leasing	Within 1 year of ROD	First Lease Sale.
Exploration	2 years after ROD (winter)	First application for permit to drill submitted for exploration well. First exploration well drilled, assumes discovery with first exploration well.
Additional lease-level seismic Exploration	Within 3 years after 1st Lease Sale (winter)	Seismic exploration on lease block with discovery to locate future delineation exploration wells. Process seismic data and determine location of delineation wells to be drilled the following winter.
Additional exploration wells	4 years after ROD (winter)	Drill 3 to 5 additional wells to define the prospect and identify satellite pad locations.
Master development plan and EIS	5 to 6 years after ROD	Conduct NEPA analysis on master development plan for anchor field. Continue drilling 2 to 3 exploration wells to identify CPF and satellite pad locations.
Development	7 years after ROD	Begin laying gravel for anchor pad and begin CPF construction. Continue drilling 2 to 3 exploration wells to identify satellite pad locations. Begin drilling production wells on anchor pad.
Production begins	8 years after ROD	First production from anchor pad. Winter gravel and construction on satellite pads.
Peak production	9 to 40 years after ROD	All wells completed on anchor pad. All wells completed on satellite pads.
Development of additional fields	11 to 85 years after ROD	Construct facilities and drill wells in additional fields. Production continues for approximately 35 years after reaching peak production in each field.
Abandonment and Reclamation	19 to 130 years after ROD	Plug wells that are no longer economically productive. Remove retired equipment, dig up vacant gravel pads and roads and reclaim the area.

3.1.8 Project design criteria

During this framework programmatic consultation, the Service and the BLM developed and agreed upon four PDCs designed to minimize and monitor effects of the proposed Program to polar bears (and other listed species) and to describe how compliance with section 7(a)(2) of the ESA will be ensured. The first two are also Lease Notices that will be issued in writing by the BLM to all lessees[2], and intend to provide notice that all future activities to be authorized under the Program will be required to comply with the MMPA and ESA. The third and fourth PDCs are procedures developed and agreed to by the BLM and the Service to be used when jointly managing the framework program as step-down consultations on future proposed activities are conducted. These measures are considered part of the BLM's Proposed Program and figure prominently in our evaluation of its potential effects in *Section 8*, below.

PDC 1. Section 7 Consultation on Future Activities – The lease areas may now or hereafter contain plants, animals, or their habitats determined to be threatened or endangered. The BLM would not approve any activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the ESA, as amended (16 United States Code [USC] 1531 et seq.), including completion of any required procedure for conference or consultation.

PDC 2. The lease area and/or potential project areas may now or hereafter contain marine mammals. The BLM may require modifications to exploration and development proposals to ensure compliance with Federal laws, including the Marine Mammal Protection Act (MMPA). The BLM would not approve any exploration or development activity absent documentation of compliance under the MMPA. Such documentation shall consist of a Letter of Authorization, Incidental Harassment Authorization, and/or written communication from USFWS and/or NMFS confirming that a take authorization is not warranted,

PDC 3. The Service and the BLM will conduct programmatic reviews by meeting at least annually beginning one year after the first Lease Sale. These reviews will evaluate, among other things, 1) whether activities proposed are consistent with the RFD, as described, for the Proposed Program, 2) whether the nature and scale of predicted effects remain valid, and 3) whether the programmatic consultation, including the PDCs and determinations reached, remain adequate and appropriate. In addition, these meetings will provide a venue where any new information on the status of species, their critical habitat, or new methods to avoid or minimize impacts can be shared.

PDC 4. All activities, including plan development, study development, and consideration of exceptions, modifications, or waivers would include coordination with the USFWS as the surface management agency and would comply with the ESA. In addition, the BLM would coordinate with other appropriate federal, state, and North Slope Borough agencies, tribes, and Alaska Native Claims Settlement Act corporations.

[2] The requirements of Lease Notices 1 and 2, which form the basis of PDCs 1 and 2, will also apply to any exploration and development actions that are not dependent on an oil and gas lease (e.g., the area-wide seismic survey in the June updates to the BA [BLM 2019b]), in the same manner the Notices would apply to lease-based activities (BLM email dated October 23, 2019).

3.1.9 Minimization measures

Other minimization measures associated with the Proposed program and all associated lease sales include lease stipulations, ROPs[3], and lease notices committed to by the BLM in their BA and Draft EIS (BLM 2018a; 2019a; 2019b) to avoid and minimize potential adverse effects on ESA-listed species and designated critical habitat. Each of these protective measures is described in detail below. These measures, when applied to activities associated with the Lease Sale and RFD, would minimize effects to ESA-listed species and designated critical habitat. Although many of the following measures apply broadly to "marine mammals," we identify that this terminology also applies to ESA-listed polar bears and sea otters.

A BLM Authorized Officer (AO) may authorize a modification to a lease stipulation only if they determine that factors leading to the stipulation have changed sufficiently to render the stipulation unjustified; the proposed operation would still be required to meet the stated objective of the stipulation. While the BLM may grant a waiver[4], exception, or modification of a stipulation through the permitting process, but only after successfully completing section 7 consultation with the Service.

Coastal Plain Lease Stipulations

Lease stipulations are requirements added to the lease as contractual obligations that lessees must follow. Timing limitations (TLs) and no surface occupancy (NSO) provisions are two of the mechanisms by which lease stipulations would minimize impacts of the proposed Program. TLs are applicable to fluid mineral leasing, all activities associated with fluid mineral leasing, for example, truck-mounted drilling, geophysical exploration off designated routes, construction of wells and pads, well workovers, and other surface-disturbing activities. Areas identified for TLs are closed to fluid mineral exploration and development, surface-disturbing activities, and intensive human activity during identified time frames. Such stipulations would not apply to operation and basic maintenance, including associated vehicle travel, unless otherwise specified. The TLs can overlap spatially with CSU and NSO areas, as well as with areas without other restrictions.

NSO areas would be open for mineral leasing. However, in order to protect other resource values construction of surface oil and gas facilities would not be allowed. Essential activities, such as pipelines, barge landings, and road crossings, would be permitted on a case-by case basis.

[3] All proposed ROPs will apply to any exploration and development actions that are not dependent on an oil and gas lease (e.g., the area-wide seismic survey contemplated in the June updates to the BA [BLM 2019b]), in the same manner the ROPs would apply to lease-based activities (BLM email dated October 23, 2019).

[4] Lease stipulations for the Program may be altered in the following ways as deemed appropriate by a BLM AO: 1) a waiver (a permanent exemption to a lease stipulation); 2) an exception (a one-time exemption to a lease stipulation, determined on a case-by-case basis); and 3) a modification (a change to a lease stipulation, either temporary or for the duration of the lease).

The following lease stipulations would reduce Program-related impacts to ESA-listed species and/or designated critical habitat, and are a subset of those stipulations that would apply to leases issued pursuant to the Proposed Program:

1. **Rivers and Streams**. Objective: Minimize the disruption of natural flow patterns and changes to water quality, the disruption of natural functions resulting from the loss or change to vegetative and physical characteristics of floodplain and riparian areas, the loss of spawning, rearing, or overwintering fish habitat, the loss of cultural and paleontological resources; the loss of raptor habitat, impacts on subsistence cabins and campsites, and the disruption of subsistence activities. Protect the water quality, quantity, and diversity of fish and wildlife habitats and populations associated with springs and aufeis across the Coastal Plain.

   Requirement/Standard: (NSO) Permanent oil and gas facilities, including gravel pads, roads, airstrips, and pipelines, are prohibited in the streambed and within the described setback distances outlined below, from the southern boundary of the Coastal Plain to the stream mouth. For streams that are entirely in the Coastal Plain, the setback extends to the head of the stream, as identified in the National Hydrography Dataset. On a case-by case basis, essential pipeline and road crossings, and barge landings would be permitted through setback areas. The setbacks may not be practical in river deltas; in these situations, permanent facilities would be designed to withstand a 200-year flood.

   a. Canning River: from the western boundary of the Coastal Plain to 1 mile east of the eastern edge of the active floodplain
   b. Hulahula River: 1 mile in all directions from the active floodplain
   c. Aichilik River: 1 mile from the eastern edge of the Coastal Plain boundary
   d. Okpilak River: 1 mile from the banks' ordinary high-water mark
   e. Jago River: 1 mile from the banks' ordinary high-water mark
   f. The following rivers and creeks will have a 0.5-mile setback from the banks' ordinary high-water mark:
      i. Sadlerochit River
      ii. Tamayariak River
      iii. Okerokovik River
      iv. Katakturuk River
      v. Marsh Creek

2. **Canning River Delta and Lakes**. Objective: Protect and minimize adverse effects on the water quality, quantity, and diversity of fish and wildlife habitats and populations, subsistence resources, and cultural resources; protect and minimize the disruption of natural flow patterns and changes to water quality, the disruption of natural functions resulting from the loss or change to vegetation and physical characteristics of floodplain and riparian areas; the loss of passage, spawning, rearing, or overwintering habitat for fish; the loss of cultural and paleontological resources; and the loss of migratory bird habitat.

   Requirement/Standard: Withdrawal of unfrozen water from lakes and the removal of ice aggregate from grounded areas 4 feet deep or less during winter and withdrawal of water

from lakes during the summer may be authorized on a site-specific basis, depending on water volume and depth, the fish community, and connectivity to other lakes or streams.

3. **Springs/Aufeis**. Objective: Protect the water quality, quantity, and diversity of fish and wildlife habitats and populations associated with springs and aufeis across the Coastal Plain. River systems with springs provide year-round habitat and host the most diverse and largest populations of fish, aquatic invertebrates, and wildlife; they are associated with major subsistence activity and cultural resources. An aufeis is a unique feature associated with perennial springs. It helps sustain river flow during summer and provides insect relief for caribou. Because the subsurface flow paths to perennial springs are unknown and could be disturbed by drilling or fracking, use buffer areas around the major perennial springs that support fish populations in which no leasing is permitted.

   Requirement/Standard: Before drilling, the lessee/operator/permittee would conduct studies in areas containing springs to ensure drilling would not disrupt flow of the perennial springs, unless such studies have already been completed. Study plans would be developed in consultation with the BLM, the Service, and other agencies, as appropriate. See Lease Stipulation 1 for additional requirements/standards.

4. **Nearshore marine, lagoon, and barrier island habitats of the Southern Beaufort Sea within the boundary of the Arctic Refuge**. Objective: Protect fish and wildlife habitat, including that for waterfowl and shorebirds, caribou insect relief, marine mammals, and polar bear summer and winter coastal habitat; preserve air and water quality; and minimize impacts on subsistence activities, recreation, historic travel routes, and cultural resources on the major coastal water bodies.

   Requirement/Standard: Lessees would be subject to no surface occupancy (NSO) restrictions for exploratory well drill pads, production well drill pads, or a CPF for oil or gas would not be permitted in coastal waters, lagoons, or barrier islands within the boundaries of the Coastal Plain.

   a. The BLM Authorized Officer may approve infrastructure necessary for oil and gas activities in these critical and sensitive coastal habitats, such as barge landing, docks, spill response staging and storage areas, and pipelines. Approval would be on a case-by-case basis, in consultation with the USFWS or NMFS or both, as appropriate.

   b. All lessees/operators/contractors involved in authorized activities in the coastal area must coordinate construction and use infrastructure with all other prospective Arctic Refuge users or user groups. Before conducting open water activities, the lessee/operator/contractor would consult with the Alaska Eskimo Whaling Commission, the NSB, and local whaling captains' associations to minimize impacts on subsistence whaling and other subsistence activities of the communities of the North Slope. In a case in which the BLM authorizes permanent oil and gas infrastructure in the coastal area, the lessee/operator/contractor would develop and implement an impact and conflict

avoidance and monitoring plan. This would be used to assess, minimize, and mitigate the effects of the infrastructure and its use on these coastal area habitats and their use by wildlife and people, including the following:

i. Design and construct facilities to minimize impacts on subsistence uses, travel corridors, and seasonally concentrated fish and wildlife resources.
ii. Daily operations, including use of support vehicles, watercraft, and aircraft, alone or in combination with other past, present, and reasonably foreseeable activities, would be conducted to minimize impacts on subsistence and other public uses, travel corridors, and seasonally concentrated fish and wildlife resources.
iii. The location of oil and gas facilities, including artificial islands, platforms, associated pipelines, ice or other roads, bridges or causeways, would be sited and constructed to not pose a hazard to public navigation, using traditional high-use subsistence-related travel routes into and through the major coastal lagoons and bays, as identified by the community of Kaktovik and the NSB.
iv. Operators would be responsible for developing comprehensive prevention and response plans, including Oil Discharge Prevention and Contingency Plans and spill prevention, control, and countermeasure plans (SPCCP) and maintain adequate oil spill response capability to effectively respond during periods of broken ice or open water, based on the statutes, regulations, and guidelines of the EPA, Alaska Department of Environmental Conservation (ADEC), and the Alaska Oil and Gas Conservation Commission (AOGCC), as well as best management practices, stipulations, and policy guidelines of the BLM.

5. **Coastal Polar Bear Denning River Habitat**. Objective: Minimize disturbance to denning polar bears, and disturbance or alteration of key river and creek maternal denning habitat areas.

   Requirement/Standard: This lease stipulation minimizes disturbance to denning polar bears, and disturbance or alteration of key river and creek maternal denning habitat areas by requiring the lessee comply with ESA and Marine Mammal Protection Act (MMPA) requirements.

6. **Caribou Summer Habitat**. Objective: Minimize disturbance and hindrance of caribou or alteration of caribou movements.

   Requirement/Standard: Facilities would be designed and located to minimize the development footprint and impacts on other purposes of the Arctic Refuge. Issues and methods that are to be considered are as follows:

   a. Using maximum extended-reach drilling for production drilling to minimize the number of pads and the network of roads between pads
   b. Sharing facilities with existing development

c. Collocating all oil and gas facilities with drill pads, except airstrips, docks, base camps, and seawater treatment plants (STPs)
d. Using gravel-reduction technologies, e.g., insulated or pile-supported pads
e. Using impermeable liners under gravel infrastructure to minimize the potential for hydrocarbon spills
f. Harvesting the tundra organic layer within gravel pad footprints for use in rehabilitation
g. Coordinating facilities with infrastructure in support of adjacent development
h. Locating facilities and other infrastructure outside areas identified as important for wildlife habitat, subsistence uses, and recreation
i. Where aircraft traffic is a concern, balancing gravel pad size and available supply storage capacity with potential reductions in the use of aircraft to support oil and gas operations

7. **Porcupine Caribou Primary Calving Habitat Area**. Objective: Minimize disturbance and hindrance of caribou or alteration of their movements in the south-southeast portion of the Coastal Plain, which has been identified as important caribou habitat during calving.

   Requirement/Standard: (TL) Major construction activities using heavy equipment, but not drilling from existing production pads, would be suspended in the Porcupine caribou herd (PCH) primary calving habitat area from May 20 through June 20, unless approved by the BLM Authorized Officer, in consultation with the appropriate federal, State, and NSB regulatory and resource agencies. These areas encompass approximately 721,200 acres. If caribou arrive on the calving grounds before May 20, major construction would be suspended. The lessee should submit with the development proposal a stop work plan that considers this, and any other mitigation related to caribou early arrival. The intent of this latter requirement is to provide flexibility to adapt to changing climate conditions that may occur during the life of fields in the region.

8. **Porcupine Caribou Post-Calving Habitat Area**. Objective: To protect key surface resources and subsistence resources/activities resulting from permanent oil and gas development and associated activities in areas used by caribou during post-calving and insect-relief periods.

   Requirement/Standard: Facilities would be designed and located to minimize the development footprint and impacts on other purposes of the Arctic Refuge.

9. **Coastal Area.** Objective: Protect coastal waters, lagoons, barrier islands, shorelines, and their value as fish and wildlife habitat, including for waterfowl, shorebirds, and marine mammals; minimize the hindrance or alteration of caribou movement in caribou coastal insect-relief areas; minimize hindrance or alteration of polar bear use and movement in coastal habitats; protect and minimize disturbance from oil and gas activities to coastal habitats for polar bears and seals; prevent loss and alteration of important coastal bird habitat; and prevent impacts on coastal subsistence resources and activities.

Requirement/Standard: Before beginning exploration or development within 2 miles of the coast, the lessee/operator/contractor would develop and implement an impact and conflict avoidance and monitoring plan to assess, minimize, and mitigate the effects of the infrastructure and its use on these coastal habitats and their use by wildlife and people.

3.1.10 Required Operating Procedures

Required Operating Procedures (ROPs) are additional protective measures that the BLM would impose on all applicants during the permitting process (i.e., project-specific measures for future project phases). At the permitting stage, the BLM AO would not include ROPs that, because of their location or other inapplicability, are not relevant to a specific permit application. Note also that at the permit stage, the BLM AO may establish additional requirements as warranted to protect the land and resources, in accordance with the BLM's responsibility under relevant laws and regulations. Described below are ROPs that apply protective measures for ESA-listed species and/or designated critical habitat.

ROP 1

Objective: Protect public health, safety, and the environment by disposing of solid waste and garbage, in accordance with applicable federal, State, and local laws and regulations.

Requirement/Standard: Areas of operation would be left clean of all debris.

ROP 2

Objective: Minimize impacts on the environment by reducing the attraction, particularly bears, to human use areas.

Requirement/Standard: Lessee/operator/contractor would prepare and implement a comprehensive waste management plan for all phases of exploration, development, and production, including seismic activities. The plan would include methods and procedures to use bear resistant containers for all waste materials.

ROP 3

Objective: Minimize the impact of contaminants from refueling operations on fish, wildlife, and the environment.

Requirement/Standard: Refueling equipment within 100 feet of the active floodplain of any waterbody is prohibited. Fuel storage stations would be located at least 100 feet from any waterbody, except for small caches (up to 210 gallons) for motor boats, float planes, and ski planes, and for small equipment, such as portable generators and water pumps. The BLM Authorized Officer may allow storage and operations at areas closer than the stated distances if properly designed to account for local hydrologic conditions.

ROP 4

Objective: Minimize conflicts from the interaction between humans and bears during oil and gas activities.

Requirement/Standard: The lessee/operator/contractor, as a part of lease operation planning, would prepare and implement bear-interaction plans to minimize conflicts between bears and humans. These bear interaction plans would be developed in consultation with and approved by the USFWS and the Alaska Department of Fish and Game (ADF&G). The plans would include specific measures similar to those measures identified in the current USFWS Incidental Take Regulations (81 FR 52318; § 18.128) that have been promulgated and applied to petroleum activities to the west of the Coastal Plain. Plans would be adapted as needed for grizzly bears. These plans must include:

- The type of activity and where and when the activity will occur (i.e., a plan of operation);
- A food, waste, and other ‘‘bear attractants’’ management plan;
- Personnel training policies, procedures, and materials;
- Site-specific polar bear interaction risk evaluation and mitigation measures;
- Polar bear avoidance and encounter procedures; and
- Polar bear observation and reporting procedures.

ROP 10
Objective: Protect polar bear denning locations.

Requirement/Standard: All oil and gas activity, including cross-country use of vehicles, equipment, and seismic survey activity, is prohibited within 1 mile of known or observed polar bear dens, unless alternative protective measures are approved by the BLM Authorized Officer and are consistent with the MMPA and the ESA.

ROP 15
Objective: Reduce changes in snow distribution associated with the use of snow fences to protect water quantity and wildlife habitat, including snow drifts used by denning polar bears.

Requirement/Standard: The use of snow fences to reduce or increase snow depth requires permitting by the BLM Authorized Officer.

ROP 17
Objective: Minimize surface impacts from exploratory drilling.

Requirement/Standard: Construction of gravel roads and pads would be prohibited for exploratory drilling. Use of a previously constructed road or pad may be permitted if it is environmentally preferred.

ROP 21
Objective: Minimize impacts of the development footprint.

Requirement/Standard: Facilities would be designed and located to minimize the development footprint and impacts on other purposes of the Arctic Refuge.

a. Using maximum extended-reach drilling for production drilling to minimize the number of pads and the network of roads between pads
b. Sharing facilities with existing development

c. Collocating all oil and gas facilities with drill pads, except airstrips, docks, base camps, and seawater treatment plants (STPs)
d. Using gravel-reduction technologies, e.g., insulated or pile-supported pads
e. Using impermeable liners under gravel infrastructure to minimize the potential for hydrocarbon spills
f. Harvesting the tundra organic layer within gravel pad footprints for use in rehabilitation
g. Coordinating facilities with infrastructure in support of adjacent development
h. Locating facilities and other infrastructure outside areas identified as important for wildlife habitat, subsistence uses, and recreation
i. Where aircraft traffic is a concern, balancing gravel pad size and available supply storage capacity with potential reductions in the use of aircraft to support oil and gas operations

ROP 24
Objective: Minimize the impact of mineral materials mining on air, land, water, fish, and wildlife resources.

Requirement/Standard: Gravel mine site design and reclamation would be done in accordance with a plan approved by the BLM Authorized Officer.

ROP 25
Objective: Avoid human-caused changes in predator populations of ground-nesting birds.

Requirement/Standard:
a. Lessee/operator/contractor would use best available technology to prevent facilities from providing nesting, denning, or shelter sites for ravens, raptors, and foxes. The lessee/operator/contractor would provide the BLM Authorized Officer with an annual report on the use of oil and gas facilities by ravens, raptors, and foxes as nesting, denning, and shelter sites.
b. Feeding of wildlife and allowing wildlife to access human food or odor-emitting waste is prohibited.

ROP 26
Objective: Reduction of risk of attraction and collisions between migrating birds and oil and gas and related facilities during low light conditions.

Requirement/Standard: All structures would be designed to direct artificial exterior lighting, from August 1 to October 31, inward and downward, rather than upward and outward, unless otherwise required by the Federal Aviation Administration.

ROP 27
Objective: Minimize the impacts to bird species from direct interaction with oil and gas facilities.

Requirement/Standard:
a. To reduce the possibility of birds colliding with aboveground utility lines (power and communication), such lines would either be buried in access roads or would be suspended on

vertical support members, except in rare cases, limited in extent. Exceptions are limited to the following situations:
b. To reduce the likelihood of birds colliding with them, communication towers would be located, to the extent practicable, on existing pads and as close as possible to buildings or other structures and on the east or west side of buildings or other structures, if possible. Support wires associated with communication towers, radio antennas, and other similar facilities, would be avoided to the extent practicable. If support wires are necessary, they would be clearly marked along their entire length to improve visibility to low-flying birds. Such markings would be developed through consultation with the USFWS.

ROP 28
Objective: Use ecological mapping as a tool to assess wildlife habitat before developing permanent facilities to conserve important habitat types.

Requirement/Standard: An ecological land classification map of the area would be developed before approval of facility construction.

ROP 32
Objective: Avoid and reduce temporary impacts on productivity from disturbance near Steller's or spectacled eider nests.

Requirement/Standard: Ground-level vehicle or foot traffic within 656 feet of occupied Steller's or spectacled eider nests, from June 1 through July 31, would be restricted to existing thoroughfares, such as pads and roads. Construction of permanent facilities, placement of fill, alteration of habitat, and introduction of high noise levels within 656 feet of occupied Steller's or spectacled eider nests would be prohibited. Between June 1 and August 15, support/construction activity must occur off existing thoroughfares, and USFWS-approved nest surveys must be conducted during mid-June before the activity is approved. Collected data would be used to evaluate whether the action could occur based on a 656-foot buffer around nests or if the activity would be delayed until after mid-August once ducklings are mobile and have left the nest site. The BLM would also work with the USFWS to conduct nest surveys or oil spill response training in riverine, marine, and intertidal areas that is within 656 feet of shore outside sensitive nesting/brood-rearing periods. The protocol and timing of nest surveys for Steller's or spectacled eiders would be determined in cooperation with and must be approved by the USFWS. Surveys would be supervised by biologists who have previous experience with Steller's or spectacled eider nest surveys.

ROP 34
Objective: Minimize the effects of low-flying aircraft on wildlife, subsistence activities, local communities, and recreationists of the area, including hunters and anglers.

Requirement/Standard: The operator would ensure that operators of aircraft used for permitted oil and gas activities and associated studies maintain altitudes according to the following guidelines:

a. Land users would submit an aircraft use plan as part of an oil and gas exploration or development proposal, which includes a plan to monitor flights and includes a reporting

system for subsistence hunters to easily report flights that disturb subsistence harvest. The number of takeoffs and landings to support oil and gas operations with necessary materials and supplies would be limited to the maximum extent possible. During the design of proposed oil and gas facilities, larger landing strips and storage areas would be considered to allow larger aircraft to be used, resulting in fewer flights to the facility.

b. Pursuing running wildlife is hazing. Hazing wildlife by aircraft pilots is prohibited, unless otherwise authorized. If wildlife begins to run as an aircraft approaches, the aircraft is too close and the operator must break away.

ROP 46

Objective: Minimize impacts on marine mammals from vessel traffic.

Requirement/Standard:

I. General Vessel Traffic

a. Operational and support vessels will be staffed with dedicated PSOs to alert crew of the presence of marine mammals and to initiate adaptive mitigation responses.

b. When weather conditions require, such as when visibility drops, support vessel operators must reduce speed and change direction, as necessary (and as operationally practicable), to avoid the likelihood of injuring marine mammals.

c. The transit of operational and support vessels is not authorized before July 1. This operating condition is intended to allow marine mammals the opportunity to disperse from the confines of the spring lead system and minimize interactions with subsistence hunters. Exemption waivers to this operating condition may be issued by the NMFS and USFWS on a case-by-case basis, based on a review of seasonal ice conditions and available information on marine mammal distributions in the area of interest.

d. The transit route for the vessels will avoid NMFS-identified known fragile ecosystems.

e. Vessels may not be operated in such a way as to separate members of a group of marine mammals from other members of the group.

f. Operators should take reasonable steps to alert other vessel operators in the vicinity of marine mammals.

g. Operators should report any dead or injured listed marine mammals to NMFS and the USFWS.

h. Vessels will not allow tow lines to remain in the water, and no trash or other debris will be thrown overboard, thereby reducing the potential for marine mammal entanglement.

i. The lessee will implement measures to minimize risk of spilling hazardous substances. These measures will include: avoiding operation of watercraft in the presence of sea ice to the extent practicable and using fully-operational vessel navigation systems composed of radar, chart plotter, sonar, marine communication systems, and satellite navigation receivers, as well as Automatic Identification System (AIS) for vessel tracking.

II. Vessels in Vicinity of Whales

a. Vessel operators should avoid groups of 3 or more whales. A group is defined as being three or more whales observed within a 500-m (1641-ft) area and displaying behaviors of directed or coordinated activity (e.g., group feeding).

b. All nonessential boat and barge traffic would be scheduled to avoid periods when bowhead whales are migrating through the area to where they may be affected by sound

from the project. Any non-essential boat, hovercraft, barge, or aircraft will be scheduled to avoid approaching the harvest area around Cross Island during the bowhead whale subsistence hunting consistent with the Conflict Avoidance Agreement (CAA).

c. If the vessel approaches within 1 mile of observed whales, except when providing emergency assistance to whalers or in other emergency situations, the operator would take reasonable precautions to avoid potential interaction with the whales by taking one or more of the following actions, as appropriate:

i. Reducing vessel speed to less than 5 knots within 300 yards of the whale

ii. Steering around the whale if possible

iii. Operating the vessel to avoid causing a whale to make multiple changes in direction

iv. Checking the waters around the vessel to ensure that no whales will be injured when the propellers are engaged

v. Reducing vessel speed to 9 knots or less when weather conditions reduce visibility to avoid the likelihood of injury to whales

vi. Vessels shall not exceed speeds of 10 knots in order to reduce potential whale strikes.

vii. If a whale approaches the vessel and if maritime conditions safely allow, the engine will be put in neutral and the whale will be allowed to pass beyond the vessel. If the vessel is taken out of gear, vessel crew will ensure that no whales are within 50 m of the vessel when propellers are re-engaged, thus minimizing risk of marine mammal injury.

d. Vessels will stay at least 300 m away from cow-calf pairs, feeding aggregations, or whales that are engaged in breeding behavior.

e. Consistent with NMFS marine mammal viewing guidelines (https://alaskafisheries.noaa.gov/pr/mm-viewing-guide), operators of vessels will, at all times, avoid approaching marine mammals within 100 yards. Operators will observe direction of travel and attempt to maintain a distance of 100 yards or greater between the animal and the vessel by working to alter course or slowing the vessel.

f. Special consideration of North Pacific right whale and their critical habitat:

i. Vessel operators will avoid transit in North Pacific right whale critical habitat. If this cannot be avoided, operators must exercise caution and reduce speed to 10 knots while in North Pacific right whale critical habitat.

ii. Vessels transiting through North Pacific right whale critical habitat must have PSOs sighting marine mammals. Vessel operators will maneuver to keep 875 yards away from any observed North Pacific right whale, while within their designated critical habitat, and avoid approaching whales head-on, consistent with vessel safety.

iii. Operators will maintain a ship log indicating the time and geographic coordinates at which vessels enter and exit NPRW critical habitat.

III. Vessels in Vicinity of Pacific Walruses and Polar Bears

a. Operators should take all reasonable precautions, such as reduce speed or change course heading, to maintain a minimum operational exclusion zone of 0.5 mile around groups of feeding walruses.

b. Except in an emergency, vessel operators would not approach within 0.5 mile of observed polar bears, within 0.5 mile of walrus observed on ice, or within 1 mile of walrus observed on land.

IV. Vessels in Vicinity of Seals

Vessels used as part of a BLM-authorized activity would be operated in a manner that minimizes disturbance to wildlife in the coastal area. Vessel operators would maintain a 1-mile buffer from the shore when transiting past an aggregation of seals (primarily spotted seals) when they have hauled out on land, unless doing so would endanger human life or violate safe boating practices.

V. Vessel Transit through Steller Sea Lion Critical Habitat/Near Major Rookeries and Haulouts

The vessel operator will not purposely approach within 3 nautical miles (nm; 5.5 km) of major Steller sea lion rookeries or haulouts where vessel safety requirements allow and/or where practicable. Vessels will remain 3 nm (5.5 km) from all Steller sea lion rookery sites listed in paragraph 50 CFR 224.103 (d)(1)(iii).

Post-lease activities may have additional mitigation imposed through conditions of approval of plans, permit conditions, or other mechanisms. As specific projects are proposed in this multi-stage oil and gas program, more precise information about the nature and extent of the activities – including the scale and location of activities and a description of the particular technologies to be employed – will be considered and evaluated in subsequent BLM reviews, step-down section 7 consultations, and other analyses (e.g., NEPA, MMPA). Through this multi-stage process, a dynamic analysis of the potential effects of oil and gas activities is ensured and additional mitigation measures and protections may be developed and required at any stage based on the specific details of the particular projects.

4. ACTION AREA

Under section 7 of the ESA the Action Area includes all areas in which listed species or designated critical habitat may be affected by the Federal action. In determining the effects of the action, and hence the Action Area, we consider the consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that result from the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action.

In this BO we define the Action Area based on information provided by the BLM to include all the areas that may be affected by activities described in the BLM's RFD. The Action Area includes the entire Program Area, which comprises all lands within the boundary of the area described by PL 115-97, including U.S. Fish and Wildlife managed lands and private lands subject to the BLM's oil and gas leasing authority. The Action Area also includes lands for which the BLM does not have direct management authority but upon which effects of the action may occur, including Native selected and interim conveyed lands, Native lands excluded from PL 115-97, and Air Force owned-lands (Figure 4.1). The Action Area also includes nearshore

waters and sea ice adjacent to the Program Area and the MTR from Dutch Harbor, Alaska through the Bering, Chukchi, and Beaufort seas to the coast of the Arctic Refuge (Figure 4.2).

There are multiple geographic descriptors used in this document. These are defined as:

- Action Area – as described above, the Action Area includes the Program Area, private lands within the boundary of the Coastal Plain of Arctic Refuge, adjacent marine waters and sea ice that could be affected by activities in the Program Area, and the MTR through the Bering, Chukchi, and Beaufort seas to Dutch Harbor.

- Program Area – describes the lands subject to the BLM's oil and gas leasing authority.

- Arctic Coastal Plain – is a physiographic region comprising low-lying, relatively flat tundra adjacent to the north coast of Alaska and northern Canada.

- Coastal Plain of Arctic Refuge – is the portion of the Arctic National Wildlife Refuge subject to PL 115-97 and proposed for oil and gas leasing.

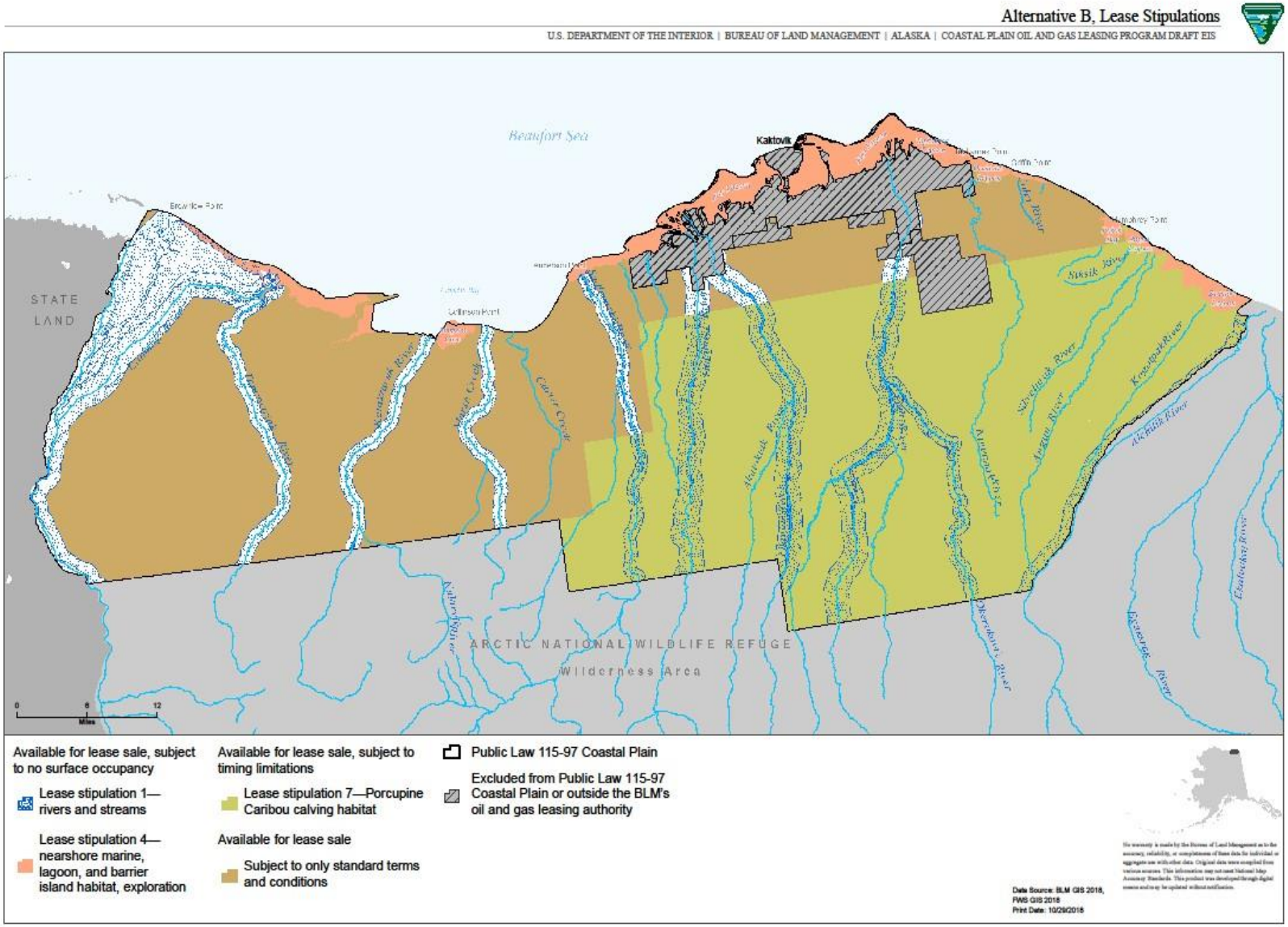

Figure 4.1. The proposed Lease Sale Action Area, the Coastal Plain of Arctic Refuge, and Lease Stipulations associated with the RFD, Alternative B (BLM 2018a).

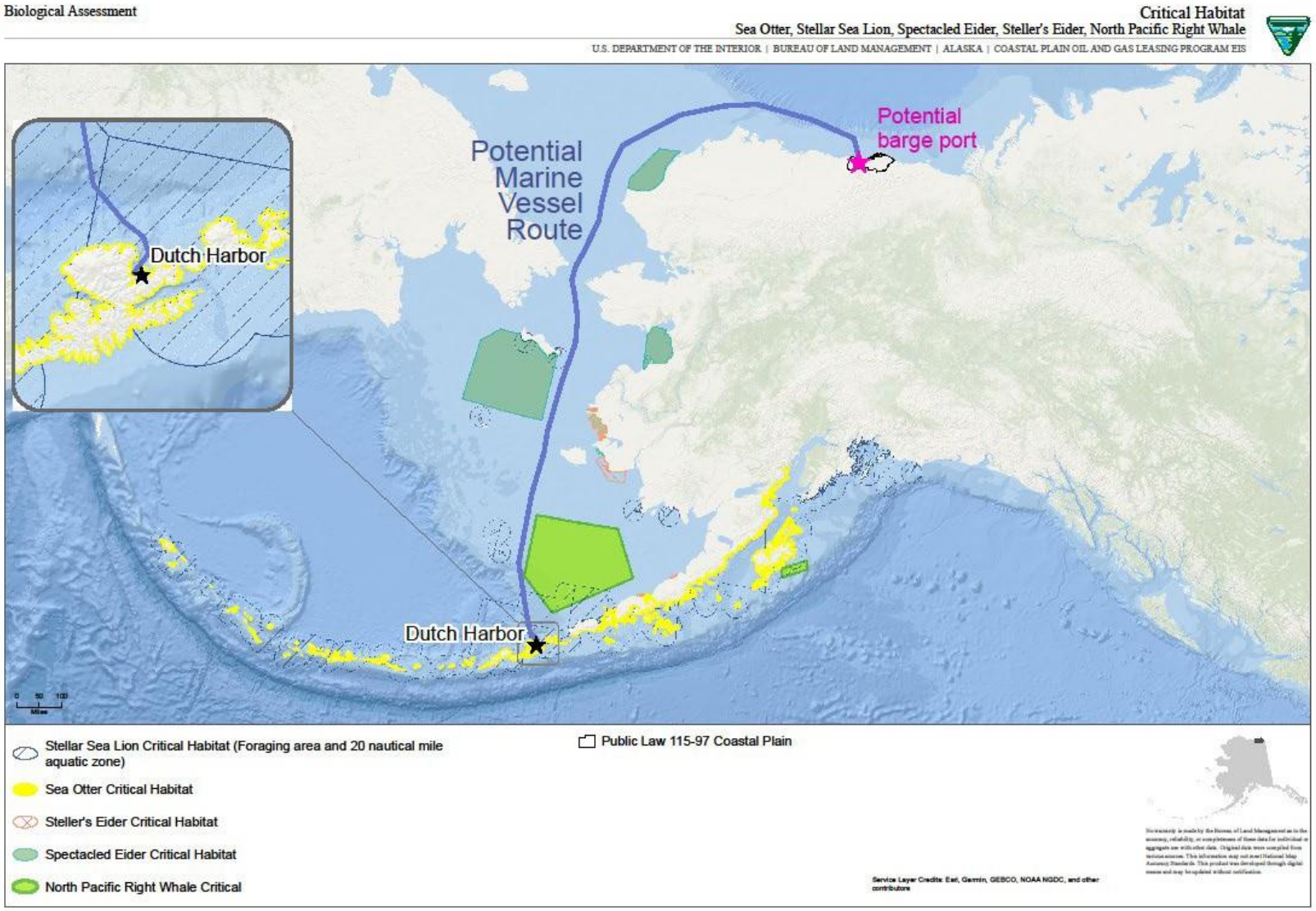

Figure 4.2. Hypothetical Marine Transit Route (MTR), from Dutch Harbor to proposed Coastal Plain of Arctic Refuge barge landing, associated with the proposed RFD (BLM 2018a).

5. EFFECT DETERMINATION FOR NORTHERN SEA OTTER AND NORTHERN SEA OTTER CRITICAL HABITAT

5.1 Northern sea otter

he Service listed the southwest Alaska distinct population segment (DPS) of the northern sea otter as threatened on August 9, 2005 (70 FR 46366). Barging operations associated with the development phase of the RFD may encounter and disturb listed sea otters when transiting in and out of Dutch Harbor in the vicinity of Unalaska Island *en route* to the Program Area.

However, sea otter density is relatively low in the vicinity of Dutch Harbor, and we expect sea lift barges would encounter very few individuals. We would also expect disturbance from barge traffic to be minor and temporary because 1) barges would move slowly through the vicinity of Dutch Harbor as they arrive and depart from the port, and 2) sea otters can respond to vessel presence or disturbance by moving away to a safe distance. Because disturbance to listed sea otters would be so minor that injury or death is not expected, we expect the effects of disturbance would be insignificant.

Listed sea otters could also be impacted by unintentional fuel spills during vessel re-fueling in Dutch Harbor. However, the BLM has indicated any spills that take place during refueling operations would likely be small in size, and be quickly contained and remediated (BLM 2019). Therefore, we anticipate impacts to listed sea otters from small refueling spills would be insignificant. Furthermore, because large spills (>500 bbl) are not anticipated from barging operations, impacts from large spills on listed sea otters would be discountable.

In summary, because effects of disturbance would be minor and temporary, and impacts from fuel spills would be insignificant and/or discountable, we expect effects of the proposed action on listed sea otters would be insignificant. Therefore, the Proposed Program is *not likely to adversely affect* the southwest Alaska DPS of the northern sea otter.

5.2 Northern sea otter critical habitat

The Service designated critical habitat for the southwest Alaska DPS of the northern sea otter on October 8, 2009 (74 FR 51988). Critical habitat occurs in nearshore marine waters around Unalaska Island (Unit 2) ranging from the mean high tide line seaward for a distance of 100 meters, or to a water depth of 20 meters. Barge traffic during the development phase of the RFD may enter designated critical habitat near Dutch Harbor and Unalaska Island.

Designated critical habitat for sea otters could be impacted by unintentional fuel spills during vessel re-fueling in Dutch Harbor. However, the BLM has indicated any spills that take place during refueling operations would likely be small in size, and be quickly contained and remediated (BLM 2019). Therefore we anticipate impacts to sea otter critical habitat from small refueling spills would be insignificant. Furthermore, because large spills (>500 bbl) are not anticipated from barging operations impacts from large spills on sea otter critical habitat would be discountable.

Because 1) overlap between barge traffic and designated sea otter critical habitat would be limited to the vicinity of Dutch Harbor and Unalaska Island, which represents a very small

proportion of designated sea otter critical habitat, 2) vessel presence in critical habitat would be temporary as barges pass through the area, and 3) spills from re-fueling would be expected to be small, and contained and remediated quickly; action-specific impacts from the proposed vessel traffic are expected to be insignificant. Therefore, the Proposed Program is *not likely to adversely affect* designated sea otter critical habitat.

6. STATUS OF THE SPECIES

his section presents biological and ecological information relevant to the BO. Appropriate information on species' life history, habitat and distribution, and other factors necessary for their survival is included for analysis in later sections.

6.1 Spectacled eider

Status and Distribution

The spectacled eider, a large, benthivorous sea duck (Figure 6.1A), was listed as threatened throughout its range on May 10, 1993 (USFWS 1993) based on indications of steep declines in the two Alaska-breeding populations. There are three primary spectacled eider populations, corresponding to breeding grounds: Alaska's North Slope or Arctic Coastal Plain (ACP), the Yukon–Kuskokwim Delta (YK- Delta), and northern Russia. The YK-Delta population of spectacled eiders declined 96% between the early 1970s and 1992 (Stehn et al. 1993). Data from the Prudhoe Bay oil fields (Warnock and Troy 1992) and information from Native elders at Wainwright, Alaska (R. Suydam, pers. comm. in USFWS 1996) suggested concurrent localized declines on the North Slope, although data for the entire North Slope breeding population were not available.

Spectacled eiders molt in several discrete areas (Figure 6.1B) during late summer and fall, with birds from different populations and genders apparently favoring different molting areas (Petersen et al. 1999). All three spectacled eider populations overwinter in openings in pack ice of the central Bering Sea, south of St. Lawrence Island (Petersen et al. 1999; Figure 6.1B), where they remain until March–April (Lovvorn et al. 2003).

Breeding

In Alaska, spectacled eiders breed primarily on the ACP of the North Slope and the YK-Delta. On the ACP, spectacled eiders breed north of a line connecting the mouth of the Utukok River to a point on the Shaviovik River about 15 miles inland from its mouth, with breeding density varying across the ACP (Figure 6.2). Although spectacled eiders historically occurred throughout the coastal zone of the YK-Delta, they currently breed primarily in the central coast zone within about 9 miles of the coast from Kigigak Island north to Kokechik Bay (USFWS 1996). However, sightings on the YK-Delta have also occurred both north and south of this area during the breeding season (R. Platte, USFWS, pers. comm. 1997).

Spectacled eiders arrive on the ACP breeding grounds in late May to early June. Numbers of breeding pairs peak in mid-June and decline 4–5 days later when males begin to depart from the breeding grounds (Anderson and Cooper 1994, Smith et al. 1994, Anderson et al. 1995, Bart and Earnst 2005). Mean clutch size reported from studies on the Colville River Delta was 4.3 (Bart and Earnst 2005). Spectacled eider clutch size near Utqiaġvik has averaged 3.2–4.1, with

clutches of up to eight eggs reported (Quakenbush et al. 1995; Safine 2011). Incubation lasts 20–25 days (Kondratev and Zadorina 1992; Harwood and Moran 1993; Moran and Harwood 1994; Moran 1995), and hatching occurs from mid- to late July (Warnock and Troy 1992).

On the breeding grounds, spectacled eiders feed on mollusks, insect larvae (craneflies, caddisflies, and midges), small freshwater crustaceans, and plants and seeds (Kondratev and Zadorina 1992) in shallow freshwater or brackish ponds, or on flooded tundra. Ducklings fledge approximately 50 days after hatch, when females with broods move from freshwater to marine habitat prior to fall migration.

Survivorship

Nest success is highly variable and thought to be primarily influenced by predators, including gulls (*Larus* spp.), jaegers (*Stercorarius* spp.), red (*Vulpes vulpes*) and arctic foxes (*Alopex lagopus*). In arctic Russia, apparent nest success was estimated to be < 2% in 1994 and 27% in 1995; low nest success was attributed to predation (Pearce et al. 1998). Apparent nest success in 1991 and 1993–1995 in the Kuparuk and Prudhoe Bay oil fields on the ACP was also low, varying from 25–40% (Warnock and Troy 1992; Anderson et al. 1998). On Kigigak Island in the YK-Delta, nest survival probability ranged from 6–92% from 1992–2007 (Lake 2007); nest success tended to be higher in years with low fox numbers or activity (i.e., no denning) or when foxes were eliminated from the island prior to the nesting season. Bowman et al. (2002) also reported high variation in nest success (20–95%) of spectacled eiders on the YK-Delta, depending on year and location.

(A)

(B)

Figure 6.1. (A) Male and female spectacled eiders in breeding plumage. (B) Distribution of spectacled eiders. Molting areas (green) are used July–October. Wintering areas (yellow) are used October–April. The full extent of molting and wintering areas is incompletely documented and may extend beyond the boundaries shown.

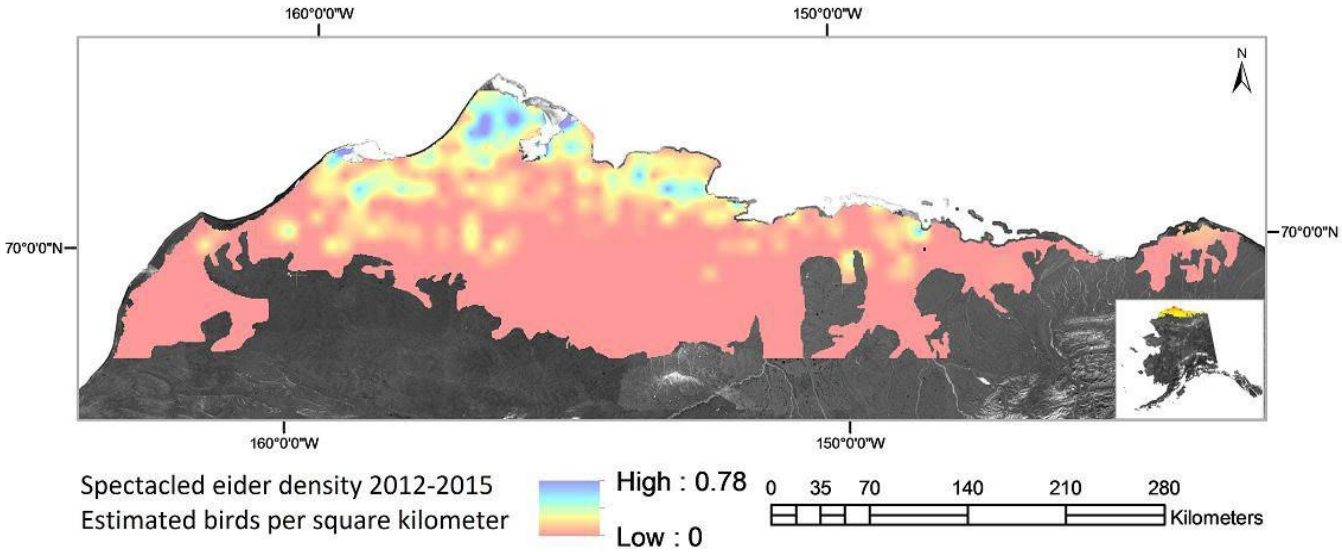

Figure 6.2. Density distribution of spectacled eiders observed on aerial transects of wetland tundra on the North Slope of Alaska during breeding pair surveys in June, 2012–2015 (USFWS 2015).

Available data indicate egg hatchability is high for spectacled eiders nesting on the ACP, in arctic Russia, and at inland sites on the YK-Delta, but considerably lower in the coastal region of the YK-Delta. Spectacled eider eggs that are addled or that do not hatch are very rare in the Prudhoe Bay area (Declan Troy, TERA, pers. comm. 1997), and Esler et al. (1995) found very few addled eggs on the Indigirka River Delta in Arctic Russia. Recruitment rate (the percentage of young eiders that hatch, fledge, and survive to sexual maturity) of spectacled eiders is poorly known (USFWS 1999) because there is limited data on juvenile survival. In the coastal region of the YK-Delta, duckling survival to 30 days averaged 34%, with 74% of mortality occurring in the first 10 days, while survival of adult females during the first 30 days post hatch was 93% (Flint et al. 1997).

Fall migration and molting

Spectacled eiders spend the 8–10 month non-breeding season at sea. Satellite telemetry and aerial surveys led to the identification of spectacled eider migrating, molting, and wintering areas. These studies are summarized in Petersen et al. (1995, 1999) and Larned et al. (1995). Results of more recent satellite telemetry research (2008–2011) are consistent with earlier studies (Matt Sexson, USGS, pers. comm.). Phenology, spring migration and breeding, including arrival, nest initiation, hatch, and fledging, is 3–4 weeks earlier in western Alaska (YK-Delta) than northern Alaska (ACP); however, phenology of fall migration is similar between areas. Individuals depart breeding areas July–September, depending on breeding status and success, and molt in September–October (Matt Sexson, USGS, pers. comm.).

Males generally depart breeding areas on the ACP when females begin incubation in late June (Anderson and Cooper 1994; Bart and Earnst 2005). Use of the Beaufort Sea by departing males is variable. Some appear to move directly to the Chukchi Sea over land, while the majority move rapidly (average travel of 1.75 days) over nearshore waters from breeding grounds to the Chukchi Sea (TERA 2002). Of 14 males implanted with satellite transmitters, only four spent an

extended period of time (11–30 days) in the Beaufort Sea (TERA 2002). Males appeared to prefer areas near large river deltas such as the Colville River where open water is more prevalent in early summer when much of the Beaufort Sea is still frozen. Most adult males marked with satellite transmitters in northern and western Alaska in a recent satellite telemetry study migrated to northern Russia to molt (USGS, unpublished data). Results from this study also suggest that male eiders likely follow coast lines but also migrate straight across the northern Bering and Chukchi seas *en route* to northern Russia (Matt Sexson, USGS, pers. comm.).

Females generally depart the breeding grounds later, when more of the Beaufort Sea is ice-free, allowing more extensive use of the area. Females spent an average of two weeks in the Beaufort Sea (range 6-30 days) with the western Beaufort Sea the most heavily used (TERA 2002). Females also appeared to migrate through the Beaufort Sea an average of 10 km further offshore than males (Petersen et al. 1999). The greater use of the Beaufort Sea and offshore areas by females was attributed to the greater availability of open water when females depart the area (Petersen et al. 1999; TERA 2002). Recent telemetry data indicate that molt migration of failed/non-breeding females from the Colville River Delta through the Beaufort Sea is relatively rapid, 2 weeks, compared to 2–3 months spent in the Chukchi Sea (Matt Sexson, USGS, pers. comm.).

Spectacled eiders use specific molting areas from July to late October/early November. Larned et al. (1995) and Petersen et al. (1999) found spectacled eiders show strong preference for specific molting locations, and concluded that spectacled eiders molt in four discrete areas (Table 6.1). Females generally used molting areas nearest their breeding grounds. All marked females from the YK-Delta molted in nearby Norton Sound, while females from the North Slope molted in Ledyard Bay, along the Russian coast, and near St. Lawrence Island. Males did not show strong molting site fidelity; males from all three breeding areas molted in Ledyard Bay, Mechigmenskiy Bay, and the Indigirka/Kolyma River Delta. Males reached molting areas first, beginning in late June, and remained through mid-October. Non-breeding females, and those that nested but failed, arrived at molting areas in late July, while successfully-breeding females and young of the year reached molting areas in late August through late September and remained through October. Fledged juveniles marked on the Colville River Delta usually staged in the Beaufort Sea near the delta for 2–3 weeks before migrating to the Chukchi Sea.

Table 6.1. Important staging and molting areas for female and male spectacled eiders from each breeding population.

Population and Sex	Known Major Staging/Molting Areas
Arctic Russia Males	Northwest of Medvezhni (Bear) Island group
	Mechigmenskiy Bay
	Ledyard Bay
Arctic Russia Females	unknown
North Slope Males	Ledyard Bay
	Northwest of Medvezhni (Bear) Island group
	Mechigmenskiy Bay
North Slope Females	Ledyard Bay
	Mechigmenskiy Bay
	West of St. Lawrence Island
YK-Delta Males	Mechigmenskiy Bay Northeastern Norton Sound
YK-Delta Females	Northeastern Norton Sound

Avian molt is energetically demanding, especially for species such as spectacled eiders that complete molt in a few weeks. Molting birds require adequate food resources, and apparently the benthic community of Ledyard Bay (Feder et al. 1989, 1994a, 1994b) provides this for spectacled eiders. Large concentrations of spectacled eiders molt in Ledyard Bay using this food resource; aerial surveys on 4 days in different years counted 200 to 33,192 molting spectacled eiders in Ledyard Bay (Larned et al. 1995; Petersen et al. 1999).

Wintering

Spectacled eiders generally depart molting areas in late October/early November (Sexson et al. 2014; Sexson 2015), migrating offshore in the Chukchi and Bering seas to a single wintering area in pack-ice lead complexes south/southwest of St. Lawrence Island (Figure 6.1B). In this relatively shallow area, > 300,000 spectacled eiders (Petersen et al. 1999) rest and feed, diving up to 230 feet to eat bivalves, other mollusks, and crustaceans (Cottam 1939; Petersen et al. 1998; Lovvorn et al. 2003; Petersen and Douglas 2004).

Spring migration

Recent information indicates spectacled eiders likely make extensive use of the eastern Chukchi Sea spring lead system between departure from the wintering area in March and April and arrival on the North Slope in mid-May or early June. Limited spring observations in the eastern Chukchi Sea have documented tens to several hundred common eiders (*Somateria mollissima*) and spectacled eiders in spring leads and several miles offshore in relatively small openings in rotting sea ice (W. Larned, USFWS; J. Lovvorn, Southern Illinois University, pers. comm.). Woodby and Divoky (1982) documented large numbers of king and common eiders using the eastern Chukchi lead system, advancing in pulses during days of favorable following winds, and concluded that an open lead is probably requisite for spring eider passage in this region. Satellite telemetry data collected by the USGS Alaska Science Center (Figure 6.3; Sexson et al. 2014) suggests that spectacled eiders also use the spring lead system during spring migration.

Adequate foraging opportunities and nutrition during spring migration are critical to spectacled eider productivity. Like most larger sea ducks, female spectacled eiders do not feed substantially

on the breeding grounds, but produce and incubate eggs while living primarily off body reserves (Korschgen 1977; Drent and Daan 1980; Parker and Holm 1990). Clutch size, a measure of reproductive potential, was positively correlated with body condition and reserves obtained prior to arrival at breeding areas (Raveling 1979; Coulson 1984; Parker and Holm 1990). Body reserves must be maintained from winter or acquired during the 4-8 weeks (Lovvorn et al. 2003) of spring staging, and Petersen and Flint (2002) suggest common eider productivity on the western Beaufort Sea coast is influenced by conditions encountered in May to early June during migration through the Chukchi Sea (including Ledyard Bay). Common eider female body mass increased 20% during the 4-6 weeks prior to egg laying (Gorman and Milne 1971; Milne 1976; Korschgen 1977; Parker and Holm 1990). For spectacled eiders, average female body weight in late March in the Bering Sea was 1,550 ± 35 g (n = 12), and slightly (but not significantly) more upon arrival at breeding sites (1,623 ± 46 g, n = 11; Lovvorn et al. 2003), suggesting that spectacled eiders maintain or enhance their physiological condition during spring staging.

Abundance and trends

The most recent rangewide estimate of abundance of spectacled eiders was 369,122 (364,190–374,054 90% CI), obtained by aerial surveys of the known wintering area in the Bering Sea in late winter 2010 (Larned et al. 2012). Comparison of point estimates between 1997 and 2010 indicate an average of 353,051 spectacled eiders (344,147–361,956 90% CI) in the global population over that 14-year period (Larned et al. 2012).

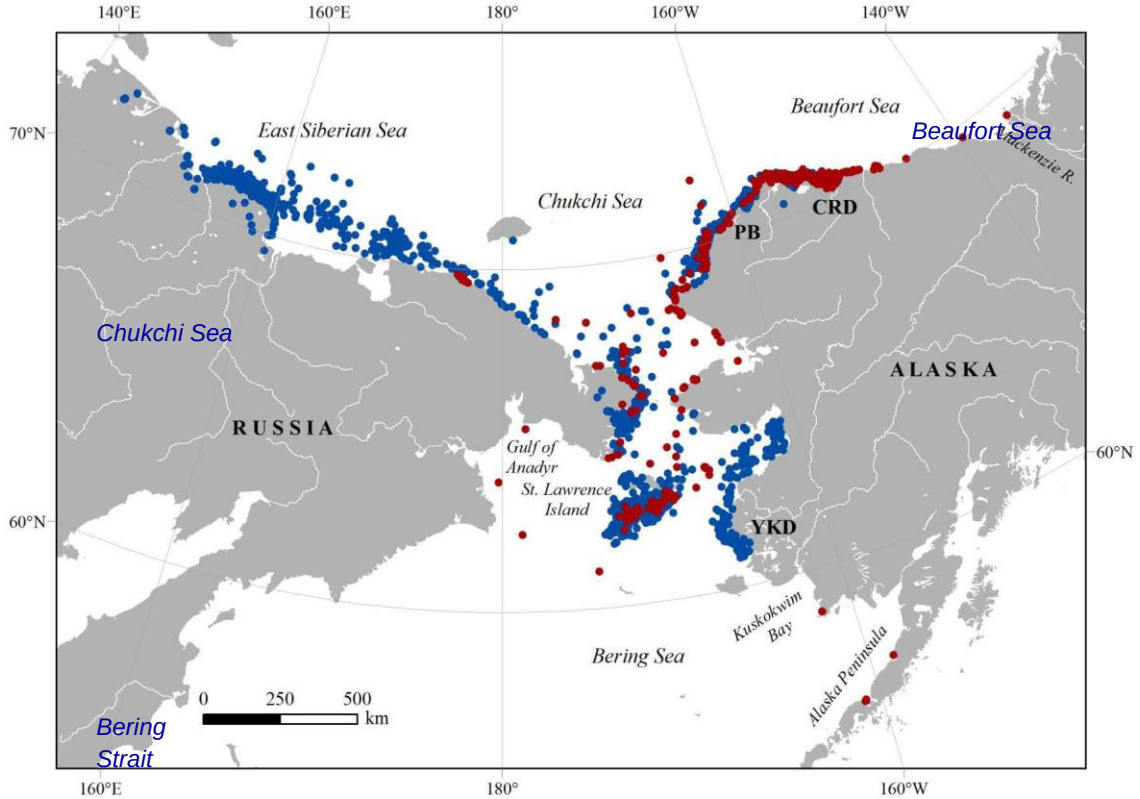

Figure 6.3. Satellite telemetry locations received from 89 adult (blue points, n = 6,813) and 27 juvenile (red points, n = 371) spectacled eiders between 30 May 2008 and 9 August 2012. Satellite Transmitters were implanted in spectacled eiders in the YK-Delta in 2008, at Peard Bay (PB) in 2009, and in the Colville River Delta (CRD) in 2009–2011 (Sexson et al. 2014).

Warnock and Troy (1992) documented an 80% decline in spectacled eider abundance from 1981 to 1991 in the Prudhoe Bay area, but evidence of a significant decline elsewhere on the North Slope, or since 1991 is lacking. Since 1992, the Service has conducted annual aerial surveys for breeding spectacled eiders on the ACP. The 2010 population index based on these aerial surveys was 6,286 birds (95% CI, 4,877–7,695; unadjusted for detection probability), which is 4% lower than the 18-year mean (Larned et al. 2011). In 2010, the index growth rate was significantly negative for both the long-term (0.987; 95% CI, 0.974–0.999) and most recent 10 years (0.974; 95% CI, 0.950–0.999; Larned et al. 2011). Stehn et al. (2006) developed a North Slope-breeding population estimate of 12,916 (95% CI, 10,942–14,890) based on the 2002–2006 ACP aerial index for spectacled eiders and relationships between ground and aerial surveys on the YK-Delta. If the same methods are applied to the 2003–2012 ACP aerial index, the resulting adjusted population estimate for North Slope-breeding spectacled eiders is 14,814 (13,501–16,128, 90% CI; Stehn et al. 2013).

The YK-Delta spectacled eider population is thought to have declined by about 96% from the 1970s to 1992 (Stehn et al. 1993). Evidence of the dramatic decline in spectacled eider nesting on the YK-Delta was corroborated by Ely et al. (1994), who found a 79% decline in eider nesting near the Kashunuk River between 1969 and 1992. Aerial and ground survey data indicated that spectacled eiders declined 9–14% per year from 1985–1992 (Stehn et al. 1993). Further, from the early 1970s to the early 1990s, the number of pairs on the YK-Delta declined from 48,000 to 2,000, apparently stabilizing at that low level (Stehn et al. 1993). Before 1972, an estimated 47,700–70,000 pairs of spectacled eiders nested on the YK-Delta in average to good years (Dau and Kistchinski 1977).

Fischer and Stehn (2013) used combined annual ground-based and aerial survey data to estimate the number of nests and eggs of spectacled eiders on the coastal area of the YK-Delta in 2012 and evaluate long-term trends in the YK-Delta breeding population from 1985 to 2012. In a given year, the estimated number of nests reflects the minimum number of breeding pairs in the population and does not include non-nesting individuals or nests that were destroyed or abandoned (Fischer and Stehn 2013). The total number of spectacled eider nests on the YK-Delta in 2012 was estimated at 8,062 (SE 1110). The average population growth rate based on these surveys was 1.058 (90% CI = 1.005-1.113) in 2003–2012 and 0.999 (90% CI = 0.986-1.012) in 1985–2012 (Fischer and Stehn 2013). Log-linear regression based solely on the long-term YK-Delta aerial survey data indicate positive population growth rates of 1.073 (90% CI = 1.046–1.100) in 2001–2010 and 1.070 (90% CI = 1.058–1.081) in 1988–2010 (Platte and Stehn 2011).

Spectacled eider recovery criteria

The Spectacled Eider Recovery Plan (USFWS 1996) presents research and management priorities with the objective of recovery and delisting so that protection under the ESA is no longer required. Although the cause or causes of the spectacled eider population decline is/are not known, factors that affect adult survival are likely to be the most influential on population growth rate. These include lead poisoning from ingested spent shotgun pellets, which may have contributed to the rapid decline observed in the YK-Delta (Franson et al. 1995; Grand et al. 1998), and other factors such as habitat loss, increased nest predation, over harvest, and disturbance and collisions caused by human infrastructure. Under the Recovery Plan, the species

will be considered recovered when each of the three recognized populations (YK-Delta, North Slope of Alaska, and Arctic Russia): 1) is stable or increasing over 10 or more years and the minimum estimated population size is at least 6,000 breeding pairs, or 2) number at least 10,000 breeding pairs over 3 or more years, or 3) number at least 25,000 breeding pairs in one year. Spectacled eiders do not currently meet these recovery criteria.

6.2 Spectacled Eider Critical Habitat

On February 6, 2001, the Service designated critical habitat for the spectacled eider. Areas designated include portions of the YK-Delta, Norton Sound, Ledyard Bay, and the Bering Sea between St. Lawrence and St. Mathew Islands. Only the Ledyard Bay Critical Habitat Unit (LBCHU) is within the Action Area as it is within the area of the MTR.

The LBCHU was designated to protect molting spectacled eiders. It is used by large numbers of eiders with 33,192 counted by aerial survey in September 1995 (Larned et al. 1995). In particular satellite telemetry data indicates that females who breed on the North Slope primarily use this area for molting (Peterson et al. 1995). We identified marine waters >5 m and ≤ 25 m at mean low water, along with associated marine aquatic flora and fauna in the water column, and the underlying marine benthic community as the physical or biological features essential to the conservation of spectacled eiders which are provided by the LBCHU.

6.3 Steller's Eider

The Steller's eider is a small sea duck with circumpolar distribution and the sole member of the genus *Polysticta*. Males are in breeding plumage (Figure 6.4) from early winter through mid-summer. Females are dark mottled brown with a white-bordered blue wing speculum (Figure 6.4). Juveniles are dark mottled brown until fall of their second year, when they acquire breeding plumage.

Figure 6.4. Male and female Steller's eiders in breeding plumage.

Steller's eiders are divided into Atlantic and Pacific populations; the Pacific population is further subdivided into the Russia-breeding and Alaska-breeding populations. The Alaska-breeding population of Steller's eiders was listed as threatened on July 11, 1997 based on:

- Substantial contraction of the species' breeding range on the ACP and YK-Delta;
    - Steller's eiders on the North Slope historically occurred east to the Canada border (Brooks 1915), but have not been observed on the eastern North Slope in recent decades (USFWS 2002);
- Reduced numbers breeding in Alaska; and,
- Resulting vulnerability of the remaining Alaska-breeding population to extirpation (USFWS 1997).

In Alaska, Steller's eiders breed almost exclusively on the ACP and winter, along with the majority of the Russia-breeding population, in southwest Alaska (Figure 6.5). Periodic non-breeding of Steller's eiders, coupled with low nesting and fledging success, has resulted in very low productivity (Quakenbush et al. 2004). In 2001, the Service designated 2,830 mi2 (7,330 km2) of critical habitat for the Alaska-breeding population of Steller's eiders, including historical breeding areas on the YK-Delta, molting and staging areas in the Kuskokwim Shoals and Seal Islands, molting wintering, and staging areas at Nelson Lagoon, and Izembek Lagoon (USFWS 2001). No critical habitat for Steller's eiders has been designated on the ACP.

Life History

Breeding – Steller's eiders arrive in small flocks of breeding pairs on the ACP in early June. Nesting on the ACP is concentrated in tundra wetlands near Utqiaġvik (formerly Barrow), AK (Figure 6.6) and occurs at lower densities elsewhere on the ACP from Wainwright east to the Sagavanirktok River (Quakenbush et al. 2002). Long-term studies of Steller's eider breeding ecology near Utqiaġvik indicate periodic non-breeding by the entire local population. From 1991-2010, Steller's eiders nests were detected in 12 of 20 years (Safine 2011). Periodic non-breeding by Steller's eiders near Utqiaġvik seems to correspond to fluctuations in lemming populations and risk of nest predation (Quakenbush et al. 2004). During years of peak abundance, lemmings are a primary food source for predators including jaegers, owls, and foxes (Pitelka et al. 1955a; Pitelka et al. 1955b; MacLean et al. 1974; Larter 1998; Quakenbush et al. 2004). It is hypothesized that Steller's eiders and other ground-nesting birds increase reproductive effort during lemming peaks because predators preferentially select (prey-switch) for hyper-abundant lemmings and nests are less likely to be depredated (Roselaar 1979; Summers 1986; Dhondt 1987; Quakenbush et al. 2004). Furthermore, during high lemming abundance, Steller's eider nest survival (the probability of at least one duckling hatching) has been reported as a function of distance from nests of jaegers and snowy owls (Quakenbush et al. 2004). These avian predators aggressively defend their nests against other predators and this defense likely indirectly imparts protection to Steller's eiders nesting nearby.

Steller's eiders initiate nesting in the first half of June and nests are commonly located on the rims of polygons and troughs (Quakenbush et al. 2000, 2004). Mean clutch size at Utqiaġvik was 5.4 ± 1.6 SD (range = 1–8) over 5 nesting years between 1992 and 1999 (Quakenbush et al. 2004). Breeding males depart following onset of incubation by the female. Nest survival is affected by predation levels, and averaged 0.23 (±0.09, standard error [SE]) from 1991–2004

before fox control was implemented near Utqiaġvik and 0.47 (±0.08 SE) from 2005–2012 during years with fox control (USFWS, unpublished data). Steller's eider nest failure has been attributed to depredation by jaegers (*Stercorarius* spp.), common ravens (*Corvus corax*), arctic fox (*Alopex lagopus*), glaucous gulls (*Larus hyperboreus*), and in at least one instance, polar bears (Quakenbush et al. 1995; Rojek 2008; Safine 2011; Safine 2012).

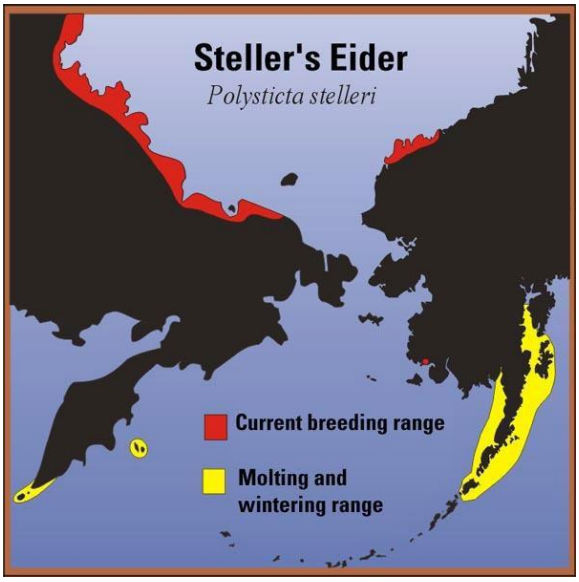

Figure 6.5. Steller's eider distribution in the Bering, Chukchi, and Beaufort seas.

Hatching occurs from mid-July through early August, after which hens move their broods to adjacent ponds with emergent vegetation dominated by *Carex* spp. and *Arctophila fulva* (Quakenbush et al. 2000; Rojek 2006, 2007, 2008). In these brood-rearing ponds, hens with ducklings feed on aquatic insect larvae and freshwater crustaceans. In general, broods remain within 0.7 km of their nests (Quakenbush et al. 2004); although, movements of up to 3.5 km from nests have been documented (Rojek 2006 and 2007). Large distance movements from hatch sites may be a response to drying of wetlands that would normally have been used for brood-rearing (Rojek 2006). Fledging occurs 32–37 days post hatch (Obritschkewitsch et al. 2001; Quakenbush et al. 2004; Rojek 2006, 2007).

Information on breeding site fidelity of Steller's eiders is limited. However, ongoing research at Utqiaġvik has documented some cases of site fidelity in nesting Steller's eiders. Since the mid-1990s, eight banded birds that nested near Utqiaġvik were recaptured in subsequent years again nesting near Utqiaġvik. Time between capture events ranged from 1 to 12 years and distance between nests ranged from 0.1 to 6.3 km (USFWS, unpublished data).

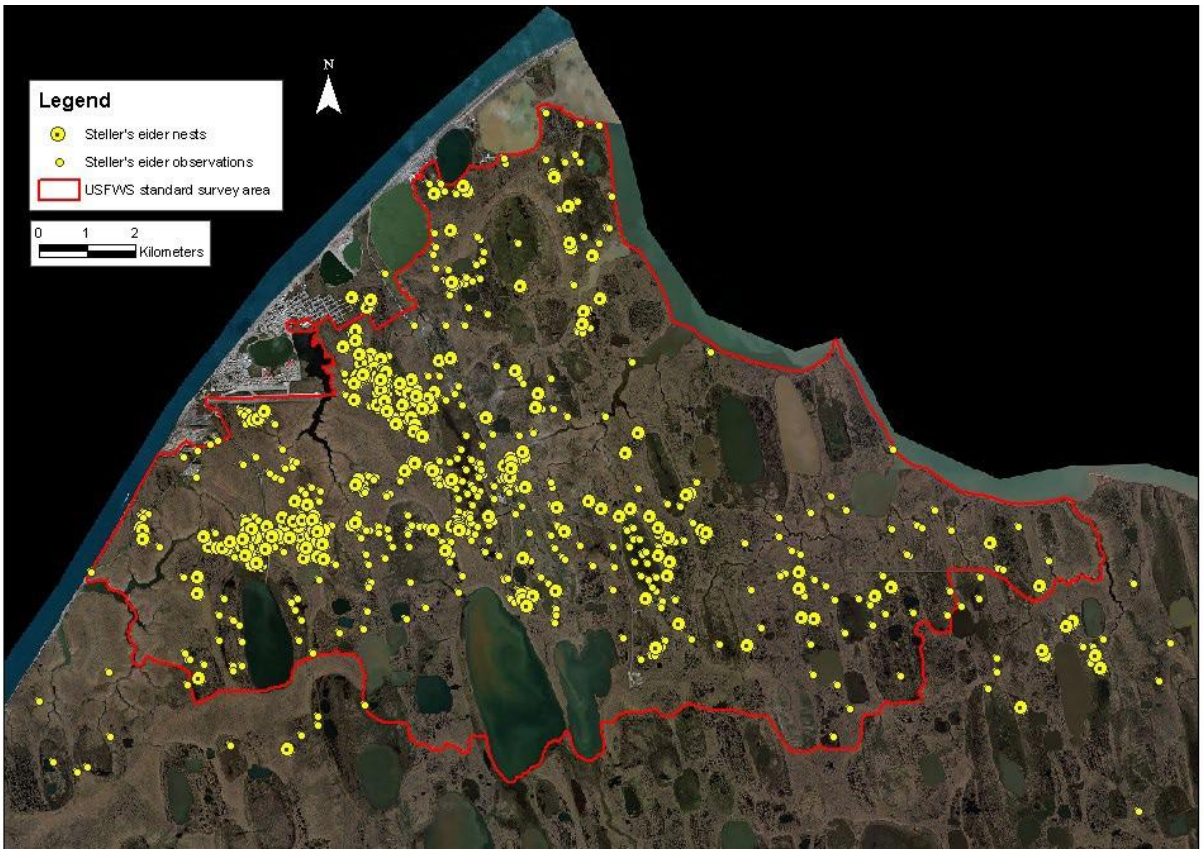

Figure 6.6. Steller's eider nest locations (1991–2010) and breeding pair observations (1999–2010). The red border represents the standard annual survey area. This survey is expanded beyond the standard area in some years.

Localized movements – Timing of departure from the breeding grounds near Utqiaġvik differs between sexes and between breeding and non-breeding years. In breeding years, male Steller's eiders typically leave the breeding grounds in late June to early July after females begin incubating (Obritschkewitsch et al. 2001, Quakenbush et al. 1995, Rojek 2006 and 2007). Females with fledged broods depart the breeding grounds in late August and mid-September to rest and forage in freshwater and marine habitat near the Barrow spit prior to fall migration along the Chukchi coast. Females with broods are often observed near the channel that connects North Salt Lagoon and Elson Lagoon (J. Bacon, NSBDWM, pers. comm.). In 2008, 10–30 Steller's eider adult females and juveniles were observed staging daily in Elson Lagoon, North Salt Lagoon, Imikpuk Lake, and the Chukchi Sea from late August to mid-September (USFWS, unpublished data).

Before fall migration in breeding and non-breeding years, some Steller's eiders rest and forage in in coastal waters near Utqiaġvik including Elson Lagoon, North Salt Lagoon, Imikpuk Lake, and the vicinity of Pigniq (Duck Camp; Figure 6.7). In breeding years, these flocks are primarily composed of males that remain in the area until the second week of July, while in non-breeding

years, flocks are composed of both sexes and depart earlier than in nesting years (J. Bacon, North Slope Borough Department of Wildlife Management [NSBDWM], pers. comm.).

Safine (2012) investigated post-hatch movements of 10 Steller's eider hens with VHF transmitters in 2011. Most (8 of 10) females successfully reared broods to fledging. From late August through early September, females and fledged juveniles were observed in nearshore waters of the Chukchi and Beaufort seas from Point Barrow south along the coast approximately 18 km. During this period, marked Steller's eiders and broods frequented areas traditionally used for subsistence waterfowl hunting (e.g., Duck Camp; Figure 6.7).

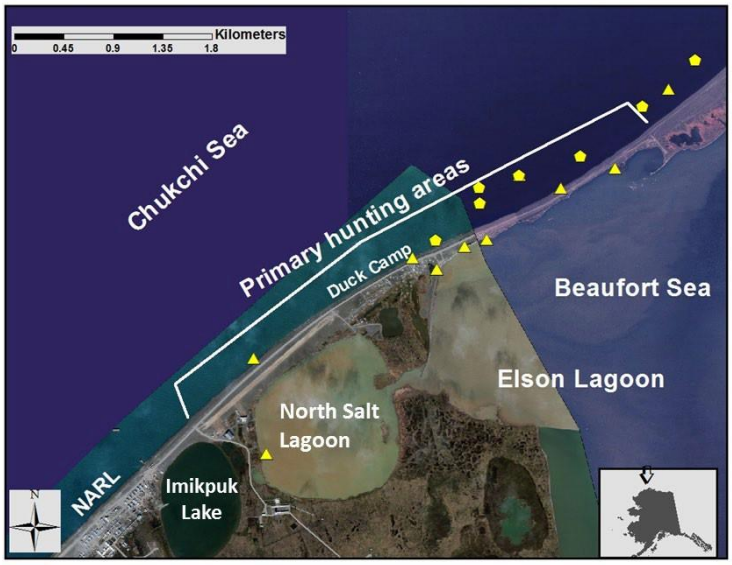

Figure 6.7. Some post-breeding and pre-migration staging areas for Steller's eiders near Utqiaġvik, Alaska. Locations of Steller's eider hens with successfully-fledged (triangles) and failed broods (pentagons) from mid-August to early September 2011.

Wing molt – Following departure from the breeding grounds, Steller's eiders migrate to southwest Alaska where they undergo complete flightless molt for about 3 weeks. Preferred molting areas are shallow with extensive eelgrass (*Zostera marina*) beds and intertidal mud and sand flats where Steller's eiders forage on bivalve mollusks and amphipods (Petersen 1980, 1981; Metzner 1993).

The Russia- and Alaska-breeding populations both molt in southwest Alaska, and banding studies found at least some individuals had a high degree of molting site fidelity in subsequent years (Flint et al. 2000). Primary molting areas include the north side of the Alaska Peninsula (Izembek Lagoon, Nelson Lagoon, Port Heiden, and Seal Islands; Gill et al. 1981; Petersen 1981; Metzner 1993) as well as the Kuskoskwim Shoals in northern Kuskokwim Bay (Martin et al. 2015). Larned (2005) also reported > 2,000 eiders molting in lower Cook Inlet near the Douglas River Delta, and smaller numbers of molting Steller's have been reported around islands in the

Bering Sea, along the coast of Bristol Bay, and in smaller lagoons along the Alaska Peninsula (e.g., Dick and Dick 1971; Petersen and Sigman 1977; Wilk et al. 1986; Dau 1987; Petersen et al. 1991).

Winter distribution – After molt, many Pacific-wintering Steller's eiders disperse throughout the Aleutian Islands, Alaskan Peninsula, and western Gulf of Alaska including Kodiak Island and lower Cook Inlet (Figure 6.8; Larned 2000a; Martin et al. 2015), although thousands may remain in molting lagoons unless freezing conditions force departure (USFWS 2002). The Service estimates the Alaska-breeding population comprises only ~ 1% of the Pacific-wintering population of Steller's eiders. Wintering Steller's eiders usually occur in shallow waters (< 10 m deep), within 400 m of shore or in shallow waters further offshore (USFWS 2002). However, Martin et al. (2015) reported substantial use of habitats > 10 m deep during mid-winter, although this use may reflect nocturnal rest periods or shifts in availability of food resources (Martin et al. 2015).

Spring migration – During spring migration, thousands of Steller's eiders stage in estuaries along the north coast of the Alaska Peninsula and, in particular, at Kuskokwim Shoals in late May (Figure 6.8; Larned 2007; Martin et al. 2015). Larned (1998) concluded that Steller's eiders show strong site fidelity to specific areas[5] during migration, where they congregate in large numbers to feed before continuing northward.

[5] Several areas receive consistent use by Steller's eiders during spring migration, including Bechevin Bay, Morzhovoi Bay, Izembek Lagoon, Nelson Lagoon/Port Moller Complex, Cape Seniavin, Seal Islands, Port Heiden, Cinder River State Critical Habitat Area, Ugashik Bay, Egegik Bay, Kulukak Bay, Togiak Bay, Nanwak Bay, Kuskokwim Bay, Goodnews Bay, and the south side of Nunivak Island (Larned 1998, Larned 2000a, Larned 2000b, Larned et al. 1993).

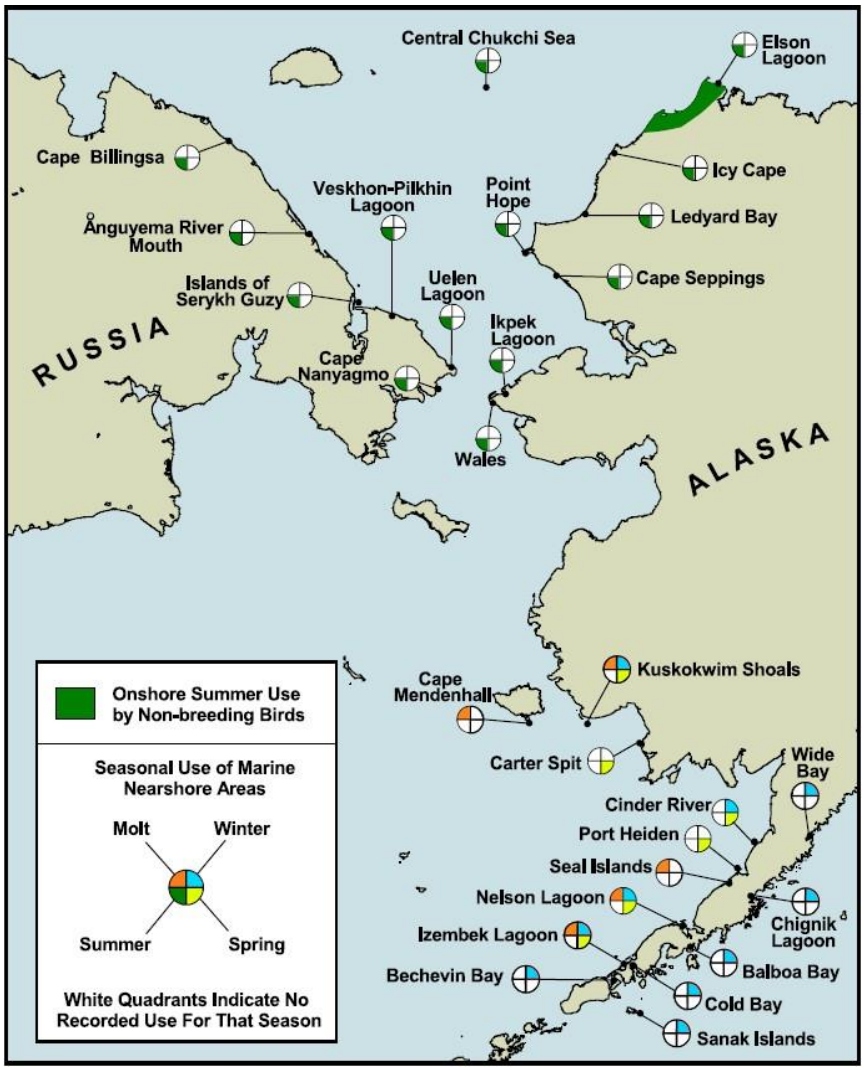

Figure 6.8. Distribution of Alaska-breeding Steller's eiders during the non-breeding season, based on locations of 13 birds implanted with satellite transmitters in Utqiaġvik, Alaska, during June 2000 and June 2001. Marked locations include all those at which a bird remained for at least three days. Onshore summer use areas comprise locations of birds that departed Utqiaġvik, apparently without attempting to breed in 2001 (USFWS 2002).

Spring migration usually includes movements along the coast, although some Steller's eiders may make straight line crossings of water bodies such as Bristol Bay (W. Larned, USFWS, pers. comm. 2000). Despite numerous aerial surveys, Steller's eiders have not been observed during migratory flights (W. Larned, USFWS, pers. comm. 2000). Steller's eiders likely use spring leads for feeding and resting as they move northward, although there is little information on distribution or habitat use after departure from spring staging areas.

Migration patterns relative to breeding origin – Information is limited on migratory movements of Steller's eiders in relation to breeding origin, and it remains unclear where the Russia- and Alaska-breeding populations converge and diverge during their molt and spring migrations.

Martin et al. (2015) attached satellite transmitters to 14 Steller's eiders near Utqiaġvik in 2000 and 2001. Despite the limited sample, there was disproportionately high use of Kuskokwim Shoals by Alaska-breeding Steller's eiders during wing molt compared to the Pacific population as a whole. However, Martin et al. (2015) did not find Alaska-breeding Steller's eiders to preferentially use specific wintering areas. A later study marked Steller's eiders wintering near Kodiak Island, Alaska and followed birds through the subsequent spring (n = 24) and fall molt (n = 16) migrations from 2004–2006 (Rosenberg et al. 2011). Most birds marked near Kodiak Island migrated to eastern arctic Russia prior to the nesting period and none were relocated on land or in nearshore waters north of the Yukon River Delta in Alaska (Rosenberg et al. 2011).

Alaska-breeding population abundance and trends – Stehn and Platte (2009) evaluated Steller's eider population and trends from multiple aerial surveys on the ACP:

- USFWS ACP survey
  - 1989–2006 (Mallek et al. 2007)
  - 2007–2008 (new ACP survey design; Larned et al. 2008, 2009)
- USFWS North Slope eider (NSE) survey
  - 1992–2006 (Larned et al. 2009)
  - 2007–2008 (NSE strata of new ACP survey; Larned et al. 2008, 2009)
  - Barrow Triangle (ABR) survey, 1999–2014 (ABR, Inc.; Obritschkewitsch and Ritchie 2015)

In 2007, the ACP and NSE surveys were combined under a single ACP survey design. Previously, surveys differed in spatial extent, timing, sampling intensity, and duration, and consequently, produced different estimates of population size and trend for Steller's eiders. These estimates, including results from previous analyses of the ACP and NSE survey data (Mallek et al. 2007; Larned et al. 2009), are summarized in Table 4.2. Most observations of Steller's eider from both surveys occurred within the boundaries of the NSE survey (Figure 6.9).

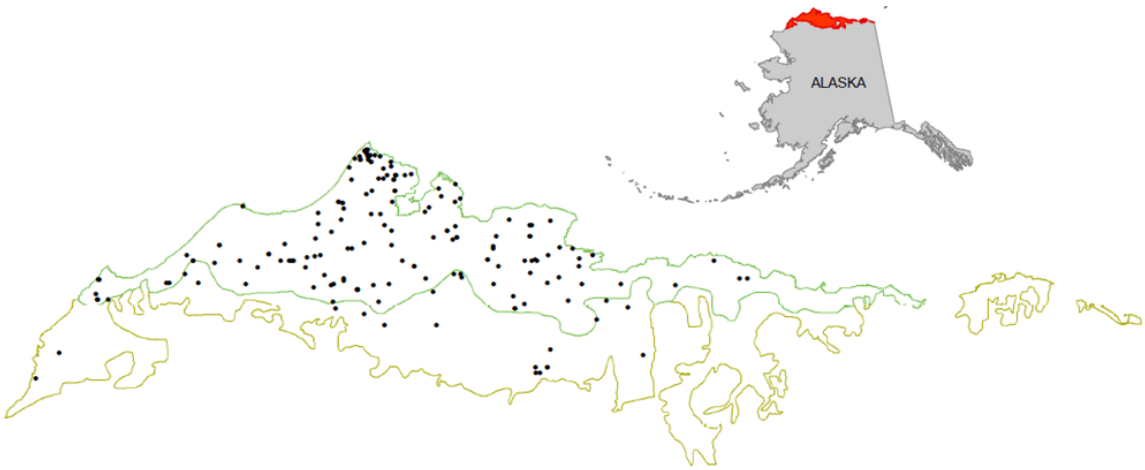

Figure 6.9. All Steller's eider sightings from the Arctic Coastal Plain (ACP) survey (1989–2008) and the North Slope eider (NSE) survey (1992–2006). The ACP survey encompasses the entire area shown (61,645 km^2); the NSE includes only the northern portion outlined in green (30,465 km^2; modified from Stehn and Platte 2009).

Following assessment of potential biases inherent in both surveys, Stehn and Platte (2009) identified a subset of the NSE survey data (1993–2008) that were determined to be "least confounded by changes in survey timing and observers." Based on this subset, the average population index[6] for Steller's eiders on the ACP was 173 (90% CI 88–258) with an estimated growth rate of 1.011 (90% CI 0.857–1.193). Average population size of Steller's eiders breeding on the ACP was estimated at 576 (292–859, 90% CI; Stehn and Platte 2009) assuming a detection probability of 30%[7]. Currently, this analysis provides the best available estimate of the Alaska-breeding Steller's eider population size and growth rate for the ACP. Note that these estimates are based on relatively few actual observations of Steller's eiders with none detected in some years.

[6] Geographically extrapolated total Steller's eiders derived from NSE survey counts.
[7] Detection probability of 30% with a visibility correction factor of 3.33 was selected based on evaluation of estimates for similar species and habitats (Stehn and Platte 2009).

The annual Barrow Triangle (ABR) survey provides more intensive coverage (50%, 1999–2004; 25–50%, 2005–2014) of the northern portion of the ACP. This survey has been conducted since 1999 over a 2,757 km^2 area south of Utqiaġvik (Figure 6.10) to compliment ground surveys closer to Utqiaġvik. Estimated Steller's eider density for the ABR survey area ranges from <0.01–0.03 birds/km^2 in non-nesting years to 0.03–0.08 birds/km^2 in nesting years. The estimated average population index for Steller's eiders within the Barrow Triangle was 99.6 (90% CI 55.5–143.7; Stehn and Platte 2009) with an estimated growth rate of 0.934 (90% CI 0.686–1.272). If we assume the same 30% detection probability applied to NSE estimates, average population size of Steller's eiders breeding in the Barrow Triangle area would be 332 (185–479, 90% CI).

Breeding population near Utqiaġvik, Alaska – The tundra surrounding Utqiaġvik supports the only significant concentration of Steller's eiders nesting in North America. Standardized ground surveys for eiders have been conducted near Utqiaġvik since 1999 (Figure 6.6; Rojek 2008). Counts of males are the most reliable indicator of Steller's eider presence because females are cryptic and often go undetected in counts. The greatest concentrations of Steller's eiders observed during Utqiaġvik ground surveys occurred in 1999 and 2008 with 135 and 114 males respectively (Table 6.2; Safine 2015). Total nests found (both viable[8] and post-failure) ranged from 0–78 between 1991 and 2014, while the number of viable nests ranged from 0–27. Steller's eider nests were found in 16 of 24 years (67%) between 1991 and 2014 (Safine 2015).

Table 6.2. Steller's eider males, nests, and pair densities recorded during ground-based and aerial surveys conducted near Utqiaġvik, Alaska 1999–2012 (modified from Safine 2015).

	Overall ground-based survey area			Standard Ground-based Survey Area[a]		Aerial survey of Barrow Triangle		Nests found near Utqiaġvik
Year	Area (km^2)	Males counted	Pair density (males/km^2)	Males counted	Pair density (males/km^2)	Males counted	Pair density (males/km^2)[b]	
1999	172	135	0.78	132	0.98	56	0.04	36
2000	136	58	0.43	58	0.43	55	0.04	23
2001	178	22	0.12	22	0.16	22	0.02	0
2002	192	1	<0.01	0	0	2	<0.01	0
2003	192	10	0.05	9	0.07	4	<0.01	0
2004	192	10	0.05	9	0.07	6	<0.01	0
2005	192	91	0.47	84	0.62	31	0.02	21
2006	191	61	0.32	54	0.40	24	0.02	16
2007	136	12	0.09	12	0.09	12	0.02	12
2008	166	114	0.69	105	0.78	24	0.02	28
2009	170	6	0.04	6	0.04	0	0	0
2010	176	18	0.10	17	0.13	4	0.01	2
2011	180	69	0.38	59	0.44	10	0.01	27
2012	176	61	0.35	55	0.41	37	0.03	19
2013	180	192	1.07	93	0.69	27	0.04	4
2014	170	137	0.81	119	0.89	30	0.05	50

[a]Standard area (the area covered in all years) is ~134 km^2 (2008 – 2010) and ~135 km^2 in previous years.
[b]Actual area covered by aerial survey (50% coverage) was ~1408 km^2 in 1999 and ~1363 km^2 in 2000 – 2006 and 2008. Coverage was 25% in 2007 and 2010 (~682 km^2) and 27% in 2009 (~736 km^2). Pair density calculations are half the bird density calculations reported in ABR, Inc.'s annual reports (Obritschkewitsch and Ritchie 2011).

[8] A nest is considered viable if it contains at least one viable egg.

Steller's Eider Recovery Criteria

The Steller's Eider Recovery Plan (USFWS 2002) presents research and management priorities that are re-evaluated and adjusted periodically, with the objective of recovery so that protection under the ESA is no longer required. When the Alaska-breeding population was listed as threatened, factors causing the decline were unknown, although possible causes identified were increased predation, overhunting, ingestion of spent lead shot in wetlands, and habitat loss from development. Since listing, other potential threats have been identified, including exposure to other contaminants, disturbance caused during scientific research, and climate change, but causes of decline and obstacles to recovery remain poorly understood.

Criteria used to determine when species are recovered are often based on historical abundance and distribution, or on the population size required to ensure that extinction risk, based on population modeling, is tolerably low. For Steller's eiders, information on historical abundance is lacking, and demographic parameters needed for accurate population modeling are poorly understood. Therefore, the Recovery Plan for Steller's Eiders (USFWS 2002) establishes interim recovery criteria based on extinction risk, with the assumption that numeric population goals will be developed as demographic parameters become better understood. Under the Recovery Plan, the Alaska-breeding population would be considered for delisting from threatened status if it has $\leq$ 1% probability of extinction in the next 100 years, and each of the northern and western subpopulations are stable or increasing and have $\leq$ 10% probability of extinction in 100 years.

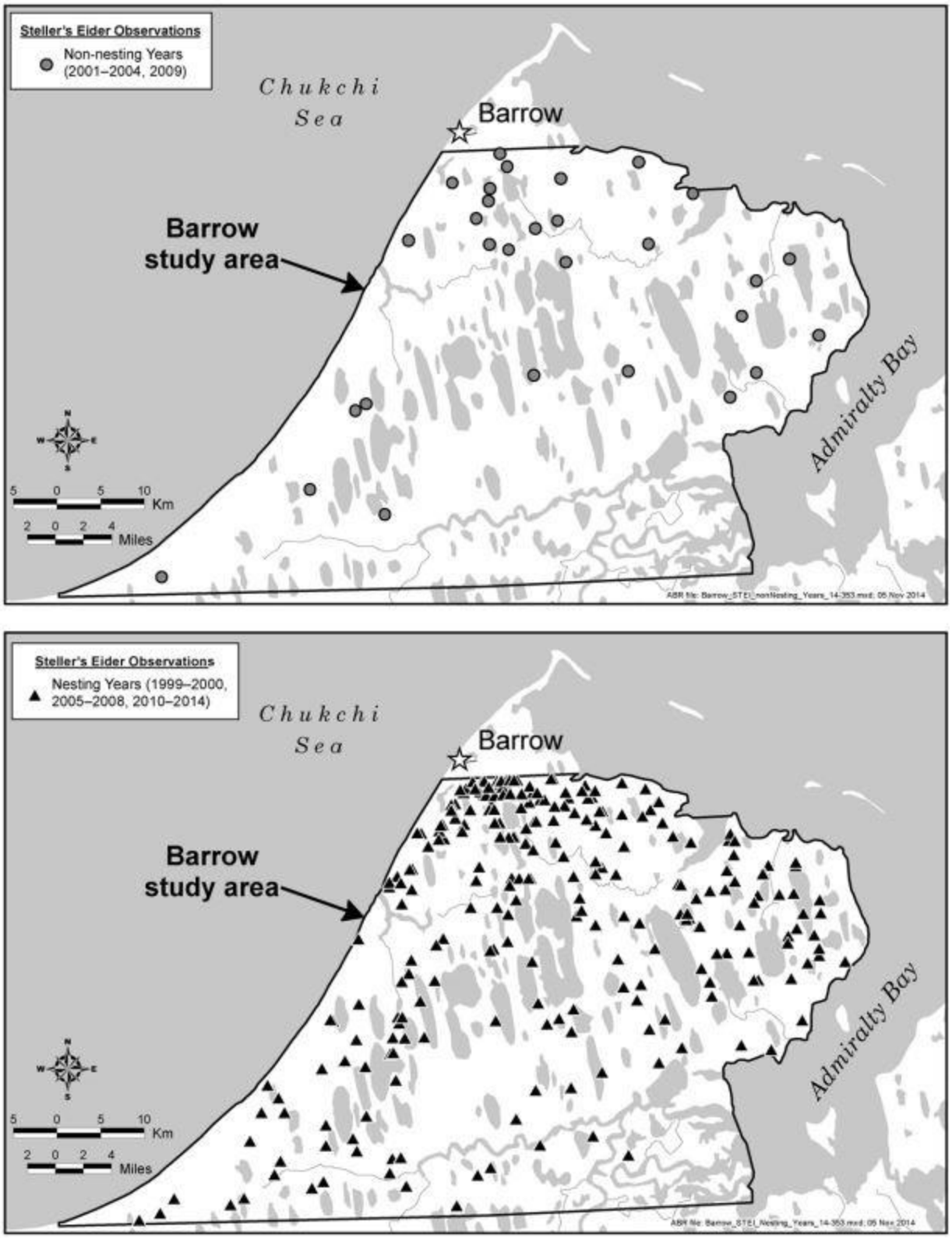

Figure 6.10. Locations of Steller's Eiders observed by ABR, Inc. during aerial surveys in non-nesting (top) and nesting years (bottom) near Utqiaġvik, Alaska, June 1999–2014 (Obritschkewitsch and Ritchie 2015).

6.4 Polar bear

Status and distribution

Due to threats to sea ice habitat, on May 15, 2008, the Service listed the polar bear as threatened under the ESA (73 FR 28212) throughout its range. In the U.S., the polar bear is also protected under the MMPA and the Convention on International Trade in Endangered Species of Wildlife Fauna and Flora.

Polar bears are widely distributed throughout the Arctic where the sea is ice-covered for large portions of the year. Polar bears throughout their range are subdivided into 19 recognized subpopulations or stocks (Figure 6.11). The U.S. contains portions of two subpopulations: the Chukchi Sea (CS) (also called the Alaska-Chukotka subpopulation in the U.S.–Russia Bilateral Agreement) and the Southern Beaufort Sea (SBS) subpopulation.

Population size estimates and trends

The most current global population estimate for polar bears is approximately 26,000 individuals (95 % CI = 22,000-31,000; Wiig et al. (2015). Regarding population trends, the International Union for Conservation of Nature and Natural Resources, Species Survival Commission (IUCN/SSC) Polar Bear Specialist Group (PBSG) ranked three of the 19 subpopulations as "declining," including the SBS subpopulation, and nine, including the CS subpopulation, as "data deficient." They ranked five as "stable" and just two as "increasing" (PBSG 2016; USFWS 2017a).

Species biology and life history

Polar bears are the largest living bear species (DeMaster and Stirling 1981) with a longer neck and proportionally smaller head than other ursids. They are sexually dimorphic; females weigh 400 to 700 pounds (lbs) and males up to 1,440 lbs (USFWS 2017a).

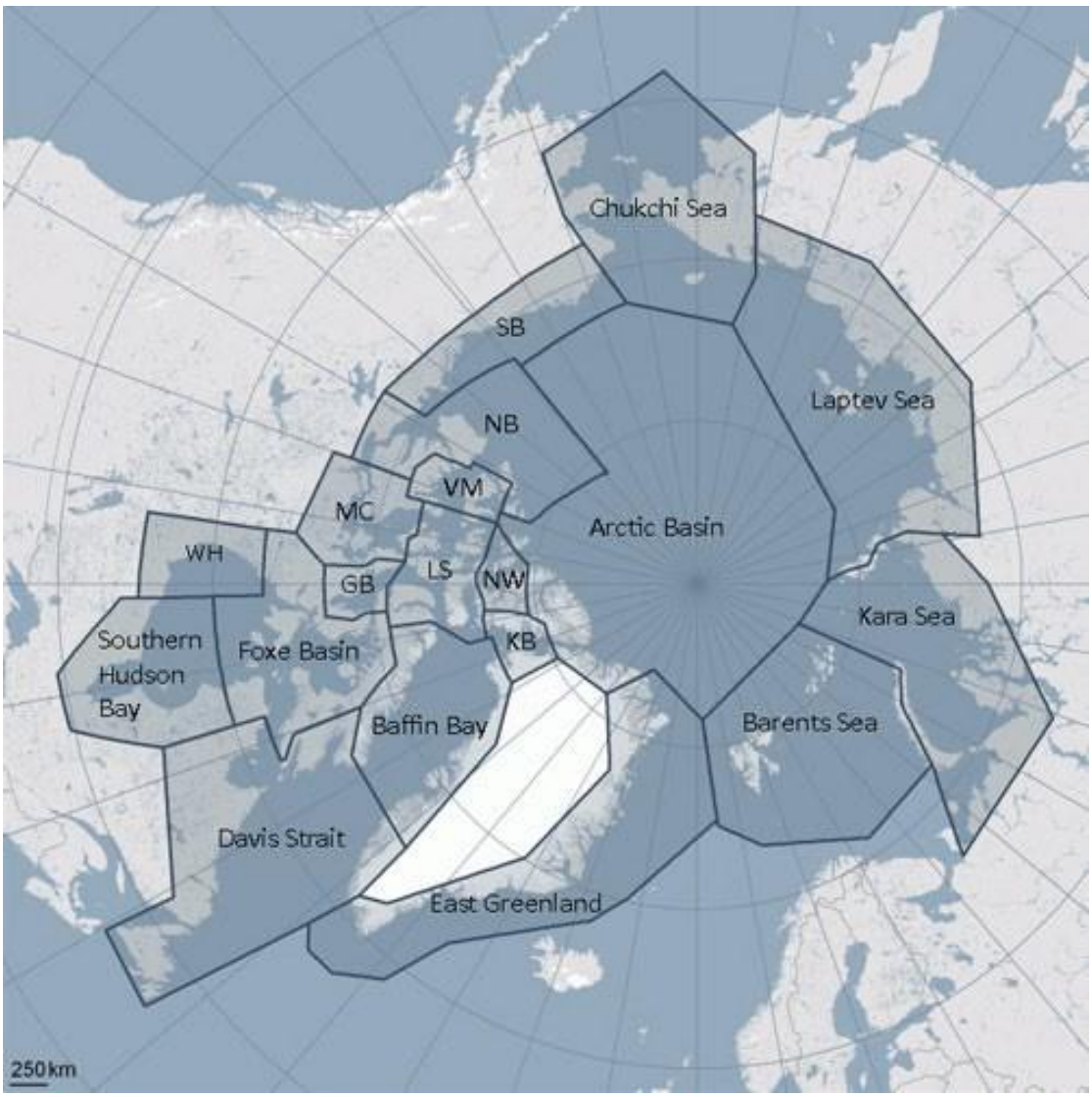

Figure 6.11. Global distribution of polar bear subpopulations as defined by the Polar Bear Specialist Group (Obbard et al. 2010; http://pbsg.npolar.no/en/status/population-map.html). Subpopulations include the Southern Beaufort Sea (SBS), Chukchi Sea, Laptev Sea, Kara Sea, Barents Sea, East Greenland, Northern Beaufort (NB), Kane Basin (KB), Norwegian Bay (NW), Lancaster Sound (LS), Gulf of Boothia (GB), McClintock Channel (MC), Viscount Melville (VM), Baffin Bay, Davis Strait, Foxe Basin, Western Hudson Bay (WH), and Southern Hudson Bay.

Breeding and reproduction – Polar bears are a K-selected species, characterized by late sexual maturity, small litter sizes, and extended maternal investment in raising young. All of these factors contribute to the species' low reproductive rate (Amstrup 2003). Females generally mature and breed for the first time at 4 or 5 years and give birth at 5 or 6 years of age. Litters of two cubs are most common, but 3-cub litters are seen on occasion across the Arctic (Amstrup 2003). The minimum reproductive interval for adult females is three years. Cubs stay with their

mothers until weaning, which occurs most commonly in early spring when cubs are 2 1/2 years old. Female bears are available to breed again after their cubs are weaned (USFWS 2017a).

Survival – Polar bears are long-lived and are not generally susceptible to disease or parasites. Due to extended maternal care of young and low reproductive rates, polar bears require high adult survival rates, particularly of females, to maintain population levels (Eberhardt 1985; Amstrup and Durner 1995). Survival rates are generally age dependent, with cubs-of-the-year having the lowest rates and prime-age adults (prime reproductive years are between approximately 5 and 20 years of age) having survival rates that can exceed 90 percent (Regehr et al. 2007a). Survival rates exceeding 90 percent for adult females are essential to sustain polar bear populations (Amstrup and Durner 1995).

Changes in body condition have been shown to affect bear survival and reproduction, which could, in turn, have population-level effects (Regehr et al. 2010; Rode et al. 2010). Survival of polar bear cubs-of-the-year has been directly linked to their weight and the weight of their mothers, with lower weights resulting in reduced survival (Derocher and Stirling 1996; Stirling et al. 1999). Changes in body condition indices were documented in the Western Hudson Bay subpopulation before a statistically significant decline in that subpopulation was documented (Regehr et al. 2007b). Thus, changes in these indices may signal that reductions in survival and abundance are imminent (USFWS 2017a).

Feeding – Polar bears are top predators in the Arctic marine ecosystem. They prey heavily on ice-seals, principally ringed seals (*Phoca hispida*), and to a lesser extent, bearded seals (*Erignathus barbatus*). Areas near ice edges, leads, or polynyas where ocean depth is minimal are the most productive hunting grounds (Durner et al. 2004). Bears occasionally take larger animals, such as walruses (*Odobenus rosmarus*) and belugas (*Delphinapterus leucas*) (Kiliaan and Stirling 1978).

Bowhead whale carcasses, leftover after subsistence harvest, have been available to polar bears as a food source on the North Slope since the early 1970s (Koski et al. 2005). The use of whale carcasses as a food source likely varies among individuals and years. Stable isotope analysis of polar bears in 2003 and 2004 suggested that bowhead whale carcasses comprised 11%-26% (95% CI) of the diets of sampled polar bears in 2003, and 0%-14% (95% CI) in 2004 (Bentzen et al. 2007).

Threats to the polar bear

Because the polar bear depends on sea ice for its survival, loss of sea ice due to climate change is its largest threat worldwide, although polar bear subpopulations face different combinations of human-induced threats (73 FR 28212; Obbard et al. 2010). The largest direct human-caused loss of polar bears is from subsistence hunting, but for most subpopulations where subsistence hunting of polar bears occurs, it is a regulated and/or monitored activity (Obbard et al. 2010). A thorough account of subsistence hunting, sport harvest, poaching, defense-of-life removals, and the management systems controlling these direct removal activities can be found in USFWS (2017b). Other threats include accumulation of persistent organic pollutants in polar bear tissue, tourism, human-bear conflict, and increased development in the Arctic (Obbard et al. 2010).

Climate change – As stated in the Polar Bear Conservation Management Plan (PBCMP) (USFWS 2016a), polar bears evolved over thousands of years to life in a sea ice-dominated ecosystem and depend on sea ice for essential life functions. Climate-induced habitat degradation and loss are negatively affecting some polar bear subpopulations, and unabated global warming is expected to reduce the worldwide polar bear population (Obbard et al. 2010). Patterns of increased temperatures, earlier spring thaw, later fall freeze-up, increased rain-on-snow events (which may cause dens to collapse), and potential reductions in snowfall are also occurring. Loss of sea ice habitat due to climate change is identified as the primary threat to polar bears (73 FR 28212; Schliebe et al. 2006; Obbard et al. 2010).

The sea ice ecosystem supports ringed seals and other marine mammals that comprise the polar bear's prey base (Stirling and Archibald 1977; Smith 1980, 1985; Iverson et al. 2006). Sea ice cover is shown to be strongly, negatively correlated with surface temperature, which is increasing at about 3 times the global average in the Arctic (Comiso 2012). Declines in sea ice area more pronounced in summer than winter (NSIDC 2011a; b). The mean linear rate of decline for August sea ice extent is 29,000 square miles per year, or 10.4 percent per decade since 1979 relative to the 1981 to 2010 average (NSIDC 2018). Thus, average Arctic sea ice extent in August is approximately 40% less now than 40 years ago. Positive feedback systems (i.e., sea-ice albedo) and naturally occurring events, such as warm water intrusion into the Arctic and changing atmospheric wind patterns, can cause fragmentation of sea ice, reduction in the extent and area of sea ice in all seasons, retraction of sea ice away from productive continental shelf areas throughout the polar basin, reduction of the amount of heavier and more stable multi-year ice, and declining thickness and quality of shore-fast ice (Parkinson et al. 1999; Rothrock et al. 1999; Comiso 2003, 2006; Fowler et al. 2004; Lindsay and Zhang 2005; Holland et al. 2006; Serreze et al. 2007; Stroeve et al. 2008).

Loss of access to prey – The decline of sea ice habitat due to changing climate is affecting the ability of polar bears to forage in several ways. Sea ice provides a platform for hunting and feeding, seeking mates and breeding, denning, resting, and for long-distance movement. Polar bears depend on sea ice to hunt seals, and temporal and spatial availability of sea ice is predicted to decline. Once sea ice concentration drops below 50 percent, polar bears have been documented to abandon sea ice for land, where access to their primary prey is almost entirely absent, or they may retreat northward with more consolidated pack ice over the polar basin, which is likely less productive foraging habitat (Whiteman et al. 2015). In either case, polar bears are likely to have reduced access to prey resources (Whiteman et al. 2015). Ware et al. (2017) found that polar bears are increasingly occurring on ice over less-productive waters in summer. Although polar bears occasionally capture ringed seals in open water (Furnell and Oolooyuk 1980), typically ice seals in open water are inaccessible to polar bears (Harwood and Stirling 1992). Thus, species experts do not believe that polar bears will readily adapt to the loss of sea ice by adopting other hunting methods, such as hunting seals in ice-free water (Stirling and Derocher 1993; Derocher et al. 2004).

Effects of climate change on polar bear prey species – Ice seals, principally ringed seals, and to a lesser extent bearded seals, are the primary prey of polar bears, although other food sources are occasionally exploited (USFWS 2017a). Climate change and the loss of Arctic sea ice are expected to affect ice seal populations significantly, and in response in 2012 the NMFS listed the Arctic subspecies of ringed seal (*Phoca hispida hispida*) and the Beringia DPS of the bearded seal (*Erignathus barbatus nauticus*) as threatened species under the Act (77 FR 76706; 77 FR 76740).

Ice seal population dynamics reflect a complex mix of biotic and abiotic factors (Pilfold et al. 2015), making it difficult to accurately assess the effects of changes in sea ice. However, several mechanisms by which a warming environment have affected ice seals, or plausibly should be expected to, have been identified. An adequate snow layer providing insulation around birth lairs is crucial for thermoregulation and survival of young pups (Stirling and Smith 2004). Pups in lairs with thin snow roofs are also more vulnerable to predation than pups in lairs with thick roofs (Hammill and Smith 1991; Ferguson et al. 2005), and when lack of snow cover has forced birthing to occur in the open, nearly 100% of pups died (Smith and Lydersen 1991; Smith et al. 1991). Rain-on-snow events during the late winter are increasing in frequency and can damage or eliminate snow-covered pupping lairs (ACIA 2005). Exposed pups are then vulnerable to hypothermia and predation by polar bears and arctic foxes (*Alopex lagopus*) (Stirling and Smith 2004). Pupping habitat on landfast ice (McLaren 1958; Burns 1970) and drifting pack ice (Wiig et al. 1999; Lydersen et al. 2004) can also be affected by earlier warming and break-up in the spring, which shortens the length of time pups have to grow and mature (Kelly 2001; Smith and Harwood 2001).

Although the rate and extent of population-level response of ice seals to changes in sea ice conditions remain unclear, effects to ice seal populations will certainly affect polar bear populations. Polar bear populations fluctuate with prey abundance (Stirling and Lunn 1997), and regional declines in ringed and bearded seal numbers and productivity have been linked to marked declines in the associated polar bear subpopulations (Stirling and Øritsland 1995; Stirling 2002).

Redistribution of polar bears in response to changes in sea ice – Several studies have shown that changes in sea ice, including the timing of melt in spring and freeze-up in fall, correlate with changes in the distribution of polar bears and their body condition or other indices of fitness. In Western Hudson Bay, sea ice break-up now occurs approximately 2.5 weeks earlier than it did 30 years ago because of increasing spring temperatures (Stirling et al. 1999; Stirling and Parkinson 2006), which is also correlated with when female bears come ashore and when they are able to return to the ice (Cherry et al. 2009). Similarly, changes in summer sea ice conditions have resulted in an increase in the time spent on shore during summer and the proportion of the population on shore in the Southern Beaufort Sea and Chukchi Sea subpopulations (Rode et al. 2015; Atwood et al. 2016). Rode et al. (2015) also found that changes in sea ice likely explain shifts in summer distribution of the Chukchi Sea subpopulation, from use of both Alaskan and Russian coastal areas before reductions in sea ice, to almost exclusive use of coastal areas in Russia after reductions in sea ice.

Changes in the distribution of polar bears in response to changes in sea ice may increase exposure to some threats. If bears spend more time on land during the open water period, there is potential for increased disease transmission (Kirk et al. 2010; Prop et al. 2015; Wiig et al. 2015), particularly where bears concentrate at dwindling food resources (e.g., remains of subsistence-harvested whales at Barter Island, Cross Island, and Point Barrow). Aggregations could also increase the number of individuals exposed in the event of oil spills (BOEM 2014). Increased use of onshore habitat by polar bears has also led to an increase in human-polar bear conflicts (Dyck 2006; Towns et al. 2009). In two studies from northern Canada, researchers found that the majority of polar bears killed in defense of human life occurred during the open water season (Stenhouse et al. 1988; Dyck 2006). Thus, as more bears come on shore during summer, remain on shore longer, and become increasingly food-stressed, the risk of human conflict increases along with a probable increase in defense-of-life kills.

Demographic response – Reduced access to preferred prey (i.e., ice seals; Thiemann et al. 2008) is likely to have demographic effects on polar bears. For example, in the Southern Beaufort Sea subpopulation, the period when sea ice is over the continental shelf has decreased significantly over the past decade, resulting in reduced body mass and productivity (Rode et al. 2010, 2014) and likely reduced population size (Bromaghin et al. 2015).

Changes in movements and seasonal distributions caused by climate change have been shown to affect polar bear nutrition and body condition (Stirling and Derocher 2012). Declining reproductive rates, subadult survival, and body mass have occurred because of longer fasting periods on land resulting from progressively earlier ice break-ups (Stirling et al. 1999; Derocher et al. 2004). Rode et al. (2010) suggested that declining sea ice has resulted in reduced body size and reproductive rates in the Southern Beaufort Sea subpopulation, and Regehr et al. (2007a) found that reduced sea ice habitat correlated with a reduction in the number of yearlings produced per female. In the Western Hudson Bay subpopulation, sea ice related declines in vital rates led to reduced abundance and declining population trends (Regehr et al. 2007b).

To date, however, researchers have documented demographic effects of sea ice loss in only a few of the 19 polar bear subpopulations (Regehr et al. 2007a; Rode et al. 2012). Rode et al. (2014) found that even though sea ice loss during summer had been substantial in the Chukchi Sea, polar bears in that subpopulation had not yet exhibited concomitant declines in body mass or productivity.

Reduced denning success – Climate change could negatively influence polar bear denning (Derocher et al. 2004). Insufficient snow would prevent den construction or result in use of poor sites where the roof could collapse (Derocher et al. 2004). Changes in the amount and timing of snowfall could also impact the thermal properties of dens, and because cubs are born helpless and remain in the den for three months before emergence, major changes in the thermal properties of dens could negatively impact cub survival (Derocher et al. 2004). Unusual rain events are projected to increase throughout the Arctic in winter (Liston and Hiemstra 2011), and increased rain in late winter and early spring could cause den collapse (Stirling and Smith 2004). The proportion of bears denning on ice has decreased for some subpopulations (Atwood et al. 2016) and not others, but the consequences of these shifts to cub survival are unknown.

While polar bears can successfully den on sea ice (Amstrup and Gardner 1994; Fischbach et al. 2007), for most subpopulations, maternity dens are located on land (Derocher et al. 2004). Female polar bears can repeatedly return to specific denning areas on land (Harington 1968; Ramsay and Stirling 1990; Amstrup and Gardner 1994). For bears to access preferred denning areas on land, pack ice must drift close enough or freeze sufficiently early to allow pregnant females to walk or swim to the area by late October or early November (Derocher et al. 2004). As distance increases between the pack ice edge and coastal denning areas, it will become increasingly difficult for females to access terrestrial denning locations unless they are already on or near land. Distance between the ice edge and shore is one factor thought to limit denning in western Alaska in the CS subpopulation (Rode et al. 2015). Increased travel distances could negatively affect denning success and ultimately population size of polar bears (Aars et al. 2006).

For example, over the last two decades, the Southern Beaufort Sea subpopulation has experienced a marked decline in summer sea-ice extent, along with pronounced lengthening of the open-water season (Stroeve et al. 2014; Stern and Laidre 2016). The dramatic changes in extent and phenology of sea-ice habitat have coincided with evidence suggesting use of terrestrial habitat has increased during open-water periods and prior to denning, including in the Arctic Refuge.

In addition to increased use of land during the open-water season, Southern Beaufort Sea polar bears have also increasingly used land for maternal denning. Olson et al. (2017) examined the choice of denning substrate (land compared to sea ice) by adult females between 1985 and 2013 and determined that the frequency of land-based denning increased over time, constituting 34.4 percent of all dens from 1985 to 1995, 54.6 percent from 1996 to 2006, and 55.2 percent from 2007 to 2013. Additionally, the frequency of land denning was directly related to the distance that sea ice retreated from the coast. From 1985 to 1995 and 2007 to 2013, the average distance from the coast to 50 percent sea ice concentration in September (when sea ice extent reaches its annual minimum) increased 351±55 km (218.10±34.17 mi), while the distance to 15 percent sea ice concentration increased by 275±54 km (170.88±33.55 mi). Rode et al. (2018) determined that reproductive success was greater for females occupying land-based dens compared to ice-based dens, which may be an additional factor contributing to an individual's increase of land-based den sites.

Under most climate-change scenarios, the distance between the edge of the pack ice and land will increase during summer. Bergen et al. (2007) found that between 1979 and 2006, the minimum distance polar bears traveled to denning habitats in northeast Alaska increased by an average rate of 3.7-5.0 miles per year, have nearly doubled since 1992, and would likely increase threefold by 2060. Comiso (2002) predicted that under future climate change scenarios (i.e., by the 2050s), pregnant female polar bears will be unable to access many of the most important denning areas in the north coast of the central Beaufort Sea (Derocher et al. 2004).

Shipping and transportation – A decline in Arctic sea ice has increased the navigability of Arctic waters, with previously ice-covered sea routes now opening in summer, allowing access for commercial shipping, natural resource development, and tourism. Potential effects include fracturing of sea ice, disturbance of polar bears and their prey, increased human-polar bear encounters, introduction of waste/ litter and toxic pollutants into the environment, and increased

risk of oil spills (PBRS 2015; USFWS 2017a). Although shipping is expected to increase in Arctic waters in response to declining sea ice, the PBCMP concluded that trans-Arctic shipping poses minimal risk to polar bears in the long-term (USFWS 2016a). Arctic nations are increasingly working cooperatively to track changes in shipping and manage possible increases in environmental impacts (USFWS 2017a).

Oil and gas development – Polar bears overlap with both active and planned oil and gas operations throughout their range. Impacts on polar bears from industrial activities, such as oil and gas development, may include: disturbance from increasing human-bear interactions, resulting in direct displacement of polar bears, preclusion of polar bear use of preferred habitat (most notably, denning habitat); and/or displacement of primary prey. At the time of listing, the greatest level of oil and gas activity occurring within polar bear habitat was in the United States (Alaska). The Service determined that direct impacts on polar bears from oil and gas exploration, development, and production activities had been minimal and did not threaten the species overall. This conclusion was based primarily on: 1) the relatively limited and localized nature of the development activities; 2) existing mitigation measures that were in place; and 3) the availability of suitable alternative habitat for polar bears (USFWS 2017a).

Although oil and gas exploration, development, and production throughout the Arctic has declined since the time of the listing, offshore oil and gas activities may increase due to a decline in summer sea ice (USFWS 2016a, 2017b). Plans are also underway for new oil and gas development and infrastructure in polar bear habitat (e.g., natural gas pipeline from Mackenzie Delta to southern Canada, exploration offshore from Greenland, Russia, and Alaska [Beaufort Sea]), and proposed offshore and onshore lease sales . In the United States, potential effects on polar bears are in part mitigated through: 1) development of activity-specific human-bear interaction plans (to avoid disturbance), 2) safety and deterrence training for industry staff, 3) bear monitoring and reporting requirements, and 4) implementation of project-specific protection measures (e.g., 1 mile buffers around den sites).

Contaminants – In the final rule listing the polar bear as a threatened species, the Service identified three categories of contaminants in the Arctic that present the greatest potential threats to polar bears and other marine mammals, these are persistent organic pollutants, heavy metals, and petroleum hydrocarbons (PCBs) (73 FR 28288-28291). In the PBCMP (USFWS 2016a), the Service concluded that contaminant concentrations were not thought to have population level effects on most polar bear populations, but noted that contaminants may become a threat in the future, especially in subpopulations experiencing declines related to nutritional stress brought on by sea ice loss and environmental changes.

Petroleum hydrocarbons/oil spills – Oil spills could potentially affect polar bears through: 1) affecting their ability to thermoregulate if their fur is oiled, 2) lethal or sublethal effects of ingestion of oil from grooming or eating contaminated prey, 3) habitat loss or decreased availability of preferred habitat; and 4) impacts to the abundance or health of prey. At the time of listing, no major oil spills had occurred in the marine environment within the range of polar bears and the Service had determined that the probability of a large oil spill occurring in polar bear habitat was low. We also noted that, in Alaska: 1) previous operations in the Beaufort and Chukchi seas have been conducted safely, and effects on wildlife and the environment have been minimized; 2) regulations exist to require pollution prevention and control; and 3) plans are reviewed by both leasing and wildlife agencies to ensure appropriate species-specific protective measures for polar bears are included. However, we also noted that increased oil and gas development coupled with increased shipping elevated the potential for spills, and if a large spill were to occur, it could have significant impacts to polar bears and their prey, depending on the size, location, and timing of the spill.

Persistent Organic Pollutants (POPs) – Persistent organic pollutants are organic chemicals resistant to biodegradation, and can affect apex predators such as polar bears that have low reproductive rates and high lipid levels because POPs tend to bioaccumulate and biomagnify in fatty tissues. While the levels of some contaminants, such as PCBs, generally seem to be decreasing in polar bears, others, such as hexachlorocyclohexanes, were relatively high, and newer compounds, such as polybrominated diphenyl ethers and perflouro-octane sulfonates, posed a potential future risk to polar bears. The effects of these contaminants at the population level are relatively unknown (USFWS 2017a).

Metals – The most toxic or abundant elements in marine mammals are mercury, cadmium, selenium, and lead. Of these, mercury is of greatest concern because of its potential toxicity at relatively low concentrations and its tendency to bioaccumulate and biomagnify in the food web (73 FR 28291). In the final rule to list the polar bear (73 RF 28212) the Service noted that although mercury found in marine mammals often exceed levels that have caused effects in terrestrial mammals, most marine mammals appear to have evolved mechanisms that allow tolerance of higher concentrations of mercury (AMAP 2005). Although population-level effects are still widely undocumented for most polar bear subpopulations, increasing exposure to contaminants may become a more significant threat in the future, especially for declining polar bear subpopulations and/or bears experiencing nutritional stress (USFWS 2017a).

Ecotourism – Polar bear viewing and photography are popular forms of tourism that occur primarily in Churchill, Canada; Svalbard, Norway; and the north coast of Alaska (near the communities of Kaktovik and Utqiaġvik). In the final listing rule for the polar bear, the Service noted that, while it is unlikely that properly regulated tourism will have a negative effect on polar bear subpopulations, increasing levels of public viewing and photography in polar bear habitat might lead to increased human-polar bear interactions. Tourism can also result in inadvertent displacement of polar bears from preferred habitats or alter natural behaviors (Lentfer 1990; Dyck and Baydack 2004; Eckhardt 2005). Conversely, tourism can have the positive effect of increasing the worldwide constituency of people with an interest in polar bears and their conservation (USFWS 2017a).

6.5 Polar bear critical habitat

The polar bear was listed as a threatened species throughout its range, but the regulatory authority to designate critical habitat (50 CFR 424.12(h)) is limited to areas of U.S. jurisdiction, which in the case of the polar bear includes Alaska and adjacent territorial and U.S. waters. The Service designated 484,734 square kilometers of critical habitat for the polar bear in 2010 (75 FR 76086).

Description of Polar Bear Critical Habitat

Designation of critical habitat requires, within the geographical area occupied by the polar bear, identification of the physical or biological features (PBFs) essential to the conservation of the species that may require special management or protection. We identified the following three PBFs essential to the conservation of the polar bear:

1) Sea-ice habitat used for feeding, breeding, denning, and movement, which is further defined as sea-ice over waters 300 m or less in depth that occurs over the continental shelf with adequate prey resources (primarily ringed and bearded seals) to support polar bears.
2) Terrestrial denning habitat, which includes topographic features, such as coastal bluffs and riverbanks, with suitable macrohabitat characteristics. Suitable macrohabitat characteristics are:
    a) Steep, stable slopes (range 15.5–50.0 degrees), with heights ranging from 1.3 to 34 m, and with water or relatively level ground below the slope and relatively flat terrain above the slope;
    b) Unobstructed, undisturbed access between den sites and the coast;
    c) Sea-ice in proximity to terrestrial denning habitat prior to the onset of denning during the fall to provide access to terrestrial den sites; and
    d) The absence of disturbance from humans and human activities that might attract other polar bears.
3) Barrier island habitat used for denning, refuge from human disturbance, and movements along the coast to access maternal den and optimal feeding habitat, including all barrier islands along the Alaska coast and their associated spits, within the range of the polar bear in the United States, and the water, ice, and terrestrial habitat within 1.6 km of these islands.

Considering the three PBFs, and the quantity and spatial arrangement of them necessary to support conservation of the polar bear, we designated the following three critical habitat units, each of which contains at least one of the PBFs:

Unit 1, Sea Ice Habitat – Sea ice habitat covers approximately 464,924 km^2 of primarily marine habitat extending from the mean high tide line of the Alaska coast seaward to the 300 m depth contour, and spans west to the international date line, north to the Exclusive Economic Zone, east to the US–Canada border, and south to the southern limit of the known distribution of the Chukchi Sea polar bear subpopulation. Sea ice is used by polar bears for the majority of their life cycle for activities such as hunting seals, breeding, denning, and traveling.

Unit 2, Terrestrial Denning Habitat – Terrestrial denning habitat occurs within approximately 14,652 km^2 of land along the northern coast of Alaska from the Canadian border west to near Point Barrow. It encompasses approximately 95 percent of the known historical terrestrial den sites from the Southern Beaufort Sea subpopulation (Durner et al. 2009a). The inland extent of denning distinctly varies between two longitudinal zones, with 95 percent of known dens between the Alaska/Canada border and Kavik River occurring within 32 km of the mainland coast, and 95 percent of dens between the Kavik River and Utqiaġvik occurring within 8 km of the mainland coast. The inland boundary of the Terrestrial Denning Unit reflects this difference in the distribution of known den sites, with the boundary drawn at 32 km inland between the Alaska/Canada border and the Kavik River and 8 km inland between the Kavik River and Utqiaġvik.

Unit 3, Barrier Island Habitat – Barrier island habitat covers approximately 10,575 km^2 of barrier islands and the associated complex of spits, water, ice, and terrestrial habitats within 1.6 km of barrier islands. There is significant overlap between this unit and the Terrestrial Denning and Sea Ice units. Similar to the Sea Ice Unit, the Barrier Island Unit extends from near the Alaska/Canada Border to near Hooper Bay in southwestern Alaska but only occurs where barrier islands exist.

Exclusions within Designated Polar Bear Critical Habitat – Within the Terrestrial Denning and Barrier Island units, critical habitat does not include manmade structures (e.g., houses, gravel roads, airport runways and facilities, pipelines, well heads, generator plants, construction camps, sewage treatment plants, hotels, docks, seawalls, and the land on which they were constructed) that existed on the effective date of the rule. The communities of Utqiaġvik and Kaktovik were also excluded.

7. ENVIRONMENTAL BASELINE

The environmental baseline refers to the condition of the listed species or its designated critical habitat in the Action Area, without the consequences of the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the Action Area, the anticipated impacts of all proposed Federal projects in the Action Area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline.

7.1 Baseline of listed eiders within the terrestrial portion of the Action Area

Listed eiders in the terrestrial Action Area

Steller's eiders are extremely unlikely to occur within the terrestrial portion of the Action Area. Therefore, the baseline of Steller's eiders relative to the Action Area is limited to areas of overlap with the MTR, described further below.

Spectacled eiders are present in the terrestrial portions of the Action Area at low density from late May through late October. In summer, spectacled eiders are widely distributed near lakes

or coastal margins throughout the North Slope with a trend toward higher abundance near the coast, north of Teshekpuk Lake, and within the Barrow Triangle (Figure 6.2). Within the terrestrial portion of the Action Area, spectacled eiders nest primarily in non-patterned wet meadows, and in wetland complexes containing emergent grasses and sedges (Anderson and Cooper 1994; Anderson et al. 2009). After hatching, spectacled eider hens and broods occupy deep *Arctophila* and shallow *Carex* habitat (Safine 2011).

Because the terrestrial portion of Action Area is located within a remote national wildlife refuge, industrial development, human habitation, and disturbance have been extremely limited to date. There is no existing industrial development within the terrestrial portion of the Action Area, although oil and gas development occurs immediately adjacent to the west (e.g., Liberty, Badami, and Point Thomson). The community of Kaktovik is the only year-round human habitation within the Action Area. Therefore, although long-term habitat loss through human development or disturbance is occurring throughout part of the species' range, it is not impacting spectacled eider habitat within the terrestrial portion of the Action Area.

However, other factors which may have contributed to the current threatened status of spectacled eiders include: environmental contaminants; increased predator populations; subsistence harvest; recreation and research; and climate change.

Environmental contaminants

Deposition of lead shot in tundra wetlands and shallow marine habitat where eiders forage is considered a threat to listed eiders. Lead poisoning of spectacled eiders has been documented on the YK-Delta (Franson et al. 1995; Grand et al. 1998) and in Steller's eiders on the ACP (Trust et al. 1997; Service unpublished data). Waterfowl hunting with lead shot is prohibited in Alaska, and for hunting all birds on the North Slope. However, it may persist in the environment and may still be used by hunters in some areas (Service, unpublished data). Lead deposition in tundra wetlands would likely be limited to areas adjacent to the community of Kaktovik and frequently used travel corridors, and the concentration of lead presumably would decline with increasing distance from these areas. Although the use of lead shot appears to be declining, residual lead shot may be present in the environment and be available to waterfowl for some unknown period into the future.

Other contaminants such as globally distributed heavy metals, may also affect listed eiders. For example, spectacled eiders sampled in winter near St. Lawrence Island exhibited high concentrations of metals, as well as subtle biochemical changes (Trust et al. 2000). However, risk of contaminant exposure and potential effects to spectacled eiders in the Action Area are limited primarily to sources outside of the area.

Increased predator populations

Predator and scavenger populations have likely increased near rural communities and industrial infrastructure on the ACP in recent decades (Eberhardt et al. 1983; Day 1998; Powell and Backensto 2009). Reduced fox trapping, anthropogenic food sources in rural communities, and an increase in availability of nesting/denning sites at human-built structures may have resulted in increased numbers of arctic foxes (*Alopex lagopus*), common ravens (*Corvus corax*), and glaucous gulls (*Larus hyperboreus*) in developed areas of the ACP (Day 1998). For example,

ravens are highly efficient egg predators (Day 1998), and have been observed depredating Steller's eider nests near Utqiaġvik (Quakenbush et al. 2004). Ravens also appear to have expanded their breeding range on the ACP by using manmade structures for nest sites (Day 1998). Therefore, as the number of structures and anthropogenic attractants associated with human habitation increase, reproductive success of spectacled eiders may decrease, although to date, anthropogenically influenced increases in predator abundance in the Program Area have been limited to the vicinity Kaktovik. Because 1) the low density of spectacled eiders in the terrestrial portion of the Action Area, 2) increasing predator populations likely diminishing with increasing distance from human habitation, and 3) areas with increased predator populations overlapping a very small subset of the action area; increased predator populations have likely had a minimal impact on spectacled eiders in the Action Area.

Subsistence harvest

Although local knowledge suggests spectacled eiders were not specifically targeted for subsistence, an unknown level of harvest occurred across the North Slope prior to listing spectacled eiders under the ESA (Braund et al. 1993). All harvest of spectacled eiders was closed in 1991 by Alaska State regulations, and outreach efforts have been conducted by the Service, the BLM, and the North Slope Borough to encourage compliance. However, annual harvest data indicate that at least some listed eiders continue to be inadvertently or deliberately taken during subsistence activities on the North Slope. Annual intra-Service consultations are conducted for the Migratory Bird Subsistence Hunting Regulations, and although estimates are imprecise, harvest of all migratory bird species, including listed eiders, is reported annually.

Instances of inadvertent harvest would likely be concentrated near the community of Kaktovik, and we expect the frequency of inadvertent harvest would decline with increasing distance from the community as access becomes more difficult. Furthermore, due to low density of spectacled eiders in the terrestrial portion of the Action Area, harvest of spectacled eiders is likely rare.

Recreation and research

All commercial guiding or outfitters operating in the Arctic Refuge require a commercial use permit from the Refuge. In 2017, Arctic Refuge issued 19 permits for air operator businesses, 21 permits for recreational guide businesses, and 11 hunting guide businesses. While it is difficult to track the number of visitors to Arctic Refuge, it is estimated that over the last five years, a minimum of 11,333 client use days occurred in the Coastal Plain of Arctic Refuge. Visitors engaged predominantly in polar bear viewing, river floating, backpacking, base camping, birding, wildlife watching, photography, fishing, and hunting (Jennifer Reed, Visitors Services Coordinator, Arctic Refuge, USFWS, Pers. Comm.).

Field-based scientific research has also increased in the Arctic in response to interest in climate change and its effects on Arctic ecosystems. While some activities have no impact on spectacled eiders (e.g., project timing occurs when eiders are absent or employs remote sensing tools), aerial surveys, on-tundra activities, or remote aircraft landings may disturb listed eiders. As with recreational use, these activities are considered in intra-Service consultations for special use permits from Arctic Refuge.

Climate change
The environmental baseline includes consideration of ongoing and projected changes in climate which have consequences for listed species in the Action Area. The terms "climate" and "climate change" are defined by the Intergovernmental Panel on Climate Change (IPCC). "Climate" refers to the mean and variability of different types of weather conditions over time, with 30 years being a typical period for such measurements, although shorter or longer periods also may be used (IPCC 2007). The term "climate change" thus refers to a change in the mean or variability of one or more measures of climate (e.g., temperature or precipitation) that persists for an extended period, typically decades or longer, whether the change is due to natural variability, human activity, or both (IPCC 2007). Various types of changes in climate can have direct or indirect effects on species. These effects may be positive, neutral, or negative and they may change over time, depending on the species and other relevant considerations, such as the effects of interactions of climate with other variables (e.g., habitat fragmentation) (IPCC 2007). In our analyses, we use our best professional judgment to weigh relevant information, including uncertainty, in our consideration of various aspects of climate change.

High latitude regions, such as Alaska's North Slope, are thought to be especially sensitive to effects of climate change (Quinlan et al. 2005; Schindler and Smol 2006; Smol et al. 2005). While climate change will likely affect individual organisms and communities, it is difficult to predict with certainty how these effects will manifest. Biological, climatological, and hydrologic components of the ecosystem are interlinked and operate on varied spatial, temporal, and organizational scales with feedback between components (Hinzman et al. 2005).

There are a wide variety of changes occurring across the circumpolar Arctic. Arctic landscapes are dominated by freshwater wetlands (Quinlan et al. 2005), which listed eiders depend on for forage and brood rearing. As permafrost thaws, some water bodies are draining (Smith et al. 2005; Oechel et al. 1995), or drying due to increased evaporation and evapotranspiration during prolonged ice-free periods (Schindler and Smol 2006; Smol and Douglas 2007). In addition, productivity of some lakes and ponds is increasing in correlation with elevated nutrient inputs from thawing soil (Quinlan et al. 2005; Smol et al. 2005; Hinzman et al. 2005; Chapin et al. 1995) and other changes in water chemistry or temperature are altering algal and invertebrate communities, which form the basis of the Arctic food web (Smol et al. 2005; Quinlan et al. 2005).

With reduced summer sea ice coverage, the frequency and magnitude of coastal storm surges has increased. During these events, coastal lakes and low lying wetlands are often breached, altering soil/water chemistry as well as floral and faunal communities (USGS 2006). When coupled with softer, semi-thawed permafrost, reductions in sea ice have significantly increased coastal erosion rates (USGS 2006), which may reduce available coastal tundra habitat over time.

Changes in precipitation patterns, air and soil temperatures, and water chemistry are also affecting terrestrial communities (Hinzman et al. 2005; Prowse et al. 2006; Chapin et al. 1995), and the range of some boreal vegetation species is expanding northward (Callaghan et al. 2004). Climate-induced shifts in distributions of predators, parasites, and disease vectors may also have significant effects on listed species. Climate change may also cause mismatched phenology

among listed eider migration, development of tundra wetland invertebrate stocks, fluctuation of small mammal populations, and corresponding abundance of predators (Callaghan et al. 2004).

In summary, the impacts of climate change are on-going and the ultimate effects on spectacled eiders within the Program Area are unclear. Some species may adapt and thrive under changing environmental conditions, while others decline or suffer reduced biological fitness; it is unknown how spectacled eider populations may be affected.

7.2 Baseline of listed eiders and designated critical habitat in the MTR

Listed eiders

Both Steller's and spectacled eiders occur along the MTR during their migrations. During molt, spectacled eiders are present in the MTR in Ledyard Bay.

While we have some information regarding migration routes of spectacled eiders (e.g., Sexson et al. 2014; Sexson 2015), specific information regarding these routes for Alaska-breeding Steller's eiders is lacking. In spring, spectacled eiders move through leads in the sea ice consistent with patterns exhibited by other sea duck species that migrate from wintering areas in the Bering Sea to breed in coastal Alaska (Sexson et al. 2014). Steller's eiders likely follow a similar migration pattern. In summer and autumn, Steller's eiders return to use open waters along the Chukchi Sea coast, with spectacled eiders remaining in these areas to molt. Large numbers of molting spectacled eiders are present in the Ledyard Bay Critical Habitat Unit (LBCHU) from late June through late October (Larned et al. 1995; Petersen et al. 1999).

A recent study in which spectacled eiders were marked with satellite telemetry devices at coastal areas adjacent to Peard Bay and in the Colville River delta has provided information regarding how the species uses the eastern Chukchi Sea (approximately within 70 km of the coast of northern Alaska) during migration (Sexson et al. 2014; Sexson 2015). Spectacled eiders used this area during pre-breeding migration, breeding, post-breeding migration, and/or post-fledging dispersal. Adult males that used the eastern Chukchi Sea during post-breeding migration arrived in early July and departed in early September, although departure dates varied substantially, ranging from 4 July to 5 October (Sexson et al. 2014). Consequently, sustained occupancy among adult males during post-breeding migration ranged from 30–97 days (Sexson et al. 2014). Adult females that used the eastern Chukchi Sea during post-breeding migration arrived in August and departed in October (Sexson et al. 2014), although the timing of arrival during post-breeding migration varied considerably; arrival occurred as early as 15 July and as late as 28 September. Consequently, the duration of sustained occupancy among adult females during post-breeding migration ranged from 16–84 days. Juveniles that fledged in tundra wetlands near or adjacent to the Beaufort Sea arrived in the eastern Chukchi Sea in early October and stayed for 13–29 days before departing by late October. Thus, spectacled eiders use the eastern Chukchi Sea continuously from pre-breeding staging through post-fledgling dispersal.

Due to the lack of industrial development and minimal human presence and vessel traffic in the region, the Chukchi Sea is currently largely in natural condition. Current industrial impacts are minimal and pollution and/or sediments occur at very low levels in the area. The majority of water flowing into this marine environment is not subject to human activity or stressors and is

considered unimpaired (Alaska's Final 2002/2003 Integrated Water Quality Monitoring and Assessment Report). Furthermore, there are no Section 303(d) impaired waterbodies identified within the Arctic Subregion by the State of Alaska. Background hydrocarbon concentrations in the Chukchi Sea appear to be biogenic (naturally occurring) and on the order of 1 part per billion or less; concentrations in the Hope Basin and Chukchi Sea are entirely biogenic in origin and are typical of levels found in unpolluted marine water and sediments. A study of heavy metals in sediments collected from portions of the eastern Chukchi in the 1990's (Naidu 2005) found concentrations were low and the environment was considered "pristine."

Use of the Beaufort Sea by listed eiders varies over time and by breeding status, and is in part controlled by ice cover on the sea surface (Schamel 1978, TERA 2002, Fischer and Larned 2004). Breeding male spectacled eiders generally depart the terrestrial environment in late June when females begin incubation (Anderson and Cooper 1994, Bart and Earnst 2005). Use of the Beaufort Sea by departing males is variable as indicated by satellite telemetry studies (TERA 2002). Of 14 males implanted with transmitters, only 4 spent an extended period of time (11–30 days), in the Beaufort Sea (TERA 2002). Preferred areas were near large river deltas such as the Colville River where open water is more prevalent. Some appeared to move directly to the Chukchi Sea over land, although the majority moved rapidly (average travel of 1.75 days) over nearshore waters from breeding grounds to the Chukchi Sea (TERA 2002).

Females spectacled eiders generally depart the breeding grounds later, when much more of the Beaufort Sea is ice-free, allowing for more extensive use of the area. Females spent an average of 2 weeks in the Beaufort Sea (range 6-30 days) with the western Beaufort Sea the most heavily used (TERA 2002). Females also appeared to migrate through the Beaufort Sea an average of 10 km further offshore than the males (Peterson et al. 1999). This offshore migration route and the greater use of the Beaufort Sea by females is attributed to decreased sea ice later in summer when females migrate through the region (Peterson et al. 1999; TERA 2002).

There are several oil facilities operating or planned in and along the Beaufort Sea coast (e.g., Liberty, Ooguruk, Point Thomson). These facilities could result in small-scale, localized impacts on individual spectacled eiders as is described in the Biological Opinions issued for individual projects (USFWS 2018, 2006, 2012). The structures at these sites pose a potential collision risk for listed eiders migrating in the MTR portion of the Action Area. Birds are particularly at risk of collision when visibility is impaired by darkness or inclement weather (Weir 1976). There is also evidence that lights on structures increase collision risk (Reed et al. 1985; Manville 2000; Russell 2005). Johnson and Richardson (1982), in their study of migratory bird behavior along the Beaufort Sea coast, reported that 88% of eiders flew below an estimated altitude of 10 m (32 ft) and well over half flew below 5 m (16 ft). Thus, structures of almost any height pose a collision risk to migrating eiders.

While no large spills of crude oil have occurred in the Beaufort Sea, small spills of refined petroleum products do occur. These spills decrease habitat quality and pose a risk to migrating eiders. However, there are detailed oil spill contingency plans associated with each development project and spill response limits the area impacts while wildlife hazing reduces the probability an eider would contact spilled product.

Similar to the Chukchi Sea, the area of the Beaufort Sea within the MTR portion of the Action Area is relatively unimpacted by human activity.

Listed Eider Critical Habitat
There is no overlap between terrestrial designated critical habitat for listed eiders and the Action Area. The MTR passes adjacent to the Ledyard Bay Critical Habitat Unit (LBCHU) designated to protect molting spectacled eiders, and a critical habitat unit used by wintering spectacled eiders south of St. Lawrence Island (Figure 6.1B), but it does not overlap with the eastern Norton Sound spectacled eider critical habitat unit or designated Steller's eider critical habitat.

Several key environmental factors, such as good water quality and lack of contamination, contribute to what can be considered the current good environmental conditions of the LBCHU. The LBCHU is currently largely in natural condition, free of physical modification or significant pollutants in either its water and sediments; and its physical and biological processes are functioning and promote production of a rich and abundant benthic community upon which spectacled eiders feed when they occupy the LBCHU.

In wintering critical habitat south of Saint Lawrence Island, spectacled eider's preferred food resources may be in decline and organic deposition and benthic biomass in this area have declined steadily since the late 1980s (66 FR 9146). Oceanographic studies during late winter (March–April 1999) found that particulate organic carbon concentrations in the water column were too low to support significant populations of large zooplankton or krill, indicating that spectacled eiders must be benthic feeders. However, a long-term trend in benthic communities continues: The formerly abundant bivalve *Macoma calcarea* has declined relative to another clam *Nuculana radiata*, which has 76 percent lower lipid content and 26 percent lower energy density (J.R. Lovvorn, Univ. Wyoming, pers. comm. 2000). The average length and mass of bivalves has also declined in the long term (J.M. Grebmeier and B.I. Sirenko, unpubl. data). Because nearly all spectacled eiders spend each winter occupying an area of ocean less than 50 km (27.0 nm) in diameter, they may be particularly vulnerable to environmental changes that appear to be impacting the benthic communities in this area.

7.3 Baseline of the polar bear in the Action Area

Both the Southern Beaufort Sea (SBS) and Chukchi Sea (CS) polar bear subpopulations occur within the Action Area. The subpopulations overlap in the western Beaufort and eastern Chukchi Sea region (Figure 7.1), but can be distinguished by animal movement data and tissue contaminants (Amstrup et al. 2004; Amstrup et al. 2005). The SBS subpopulation also ranges beyond the U.S. into Canada.

The CS subpopulation occurs only in the MTR portion of the Action Area. The highest number of polar bears in the Action Area occurs on land during fall and winter when some polar bears enter the coastal environment as they abandon melting sea ice, forage for terrestrial food (particularly subsistence harvested whale carcasses near Kaktovik), or search for suitable den sites (pregnant females). Bears may also spend some time on land while transiting to other areas. If bears come ashore due to fall storms, melting sea ice, and/or ocean currents, they may remain along the coast or on barrier islands for several weeks until sea ice returns. Polar bears do not

use the Chukchi Sea and adjacent Alaska coastline in the same manner they use the Beaufort Sea and the adjacent North Slope (Craig Perham, MMM-FWS, pers. com.). Interactions with polar bears in the SBS subpopulation could occur both onshore and offshore and would likely be related to seasonal variation in sea ice cover and extent.

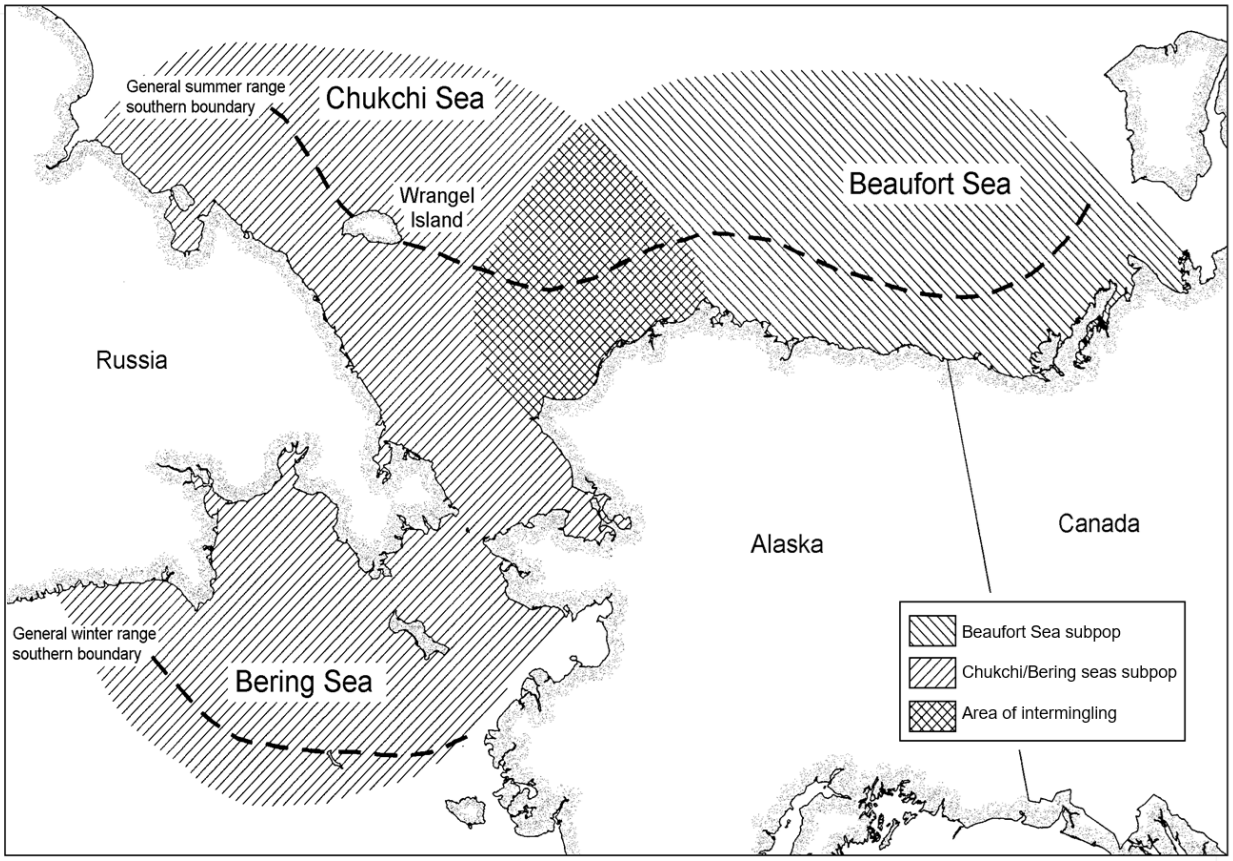

Figure 7.1. Range of polar bear subpopulations in Alaska.

The SBS subpopulation had an estimated population size of approximately 900 bears in 2010 (Bromaghin et al. 2015). This represents a significant reduction from previous estimates of approximately 1,800 in in 1986 (Amstrup et al. 1986) and 1,526 in 2006 (Regehr et al. 2006). In addition, analyses of over 20 years of data on size and body condition of bears in this subpopulation demonstrated declines for most sex and age classes and significant negative relationships between annual sea ice availability and body condition (Rode et al. 2010). This evidence suggests that the SBS subpopulation is currently declining due to sea ice loss (USFWS 2017a).

Polar bears in the SBS subpopulation historically spent the entire year on the sea ice hunting for seals, with the exception of a relatively small proportion of adult females that would come ashore during autumn and overwinter to den. However, over the last two decades, the SBS subpopulation has experienced a marked decline in summer sea-ice extent, along with a pronounced lengthening of the open-water season (period of time between sea ice break-up and

freeze-up; Stroeve *et al.* 2014; Stern and Laidre 2016). The dramatic changes in the extent and phenology of sea-ice habitat have coincided with evidence suggesting that use of terrestrial habitat has increased during summer and prior to denning, including in the Coastal Plain of Arctic Refuge.

The CS subpopulation is widely distributed on the pack ice of the northern Bering, Chukchi, and eastern Siberian seas (Garner et al. 1990; Garner et al. 1994; Garner et al. 1995). The constant movement of pack ice influences the movement of polar bears, and this makes obtaining a reliable population size estimate from mark and recapture studies challenging. For example, polar bears of this subpopulation move south with advancing ice during fall and winter and north in advance of receding ice in late spring and early summer (Garner et al. 1990). The most recent estimate of the CBS subpopulation is approximately 2,900 bears (Regehr et al. 2018) based on extrapolation from capture-recapture, radio telemetry and count data. U.S. capture-recapture research conducted in spring of 2008 through 2011 indicated that CBS animals have good body condition and reproduction, suggesting capacity for positive population growth despite sea ice loss (Rode et al., 2014). Regehr et al. (2018) also calculated survival probabilities for Chukchi Sea bears, with survival for adult males and adult females estimated to be 0.89 and 0.90, respectively, and for subadult males and females to be 0.71 and 0.79, respectively.

In the Action Area, the greatest impact to polar bears is loss of sea ice resulting from climate change. Other factors such as subsistence hunting, MMPA authorizations, recreation and research, and environmental contaminants are also discussed in this section.

Climate change and sea ice loss

Global climate change and its effects in the Arctic are likely to have serious consequences for the worldwide population of polar bears and their prey (Amstrup et al. 2007; Amstrup et al. 2008; Hunter et al. 2010; Atwood et al. 2015). The associated reduction of summer Arctic sea ice is expected to be a primary threat to polar bear populations (Stirling and Derocher 2012), and projections indicate continued climate warming at least through the end of this century (IPCC 2013). The Service issued a draft Polar Bear Conservation Management Plan (USFWS 2015b). In it, the Service reaffirms the 2008 ESA-listing decision, that the decline of sea ice habitat due to changing climate, driven primarily by increasing atmospheric concentrations of greenhouse gases, is the primary threat to polar bears.

Climate change is expected to impact polar bears in a variety of ways. The timing of ice formation and breakup will impact seal distributions and abundance, and, consequently, how efficiently polar bears can hunt seals. Reductions in sea ice are expected to increase the polar bears' energetic costs of traveling, as moving through fragmented sea ice and swimming in open water requires more energy than walking across consolidated sea ice (Cherry et al. 2009; Pagano et al. 2012; Rode et al. 2014). Research has linked declines in summer sea ice to reduced physical condition, growth, and survival of polar bears (Bromaghin et al. 2015).

Habitat loss due to declining Arctic sea ice throughout the polar bear's range has been identified as the primary cause of population decline and is expected to continue for the foreseeable future (73 FR 28212). Amstrup et al. (2007) projected a 42 percent loss of optimal summer polar bear habitat by 2050. They concluded that if current Arctic sea-ice declines continue, polar bears may

eventually be excluded from onshore denning habitat in the Polar Basin Divergent Region. Amstrup et al. (2007) projected the SBS subpopulation may be extirpated within the next 45–75 years, if sea-ice declines continue at current rates.

The occurrence of polar bears along the Beaufort Sea coast has increased in recent years (Schliebe et al. 2008) in correlation with the distance of pack ice from the coast at that time of year (i.e., more bears are observed onshore when the leading edge of the ice is further offshore; Schliebe et al. 2006). We expect this trend to continue in the future, and surmise that an increasing number of bears onshore for longer periods of time during the open water season may increase the potential for human-bear conflicts industrial development or other human activities. Additionally, in recent years when sea ice has retreated far from the Beaufort Sea coast, researchers have observed polar bears swimming in open water, far from the nearest sea ice or land, presumably placing them at risk of exhaustion (Durner et al. 2011; Pagano et al. 2012). In the fall of 2004, four drowned polar bears were observed in the Beaufort Sea during a BOEM coastal aerial survey program (Monnett and Gleason 2006).

Schliebe et al. (2008) determined that an average of 4.0 percent of the SBS subpopulation of polar bears was on land in autumn during 2000 to 2005, and that the percentage increased when sea ice was farther from the coast. More recently, Atwood et al. (2016) determined that the percentage of radio-collared adult females coming ashore in summer and fall increased from 5.8 to 20 percent between 2000 and 2014. Over the same period, the mean duration of the open-water season increased by 36 days and the mean length of stay on land by polar bears increased by 31 days (Atwood et al. 2016). While on shore, the distribution of polar bears is largely influenced by the opportunity to feed on the remains of subsistence-harvested bowhead whales. Most polar bears are aggregated at three sites along the coast, Utqiaġvik, Cross Island, and Kaktovik (Rogers et al. 2015; McKinney et al. 2017; Wilson et al. 2017).

In addition to increased use of land during the open-water season, polar bears in the SBS subpopulation have also increasingly used land for maternal denning. Olson *et al.* (2017) examined the choice of denning substrate (land compared to sea ice) by adult females between 1985 and 2013 and determined that the frequency of land-based denning increased over time, constituting 34.4 percent of all dens from 1985 to 1995, 54.6 percent from 1996 to 2006, and 55.2 percent from 2007 to 2013. Additionally, the frequency of land denning was directly related to the distance that sea ice retreated from the coast. From 1985 to 1995 and 2007 to 2013, the average distance from the coast to 50 percent sea ice concentration in September (when sea ice extent reaches its annual minimum) increased 351±55 km (218.10±34.17 mi), while the distance to 15 percent sea ice concentration increased by 275±54 km (170.88±33.55 mi). Rode *et al.* (2018) determined that reproductive success was greater for females occupying land-based dens compared to ice-based dens, which may be an additional factor contributing to the increase in land-based denning. However, this increase in the proportion of dens occurring in the terrestrial environment may increase the potential for disturbance at dens from industrial development and other human activities.

Subsistence harvest

The Inuvialuit-Inupiat Polar Bear Management Agreement, a Native-to-Native agreement, between the Inupiat from Alaska and the Inuvialuit in Canada was created for the SBS stock of

polar bears in 1988. Polar bears harvested from the communities of Utqiaġvik, Nuiqsut, Kaktovik, Wainwright, and Atqasuk are currently considered part of the SBS stock and thus are subject to the terms of the Inuvialuit-Inupiat Polar Bear Management Agreement. The agreement establishes quotas and recommendations concerning protection of denning females, family groups, and methods of harvest.

In 1988, the Inuvialuit-Inupiat Council (Council) established a sustainable harvest quota of 80 bears for the SBS stock. In 2011, the Council reduced the quota to 70 polar bears. Native subsistence hunters harvested 15 polar bears from the SBS at, or proximal to, Kaktovik between 2008 and 2017 (U.S. Fish and Wildlife Service - Marine Mammals Management Office pers. comm.).

Marine Mammal Protection Act Authorizations: Incidental take and incidental harassment authorizations

The current Beaufort Sea Incidental Take Regulations (ITRs; 81 FR 52318; § 18.128) describe mitigation, monitoring, and reporting requirements of oil and gas operators that are applied to active operations in the central Beaufort Sea which abuts the Action Area to the west. The Beaufort Sea ITRs encompass a larger portion of the range of the SBS stock than the Action Area and have been important in mitigating impacts to polar bears from oil and gas activities on the North Slope to the west of the Program Area. Additional information concerning the USWFS's Incidental Take Program and its demonstrated effectiveness in limiting adverse impacts to polar bears is provided in Section 8 of this document.

Deterrence activities and intentional take authorizations

In addition to the regulatory program allowing for incidental take of polar bears described above, the MMPA also provides a mechanism for managing human-polar bear interactions in order to promote conservation of bears while protecting human safety. This Deterrence Program, under section 101(a)(4)(A) of the MMPA, provides Letters of Authorization (LOAs) that allow the use of deterrence actions to prevent polar bears from damaging private property or endangering personal safety. Under this authority, Federal, State and local government employees may deter polar bears for the welfare of the animal when acting in the course of their official duties, and private persons (such as employees of the oil and gas industry) may enter into cooperative agreements with the Service to carry out deterrence measures when acting in their capacity as designated persons under such an agreement and in full compliance with its terms and conditions. This program strives to: 1) prevent bears from associating food with humans and communities, 2) "condition" bears to avoid humans, human activities and communities, 3) promote movement of bears by actively redirecting them into corridors, such as coastal travel routes, 4) minimize extended use of areas near communities, and 5) minimize bear entry into communities.

Importantly, the program mandates "active deterrence actions must not result in the death or serious injury of any marine mammal," and requires an application that includes: a) a detailed plan of operations, b) a site-specific plan to monitor effects of the activity on polar bears present during activities, and c) a site-specific polar bear interaction plan that outlines steps the applicant will take to limit animal-human interactions, increase site safety, and minimize impacts to polar bears. The program does not allow for the deterrence of polar bears for convenience or to aid

project activities, and prior to conducting deterrence activities operators must make reasonable efforts to reduce or eliminate attractants (e.g., garbage, human waste, and food); move personnel to safety; ensure the bear has escape route(s); and begin with the lowest level of force or intensity that is effective and increase the force or intensity only as necessary to achieve the desired result. The program also contains specific training, monitoring, and reporting requirements to minimize risk and impacts to polar bears. This program has been in place for decades, and although deterrence actions result in negative impacts to individual bears on rare occasions, proper implementation of deterrence actions under this program effectively reduces the need for lethal take of polar bears, and thus as a whole contributes to the conservation of polar bears.

For example, between Jan 1, 2001 and Dec. 31, 2016 the entire North Slope oil and gas industry reported 2,731 observations of 4,371 individual polar bears. Of these, 848 (19%) were deterred. Of those deterred, the vast majority were subjected to noise or visual stimuli (e.g., vehicle horns, engine noise, yelling, spotlights, sirens, or discharge of cracker shells) intended to direct bears away from facilities or human activities. On rare occasions, when less-intrusive methods fail, "direct contact" rounds such as bean bags or rubber bullets are used. During 640 deterrence events by industry on the North Slope from Jan 1, 2001 to Dec. 31, 2016, 42 polar bears were hazed with bean bags and 6 with rubber bullets. The number of polar bears hazed with bean bags or rubber bullets annually ranged from 0 to 11; the average was 3 polar bears per year. Injuries or lethal impacts are exceptionally rare. In 2011, a polar bear died because personnel mistakenly used a crackershell to deter a bear at close range rather than a beanbag round (Kimberly Klein, Incidental Take Coordinator, Marine Mammals Management Office, US Fish and Wildlife Service. Pers. Comm.).

Research

Polar bear research takes place within the Program Area as well as throughout the broader Action Area. In general, the long-term goal of research programs is to gain information on the ecology and population dynamics of polar bears to help inform management decisions, especially in light of climate change. These activities may cause short-term disturbance and/or minor injuries (e.g., sedation, tissue sampling, marking, etc.) to individual polar bears targeted in survey and capture efforts, and may incidentally disturb other individuals. In rare cases, research efforts may lead to serious injury or death of polar bears. Polar bear research is authorized through Division of Management Authority (DMA) permits issued under the MMPA. These permits include estimates of the maximum number of bears likely to be impacted by disturbance or minor capture-related injuries, and include a condition to halt research if a specified number of deaths (limited to small numbers), occur during the life of the permit. Research DMA permits are typically issued for a five-year period.

Tourism

As more polar bears are spending time onshore, particularly in areas around the subsistence whale bone pile near Kaktovik there has been an increase in "polar bear viewing" tourism. The influx of visitors to the area may result in increased anthropogenic disturbance of polar bears (e.g., from humans on foot, ATVs, snow machines, or other vehicles). Although difficult to quantify, these disturbances are usually temporary, which may limit the severity of their impact, although the frequency could increase. Land-based viewing is not managed by the

Service, but the Service does manage boat-based viewing. The boat-based viewing program is designed to avoid all impacts to polar bears and not result in any disturbance (USFWS 2019).

Environmental contaminants
Exposure to environmental contaminants may affect polar bear survival or reproduction. Three main types of contaminants in the Arctic are thought to pose the greatest potential threat to polar bears: petroleum hydrocarbons, persistent organic pollutants (POPs), and heavy metals. To date, no large oil spills from oil and gas activities have occurred in marine waters of arctic Alaska. However, contamination of the Arctic and sub-Arctic regions through long-range transport of pollutants has been recognized for over 30 years (Bowes and Jonkel 1975; Proshutinsky and Johnson 2001; Lie et al. 2003). Arctic ecosystems are particularly sensitive to environmental contamination due to 1) the slower rate of breakdown of POPs including organochlorine compounds (OCs), 2) relatively simple food chains, and 3) the presence of long-lived organisms with low rates of reproduction and high lipid levels that favor bioaccumulation and biomagnification. Consistent patterns between OC and mercury contamination and trophic status have been documented in Arctic marine food webs (Braune et al. 2005), and the highest concentrations of persistent organic pollutants in Arctic marine mammals have been found in seal-eating walruses and polar bears near Svalbard (Norstrom et al. 1988; Muir et al. 1999; Andersen et al. 2001). While polar bears may come into contact with contaminants in the Action Area if they are not properly disposed of or secured, this has occurred very rarely. Furthermore, contaminant concentrations are not presently thought to have population-level effects on most polar bear populations. However, increased exposure to contaminants has the potential to operate in concert with other factors, such as nutritional stress from loss or degradation of sea ice habitat, decreased prey availability and accessibility, or lower recruitment and survival rates. These combined stressors could ultimately have negative population level effects on polar bears.

7.4 Baseline of polar bear critical habitat in the Action Area

The Action Area includes portions of each of the three polar bear critical habitat units. Activities proposed under the RFD would primarily occur within terrestrial denning habitat, but areas of overlap with sea ice and barrier island critical habitat would also occur. To date, polar bear critical habitat in the eastern portion of Alaska's arctic has not been subject to oil and gas development; however, due to Public Law 115-97, future Industry interest in the area is expected to increase.

Localized effects to critical habitat in the Action Area have been small in scale and have been limited to short-term human disturbance from access by scientific researchers as well as recreational and subsistence users. At a larger spatial scale, globally distributed pollutants and climate change have diminished the quality of polar bear critical habitat; however, estimating the magnitude of these effects within the Action Area is difficult. These factors are discussed in further detail below.

Environmental contaminants
Exposure to environmental contaminants may affect polar bear survival or reproduction. Thus, the presence of contaminants within polar bear critical habitat could affect the conservation value of the habitat. Three main types of contaminants in the Arctic are thought to pose the greatest

potential threat to polar bears: petroleum hydrocarbons, persistent organic pollutants (POPs), and heavy metals.

Petroleum hydrocarbon contamination from oil and gas development has had a limited effect on the environmental baseline of polar bear critical habitat. A single large spill has been reported for the Chukchi and Beaufort seas. In August 1988, 68,000 gallons (1,619 barrels) of heating fuel were spilled 3–6 miles north of the barrier islands off Brownlow Point by a barge tanker enroute to Kaktovik. No large oil spills from oil and gas activities have occurred in arctic Alaska. Small spills have occurred but have affected a limited area.

Contamination of the Arctic and sub-Arctic regions through long-range transport of pollutants has been recognized for over 30 years (Bowes and Jonkel 1975, Proshutinsky and Johnson 2001, Lie et al. 2003). Arctic ecosystems are particularly sensitive to environmental contamination due to the slower rate of breakdown of POPs, including organochlorine compounds (OCs), relatively simple food chains, and the presence of long-lived organisms with low rates of reproduction and high lipid levels that favor bioaccumulation and biomagnification. Consistent patterns between OC and mercury contamination and trophic status have been documented in Arctic marine food webs (Braune et al. 2005). Although polar bears in arctic Alaska and designated polar bear critical habitat in Alaska have unquestionably been affected by exposure to environmental contaminants, at this time we have no reason to believe the critical habitat's ability to support polar bears has been affected.

Climate change

Climate change is contributing to the rapid decline of sea ice throughout the arctic, and some of the largest declines are predicted to occur in the Chukchi and southern Beaufort seas (Durner et al. 2009b *in* USFWS 2010a). This directly affects the sea ice PBFs, which provide feeding, breeding, denning, and traveling habitat for polar bears. Decreased quality and quantity of sea ice may increase the importance of barrier island and terrestrial habitat for foraging, denning, and resting. For example, Schliebe et al. (2006) demonstrated an increasing trend in the number of observed polar bears using terrestrial habitats in the fall. Additionally, Fischbach et al. (2007) hypothesized that reduced availability of older, more stable sea ice is contributing to the observed decrease in the proportion of female polar bears denning on sea ice in northern Alaska.

Climate change may also affect the availability and quality of denning habitat on land. Durner et al. (2006) found that 65% of terrestrial dens found in Alaska between 1981 and 2005 were on coastal or island bluffs. These areas are suffering rapid erosion and slope failure as permafrost melts and wave action increases in duration and magnitude. In all areas, dens are constructed in autumn snowdrifts (Durner et al. 2003). Changes in autumn and winter precipitation or wind patterns (Hinzman et al. 2005) could significantly alter the availability and quality of snow drifts for denning.

8. EFFECTS OF THE ACTION ON LISTED SPECIES

This section of the BO provides an analysis of the effects of the action on listed species and critical habitat. Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused

by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action.

8.1 Effects to spectacled eiders

Hypothetical adverse effects to spectacled eiders in the terrestrial environment from the proposed RFD could potentially occur through long-term habitat loss, disturbance from new infrastructure and on-tundra aircraft landings, increased predators, spills, and collisions with structures. Additionally, spectacled eiders in the Marine Transit Route (MTR) could be effected by disturbance, spills, and/or collisions associated with vessels. The likelihood of each of these factors affecting spectacled eiders is evaluated in more detail below.

8.1.1 Effects in the Program Area

Long-term habitat loss – Winter travel

Snow trails, ice roads, and seismic vibroseis could damage tundra vegetation, and indirectly affect nesting habitat for spectacled eiders. However, we would not anticipate significant long-term habitat loss from winter routes associated with the exploration or development phases. Research indicates damage from winter trails occurs on higher, drier sites with little or no damage in wet or moist tundra areas (Pullman et al. 2003) when ice roads or snow trails are used. Jorgenson (1999) found impacts were limited to isolated patches of scuffed high microsites and crushed tussocks. Similarly, Yokel and VerHoef (2014), found disturbance from seismic and ice road activity was greatest in drier, shrubby habitat than in moist habitat. McKendrick (2003) studied several riparian willow areas and found although some branches were damaged, the affected plants survived. Because spectacled eiders prefer to nest in low moist tundra areas (Anderson and Cooper 1994, Anderson et al. 2009), and we anticipate limited damage in these habitats from winter routes associated with the proposed RFD, we conclude these activities are not likely to adversely affect spectacled eiders.

Long-term habitat loss – Gravel placement and extraction

Direct, permanent habitat loss would result from the extraction or placement of gravel fill impacting up to 2,000 acres (8.1 km^2) of wetlands under the proposed RFD. We also anticipate indirect habitat loss via disturbance would occur within a 200 m (656.2 ft.) zone of influence surrounding new development from on-pad activities, road operations, and maintenance activities. The two principal mechanisms through which disturbance can adversely affect eiders on their breeding grounds are:

1. Displacing adults and/or broods from preferred habitats during pre-nesting, nesting, brood rearing, and migration; and
2. Displacing females from nests, exposing eggs or small young to inclement weather and predators.

In the discussion below, we provide an assessment of potential loss of spectacled eider production resulting from estimated impacts to nesting habitat from the RFD.

Effects to nesting spectacled eiders
Broad-scale aerial surveys conducted in multiple years allow us to estimate how density of listed eiders varies across the landscape. These estimates were developed at a coarse regional scale and are not site- or habitat-specific; however, they reasonably reflect the density of breeding spectacled eiders in the Program Area. Observations during aerial surveys of the ACP in 2012–2015 indicate spectacled eider density within the surveyed subset of the Program Area was low, and ranged from 0 to 0.074 spectacled eiders/km^2 (USFWS 2015a), with a mean density of (0.01 spectacled eiders/km^2 or 0.005 nests/km^2; Figure 6.2).

However, because locations of activities associated with the RFD are unknown, and anchor fields could be located anywhere within the Program Area, we adjusted the estimated density of spectacled eiders to reflect average density across the entire Program Area. GIS raster data based on the aerial survey assigned density values (i.e., birds/km^2) using a grid of pixels overlaying the aerial survey area (Figure 6.2). The BLM provided GIS analysis which we adopt here, to incorporate the discrete aerial survey area and extend a theoretical boundary to cover the entire Program Area (Figure 8.1). Pixels outside the discrete aerial survey area were assigned a density of zero as these areas are not surveyed because they contain unsuitable habitat for nesting waterfowl. A mean density estimate of 0.003 spectacled eiders/km^2 for the entire area was calculated using all values contained in all pixels (Figure 8.1). This estimate was then adjusted for imperfect detection by assuming ~75% of spectacled eiders are seen during aerial surveys (Wilson et al. 2017), which resulted in an estimated 0.004 spectacled eiders/km^2. Last, assuming one potential nest for every two adults, we divided estimated density by two to convert the estimate to number of pairs or nests/km^2. Applying this process, we estimate an average density of 0.002 spectacled eider pairs or nests/km^2 in the Action Area.

To estimate impacts of the 2,000 acres of development projected to occur under the RFD plus the associated zones of influence, we estimated the total footprint size (direct impact + zone of influence) for each project feature described in Table 3.1 (i.e., pads for CPF, satellites, STP, barge landing, roads and VSMs). We also assumed:

- The footprint of each pad feature is approximately square;
- Impact areas for pipelines and VSMs would be limited to the directly impacted area, (i.e., there would be no zone of influence because, aside from occasional inspections and winter maintenance, on-going disturbance would not be associated with these features); and,
- The total impact area estimated for a single anchor field (137.6 km^2) should be multiplied by four to account for the four anchor fields proposed under the RFD.

Therefore, we estimate impacts to nesting habitat, including direct habitat loss from excavation or fill and the 200-m zone of influence surrounding development features, to be 31,546 acres or 128 km^2. To estimate the likelihood of eiders occurring within the area of habitat loss, we multiplied the average annual density of spectacled eider breeding pairs in the Action Area (0.002 eiders/km^2) by the size of the impacted area (128 km^2). While acknowledging the imprecision of this calculation and its associated assumptions, this approach estimates a potential loss of 0.3 spectacled eider nests each year, or 35 nests over the projected 135-year Program from long-term habitat loss and associated disturbance.

Disturbance from aircraft landings and on-tundra activities
An absence of empirical data makes it difficult to estimate the effect of aircraft landings and associated ground-based activities (e.g., archeological surveys, stick picking and/or other debris removal) on nesting and brood-rearing listed eiders. Our estimates are therefore based on a series of assumptions. Landing close to a nest would likely flush a female and prevent her from returning for as long as the aircraft and associated human activity remain near the nest. We expect there is a gradient effect centered on a given landing site, with effects presumably decreasing with increasing distance. However, in order to provide a numerical estimate, we assume all hens within a 600-m radius of a landing site would be flushed, and nests would subsequently be at increased risk of abandonment or depredation. The likelihood of a nesting hen flushing, and her reluctance to return to the nest, is assumed to decrease as distance from human activity increases. We assume no effects to nesting hens outside this 600-m radius. We also assume the 600-m radius centered on the landing site would encompass the area affected by associated on-tundra activities. After landing, field crews would conduct work over an unspecified area, and it is assumed all nesting spectacled eiders within the radius of the landing site would be disturbed. While aircraft landings and associated activities may also disturb or fragment hens with broods, we assume these impacts would be minor and temporary because hens with broods are mobile and could move away from disturbance.

Effects of disturbance associated with on-tundra summer aircraft landings, and the on-tundra activities they provide access for, are therefore assumed to result in reduced production of listed eiders, and we estimate effects of hypothetical summer aircraft landings on spectacled eider nesting success by using the following multi-step process:

1) Using the assumptions described above, we estimate potential effects of aircraft and human disturbance on spectacled eider nest success would occur within a 600-m radius, or 1.13 km^2 area, at each landing site, and multiply this area of impact by the total number of sites (for this analysis, we estimated up to 650 landings would occur within the nesting period each year, based on the number of similar aircraft operations that occur in NPR-A in recent years).
2) We then use our assumption regarding distance over which take-off and landing may affect eider nests, combined with estimates of eider density, to estimate the number of nests potentially subject to disturbance.
3) Finally, because not all nests subjected to disturbance would be expected to fail, we multiply the estimated reduction in nest success by the number of nests potentially disturbed, calculated in Step 3, to estimate the total number of nest failures that could result from aircraft activities during exploration and development.

These steps are explained in more detail below.

We assume summer activities in support of exploration and development (years 2 through 85) would include helicopter-based cleanup and site inspections from June through August. Total helicopter landings would vary depending on the number of winter exploration camps, areas of concern, and/or other debris.

The number of spectacled eider nests potentially disturbed near landing sites was estimated by multiplying the area impacted at each site (600-m radius, area of 1.13 km^2) by the number of

sites estimated each summer season (650 sites), and the adjusted estimated nest density for spectacled eiders (0.004 spectacled eiders/km^2 or 0.002 nests/km^2) as follows:

1.13 km^2 × 650 sites = 734.5 km^2 affected, 0.002 spectacled eider nests/km^2 × 734.5 km^2 = 1.47 spectacled eider nests potentially disturbed.

Nest success varies spatially and temporally. Using Mayfield methods, Bowman and Stehn (2003) estimated nest survival for spectacled eiders on the YK-Delta in 1994 – 2002 to be 0.678. At Utqiaġvik, Safine estimated spectacled eider nest survival to be 0.27 (95% CI: 0.08 – 0.51) in 2013 and 0.62 (95% CI: 0.28, 0.83) in 2014 (Safine 2015). Therefore, it is clear that not all nests will survive to hatch, and survival rates vary among years and areas.

Furthermore, we would not expect all nests from which females flush to be abandoned or depredated. For example, a site visit including one helicopter landing and human presence lasting 15 minutes would presumably result in lower risk of nest abandonment than a site visit requiring several landings and 8-10 hours of on-tundra activity; however, the difference is difficult to quantify. Bowman and Stehn (2003) and Grand and Flint (1997) reported human disturbance at spectacled eider nests on the YK-Delta reduced nest success by a mean of 9.9% (rounded to 10%). Although the likelihood of nest abandonment or depredation resulting from aircraft landings and on-tundra activities would presumably vary with the number, frequency, and duration of landings, and the type of activities at each site, we assume effects of human disturbance on nest success reported on the YK-Delta would also approximate the effects of aircraft disturbance on spectacled eider nests in the Program Area.

We also assume risk of nest failure where a hen is flushed twice (i.e., a hen is flushed during landing, returns to the nest, and is flushed again during takeoff) would be double (19.8%, which we round to 20%). We expect these circumstances would represent a worst-case-scenario (i.e., most impactful), and calculate annual nests lost to aircraft disturbance in the Program Area as follows:

> 1.47 spectacled eider nests potentially disturbed × 0.20 = 0.297 spectacled eider nests lost due to disturbance.

Using this process we estimate 0.29 spectacled eider nests would be lost each summer season due to on-tundra aircraft landings. Therefore, over the predicted 85-year period of on-going exploration and development, we estimate summer aircraft operations would result in loss of production of 25 spectacled eider nests.

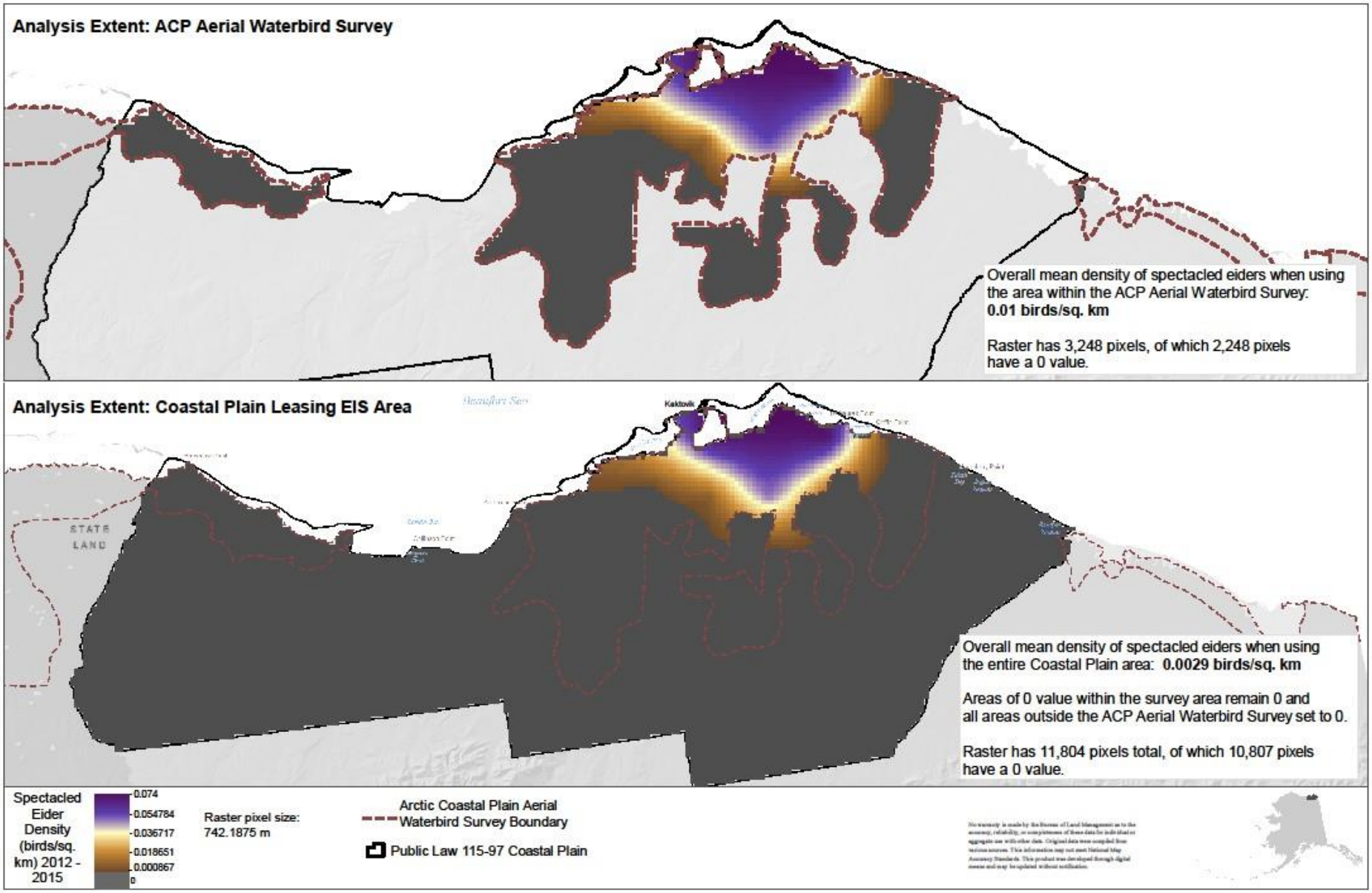

Figure 8.1. Average density of spectacled eiders/km^2 from the ACP aerial survey (top), and extrapolated to the entire project area (bottom).

Increased predators
As discussed in the *Environmental Baseline* for spectacled eiders, abundance of predators and scavengers has increased near industrial infrastructure to the west of the Program Area. In particular, ravens have expanded their breeding range on the ACP by using manmade structures for nesting and perching. Therefore, as the number of structures and anthropogenic attractants associated with development increase, reproductive success of listed eiders may decrease.

Estimating the effects of predators on spectacled eider production in the Program Area is extremely difficult. We expect structures associated with the RFD would increase the number of potential nesting and perching sites for ravens, and increased availability of anthropogenic food sources may also attract predators to the Action Area. However, measures requiring proper waste management and disposal (i.e., ROP 2 in the *Description of the Proposed Action*) would reduce potential increases in predators responding to anthropogenic attractants, and potential subsequent depredation of spectacled eider nests, and thereby diminish adverse effects to spectacled eiders from increased predator populations.

Spills
Accidental spills of oil or other petroleum products resulting from activities during all phases of the RFD could originate from anchor fields (e.g., CPF and satellite pads), terrestrial pipelines, and vessels operating in the Program Area. Exposure to oil may impact spectacled eiders in several ways, depending on the volume, location, and timing of a spill, and severity of exposure. For example, waterfowl directly contacting even small amounts of oil may lose the hydrophobic, insulative properties of their feathers and suffer impaired thermoregulation. These birds may become wet, hypothermic, or potentially drown (Jenssen 1994). Birds sublethaly exposed to oil may also suffer reduced reproductive success. Mortality of embryos and nestlings follows exposure to even small amounts of hydrocarbons (light fuel oil, crude oil, or weathered oil) transferred to eggs or ducklings from adults with lightly oiled plumage (Parnell et al. 1984; Hoffman 1990; Szaro et al. 1980; Stubblefield et al. 1995). Furthermore, waterfowl ingesting oil in the course of normal foraging or preening behaviors may experience toxicological effects including gastrointestinal irritation, pneumonia, dehydration, red blood cell damage, impaired osmoregulation, immune system suppression, hormonal imbalance, inhibited reproduction, retarded growth, and abnormal parental behavior (Albers 2003; Briggs et al. 1997; Epply 1992; Fowler et al. 1995; Hartung and Hunt 1966; Peakall et al. 1982). Birds also bioaccumulate hydrocarbons and are vulnerable to both accute and sublethal effects from contaminated food supplies (Albers 2003).

Although small spills (< 500 bbl) could occur during winter exploration, and year-round development and production activities associated with the RFD, due to measures required by Lease Stipulations 4 and 6, and ROPs 1-3, 21, and 46, spills are expected to be uncommon (BLM 2019). Furthermore, due to low density of spectacled eiders in the Action Area, we expect the likelihood of spectacled eiders encountering oil from a small terrestrial or marine spill in the Program Area would be low. Small spills would be more likely to occur than large spills, and we expect the majority of small spills would occur on production pads, be confined to a small area, and be remediated quickly. Small marine spills (i.e., at the barge landing) would be expected to be contained or weather quickly (i.e., within 24 hours; BLM 2019), and small onshore spills would likely be recovered (e.g., oiled soil or tundra would be removed and disposed of).

Although disturbance of spectacled eiders could occur during spill response efforts, this disturbance is expected to be minor and temporary as eiders would be expected to move away to a safe distance. In their proposed RFD, the BLM did not project any spills >500 bbl, therefore the consequences of a large spill are considered not reasonably certain to occur.

Because 1) spills are expected to be uncommon and of low volume, 2) spectacled eider density in the Program Area is low, 3) small spills are expected to be contained or weather quickly, 4) eiders would likely avoid disturbance associated with areas of active response, and 5) material handling, spill prevention, and response measures required by the BLM through Lease Stipulations and ROPs include numerous measures to minimize impacts to spectacled eiders in the event of a spill; we anticipate the consequences of small oil spills would, at most, impact low numbers of spectacled eiders over the 135 year life of the Program.

Collisions with structures

As discussed in the *Environmental Baseline*, migratory birds are at risk from collisions with human-built structures. Spectacled eiders migrating east during spring and west during summer/fall would be at risk of colliding with structures. These structures include light poles, buildings, drill rigs, and booms. During post-breeding migration in summer and fall, we anticipate male eiders would have the greatest collision risk in the Action Area, as many females remain in the nesting and brood rearing areas. Satellite telemetry studies from the eastern ACP indicated male spectacled eiders depart early in summer and generally remain close to shore, sometimes crossing overland, during westward migration (TERA 2002; see also Petersen et al. 1999). However, we anticipate spectacled eider collision risk with structures from mid-May through late July would be greatly reduced by the visibility of structures during 24 hours of daylight in the project area. When females and juveniles migrate during late summer/fall, decreasing daylight and frequent foggy weather conditions could increase collision risk. Longer nights increase the duration that eiders are vulnerable to collisions with unseen structures, and may compound susceptibility to attraction and disorientation from project lighting. However, we expect collision risk with structures would be reduced by the BLM's ROPs 26 and 27, which require lighting plans that would shield outward-radiating light and minimize potential disorienting and attracting effects to eiders, and communication tower configurations that would reduce collision risk to the extent practicable (e.g., co-location of towers adjacent to structures and avoidance of guys wires).

Overall, we anticipate the likelihood of collisions of spectacled eiders with structures that are part of the proposed RFD would be low because 1) good visibility of project structures in late-spring and early summer due to extended daylight would likely reduce collision risk, 2) facility lighting would be designed to reduce the potential for attracting or disorienting eiders in flight (BLM ROP 26), 3) project features would avoid guy wires to the extent practicable (ROP 27), and 4) spectacled eiders occur at low density in the Action Area. Given the uncertainty in location of structures which may result from the action we have no means to reliably estimate numbers of collisions. However, the estimated collision rate at the Liberty project, located west of the Program Area where large numbers of spectacled eiders occur is one bird over the course of its 25-year lifespan (Service 2018). Therefore, we would anticipate that few (<10) adult or fledged juvenile spectacled eiders could be killed or injured due to collisions with onshore RFD structures over the life of the Proposed Program.

8.1.2 Effects in the MTR

Disturbance from vessels

During development and production phases of the RFD, barges could encounter and disturb spectacled eiders within the MTR. However, because only two barges associated with the RFD would be operating at any given time, we expect barges would encounter very few individuals. We would also expect disturbance from barging operations to be minor and temporary because 1) barges would move slowly through the MTR, and 2) spectacled eiders can respond to vessel disturbance by moving away to a safe distance. Because disturbance to non-breeding, migrating, or marine foraging spectacled eiders would be so minor that injury or death is not expected, effects of vessel disturbance on these individuals would be insignificant.

Spills

BLM (2019) expects that accidental petroleum spills during sealift operations would be limited to small spills originating from vessels, and would most likely occur during fuel transfers. Spectacled eiders in the MTR could conceivably be impacted by unintentional fuel spills during barge re-fueling. However, the BLM has indicated spills during refueling operations would be uncommon, and any spills that take place would be small in size (<500 bbl), and be quickly contained and remediated (BLM 2019). Therefore we anticipate impacts to spectacled eiders from small refueling spills would be very limited in scale. Furthermore, because large spills (>500 bbl) resulting from the limited barging operations would be extremely unlikely, impacts from large spills on spectacled eiders in the MTR are not reasonably certain to occur.

Collisions with vessels

In addition to collisions with onshore structures in the Program Area, spectacled eiders migrating east during spring and west during summer/fall would be at risk of colliding with vessels in the MTR. Using the best available information, we provide an estimate of collision risk for spectacled eiders from barge traffic under the RFD. We first calculated the risk of collision per vessel operating during a single season in the Chukchi and Beaufort seas, based on observed eider (king and common) collisions during Royal Dutch Shell's (Shell) 2012 Exploratory Program, and the estimated number of eiders migrating through the region. We then multiplied the estimated collision rate (collisions per vessel per season) by the estimated abundance of spectacled eiders within the Action Area. Next we approximated the number of collisions expected for spectacled eiders for an estimated total of 270[9] vessels, over the life of the Program. Finally, because barges could operate over a longer period each season than the duration of Shell's 2012 open-water campaign, we adjusted the calculations to estimate collisions over an extended operations period (approximately 150-days[10] of predicted open-water barging operations per season). These calculations are presented in detail in Appendix A.

[9] BLM predicts an average of two barge transports per year (BLM 2018a). Therefore, over a 135-year Program, approximately 270 vessel trips would be expected.

[10] A typical open-water season is approximately 150 days. We expect the proposed barging operations would be of shorter duration (likely much shorter) than the length of a typical open-water season. We also acknowledge the timing of barge operations would be difficult to estimate with precision due to a number of factors including seasonal variation in sea ice conditions and marine forecasts. Therefore, lacking greater certainty in project timing, we have conservatively extrapolated our estimate to cover a full open-water season. We believe this represents an overestimation of collision risk to listed eiders and we expect actual collision risk to listed eiders may be considerably less than the level predicted.

Using the approach described above, we roughly estimate the loss of 12 adults and/or fledged juvenile spectacled eiders from collisions with barges during the proposed RFD. The reliability of these estimates may be limited by several factors. For example, 1) collisions are often episodic, and those resulting from light attraction in inclement weather may be particularly so, such that observations collected on a few structures/vessels in a single year may not be representative of collisions in general, 2) monitoring for collisions is difficult and an unknown number of collisions may go undetected, even by trained bird observers, and 3) low visibility often coincides with increased collisions (Ronconi et al. 2015), which may increase the number of undetected collisions. However, these estimates are based on the best information available.

Summary

In summary, appreciable adverse effects to spectacled eiders from increased predator populations are not anticipated. However, hypothetical adverse effects to spectacled eiders could occur through habitat loss, on-tundra disturbance, oil spills, and collisions resulting from the RFD. Over the 135-year Program, we roughly estimate:

- Loss of production from 35 nests due to long-term habitat loss and associated disturbance;
- Loss of production from 25 nests from on-tundra aircraft operations; and,
- Loss of a total of 17 adult or fledged juvenile spectacled eiders from collisions attributed to the RFD (5 due to collisions with structures and 12 due to collisions with vessels).

Because the most recent population estimate for North Slope-breeding spectacled eiders is 14,814 (13,501–16,128, 90% CI; Stehn et al. 2013), we would not anticipate population level effects from loss of production of 60 total nests, and 17 spectacled eider adults and/or fledged juveniles over the 135-year life of the Proposed Program.

8.2 Effects to spectacled eider critical habitat

We designated critical habitat for spectacled eiders on March 8, 2001 (66 FR 9145). Terrestrial critical habitat occurs on the YK-Delta and marine critical habitat occurs in eastern Norton Sound, Ledyard Bay (both are molting areas), and south of Saint Lawrence Island (the wintering area). We anticipate barging operations or other activities under the RFD would have no effect on terrestrial critical habitat for spectacled eiders. Primary constituent elements (PCEs) of eastern Norton Sound and LBCHU include marine waters greater than 5 m (16.4 ft) and less than or equal to 25 m (82.0 ft) in depth at mean lower low water (MLLW), along with associated marine aquatic flora and fauna in the water column, and the underlying marine benthic community. PCEs of critical habitat south of St. Lawrence Island include marine waters less than or equal to 75 m (246.1 ft) in depth, along with the associated marine aquatic flora and fauna in the water column, and the underlying marine benthic community (66 FR 9146).

Although barges associated with the RFD would follow established marine transit routes that ordinarily avoid critical habitat, because the MTR passes adjacent to LBCHU, barges could conceivably enter this unit during inclement weather or other emergencies. However, we expect these instances would be rare. Furthermore, temporal overlap between vessel traffic and large concentrations of eiders within the LBCHU would be minimized by ROP 46 which would require operators to follow Service guidance when transiting through LBCHU or any other designated critical habitat for listed eiders (BLM 2019). In addition, given the size of LBCHU and the relatively small number of vessels that could operate within it at any one time, we do not

anticipate barge traffic during the development or production phases would appreciably affect spectacled eider access to, or use of, LBCHU such that the function and conservation value of the LBCHU for spectacled eiders would be reduced.

Accidental fuel spills during sealift operations would be limited to small spills originating from vessels, and would most likely occur during fuel transfers (BLM 2019). Wintering habitat south of St. Lawrence Island, the nearest critical habitat unit to Dutch Harbor, is 800 km away. Therefore, it is extremely unlikely that any oil from re-fueling spills would be carried into designated critical habitat, and we do not anticipate adverse impacts to spectacled eider critical habitat from refueling spills.

Because 1) impacts to terrestrial critical habitat from the RFD are not expected, 2) overlap between barge traffic, and subsequent disturbance to designated marine critical habitat, is expected to be infrequent and limited to minor short-term disturbance, 3) BLM's ROP would reduce impacts if vessels enter marine critical habitat, and 4) due to geographic separation, impacts from re-fueling spills are not anticipated; cumulative impacts from the Proposed Program are expected to be insignificant. Therefore, we conclude the proposed action is *not likely to adversely affect* designated spectacled eider critical habitat.

8.3 Effects to Steller's eiders

Hypothetical adverse effects to Alaska-breeding Steller's eiders from the proposed RFD could occur through long-term habitat loss, disturbance from new infrastructure and on-tundra aircraft landings, increased predators, and collisions with structures. Additionally, Steller's eiders in the MTR could be affected by disturbance, fuel spills, and/or collisions with vessels.

8.3.1 Effects in the Program Area

Long-term habitat loss, disturbance, increased predators, and collisions with structures

As described in the *Status of the Species*, Steller's eiders in Alaska breed almost exclusively on the ACP, migrating to the breeding grounds in late spring with some individuals remaining in the region as late as mid-October. However, nesting is concentrated in tundra wetlands near Utqiaġvik and Steller's eiders occur at extremely low density elsewhere on the ACP (Figure 8.2). USFWS aerial surveys for breeding eiders conducted annually on the ACP from 1992–2010 reported only 5 observations of Steller's eiders east of the Colville River, with the most recent observation in 1998 (USFWS Alaska Region Migratory Bird Management, unpublished data). Because available data indicate Steller's eiders are extremely unlikely to nest within the Program Area (USFWS 2015a), impacts to nesting Steller's eiders from long-term habitat loss, disturbance from on-tundra aircraft landings, increased predators, and collisions with onshore structures associated with the RFD are not expected.

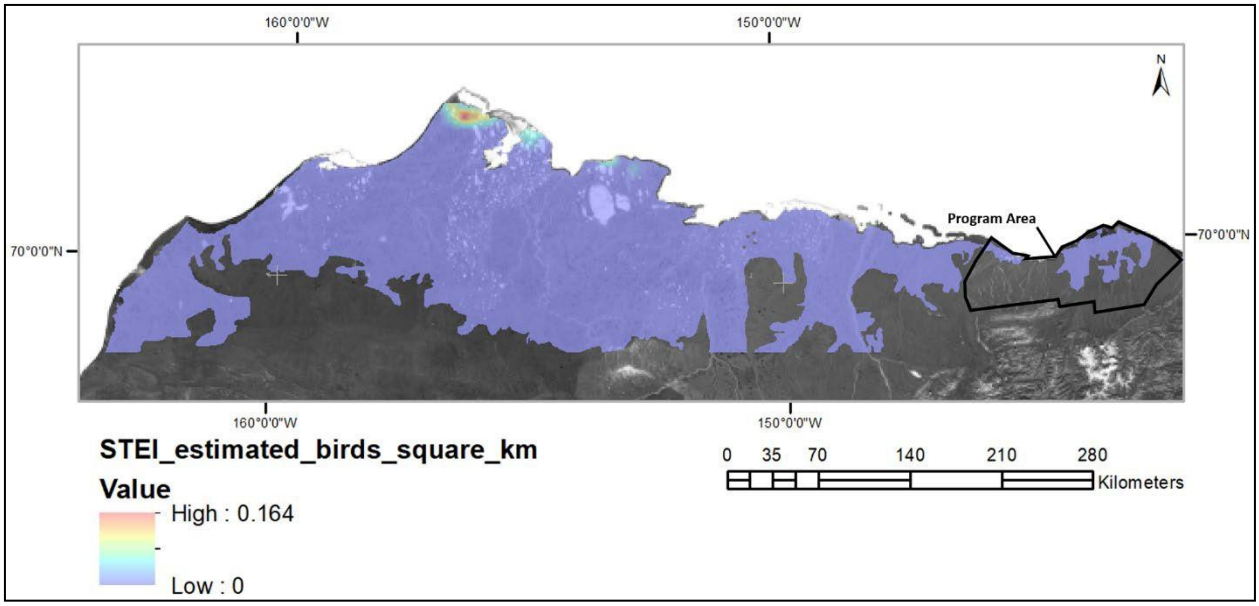

Figure 8.2. Density distribution of Alaska-breeding Steller's eiders observed on the North Slope, including the Program Area, during breeding pair surveys in June, 2012 – 2015 (USFWS 2015a). Colored pixels indicate the aerial survey area. Gray areas are not surveyed because the habitat unsuitable for nesting waterfowl.

Although unlikely, small numbers of non-breeding Steller's eiders could conceivably pass through the Program Area, and if so, could potentially be subject to disturbance from summer activities proposed in the RFD (e.g., development and/or production activities, or on-tundra aircraft landings). However, we expect disturbance to non-breeding eiders would be minor because non-nesting individuals can respond to human presence or disturbance by moving away to a safe distance. Because disturbance would be so minor that injury or death is not expected, effects of disturbance from summer activities to non-breeding Steller's eiders in the Program Area would be insignificant.

8.3.2 Effects in the MTR

Disturbance from vessels

During development and production phases of the RFD, barges could encounter and disturb Steller's eiders within the MTR. However, only two barges associated with the RFD would be operating at any given time, and because Steller's eider density is relatively low throughout the MTR, we expect barges would encounter very few individuals. We would also expect disturbance from barging operations to be minor and temporary because 1) barges would move slowly through the MTR, and 2) Steller's eiders can respond to vessel presence or disturbance by moving away to a safe distance. Because disturbance to non-breeding, migrating, or marine foraging Steller's eiders would be so minor that injury or death is not expected, effects of vessel disturbance on these individuals would be insignificant.

Spills

Accidental fuel spills during sealift operations would be limited to small spills originating from vessels, and would most likely occur during fuel transfers (BLM 2018a). Steller's eiders in and

around Unalaska Island could conceivably be impacted these spills during barge re-fueling operations in Dutch Harbor. However, because Steller's eider would only be present near Unalaska Island during winter months and barging would take place during the open-water season, temporal overlap between wintering Steller's eiders and barge refueling operations would be unlikely. Furthermore, the BLM's analysis suggested spills during refueling operations would be uncommon, and any spills that take place would be small in size (<500 bbl), and be quickly contained and remediated (BLM 2019). Large spills (≥ 500 bbl) are not anticipated. Therefore we anticipate impacts to Steller's eiders from refueling spills would be insignificant.

Collisions with vessels
Steller's eiders migrating east during spring and west during summer/fall would be at risk of colliding with vessels in the MTR. Collision risk for migratory sea ducks is discussed in greater detail in the *Environmental Baseline*, however we provide a brief discussion regarding collision risk for Steller's eiders below.

Using the best available information, we provide an estimate of collision risk for Steller's eiders from barge traffic under the RFD. We begin by calculating the risk of collision per vessel operating during a single season in the Chukchi and Beaufort seas, based on observed eider (king and common) collisions during Royal Dutch Shell's (Shell) 2012 Exploratory Program, and the estimated number of eiders migrating through the region. We then multiply the estimated collision rate (collisions per vessel per season) by the estimated abundance of Steller's eiders within the Action Area. Next we approximate the number of collisions expected for Steller's eiders for an estimated total of 270 vessels, over the life of the Program. Finally, because barges could operate over a longer period each season than the duration of Shell's 2012 open-water campaign, we adjust the calculations to estimate collisions over an extended operations period (approximately 150-days of predicted open-water barging operations per season). These calculations are presented in detail in Appendix A.

Using the approach described above, we roughly estimate the loss of 1 adults and/or fledged juvenile Steller's eider from collisions with barges during the proposed RFD. The reliability of this estimate may be limited by several biases. For example, 1) collisions are often episodic, and those resulting from light attraction in inclement weather may be particularly so, such that observations collected on a few vessels in a single year may not be representative of collisions in general, 2) monitoring for collisions is difficult and an unknown number of collisions may go undetected, even by trained bird observers, and 3) low visibility often coincides with increased collisions (Ronconi et al. 2015), which may increase the number of undetected collisions. However, this estimate is based on the best information available.

In summary, 1) appreciable effects from long-term habitat loss on nesting Steller's eiders are not expected, 2) effects of disturbance from vessel traffic to non-breeding or migrating eiders would be minor and temporary, and 3) adverse effects from small refueling spills would be unlikely, and large spills are not reasonably expected to occur. However, we estimate the loss of one adult or fledged juvenile Steller's eider due to collision with vessels over the 135-year life of the Proposed Program.

8.4 Effects to Steller's eider critical habitat

The Service designated critical habitat for the Alaska-breeding population of Steller's eiders on March 5, 2001 (66 FR 8850). Terrestrial critical habitat occurs on the YK-Delta (which is not within the Action Area) and marine critical habitat occurs in nearshore waters at Kuskokwim Shoals, Seal Islands, and Nelson and Izembek lagoons. PCEs of these marine critical habitat units for Steller's eiders include marine waters up to 9 m (30 ft) deep and the underlying substrate, the associated invertebrate fauna in the water column, and the underlying marine benthic community (66 FR 8850).

Barge traffic is expected to follow established shipping routes and, because designated critical habitat is geographically removed from the MTR, even in cases of inclement weather or emergencies, it would be unlikely for barges to enter marine critical habitat units for Steller's eiders. Therefore, we anticipate impacts of vessel presence on Steller's eider marine critical would be insignificant.

Accidental fuel spills during sealift operations are anticipated to be limited to small spills originating from vessels, and would most likely occur during fuel transfers (BLM 2018a). Izembek Lagoon, the nearest critical habitat unit to Dutch Harbor, is 250 km away. Therefore, it is extremely unlikely that any oil from infrequent small re-fueling spills would be carried into designated critical habitat. Furthermore, the BLM has indicated any spills that take place during refueling operations would be quickly contained and remediated (BLM 2019). Therefore we anticipate impacts to Steller's eider critical habitat from refueling spills would be insignificant.

Because 1) impacts to terrestrial critical habitat from the RFD are not expected, 2) overlap between barge traffic and designated marine critical habitat is not expected, and 3) due to geographic separation, impacts from infrequent, small re-fueling spills are not anticipated; impacts from the proposed Program to Steller's eider critical habitat are expected to be insignificant. Therefore, the proposed action is *not likely to adversely affect* designated Steller's eider critical habitat.

8.5 Effects to Polar Bears

In this section we evaluate potential effects of the proposed action to polar bears. First, we review how polar bears use the Coastal Plain of Arctic Refuge, dividing the discussion between denning and non-denning bears. We use this approach because they occur at different times of the year, involve different members of the population; and because denning polar bears are more sensitive to disturbance, and are less capable of moving away from disturbance or other impacts. In our review, we highlight distribution and timing of use by bears, which is useful in considering potential exposure to impacts caused by industry activities. Second, we briefly review the anticipated activities of industry (i.e., the RFD, referring the reader back to *Project Description*, above, and the BA for more detail). Here, too, we highlight location and seasonal timing, again to help describe potential exposure or intersect between the activities of polar bears and industry. We then review factors that would serve to increase or decrease potential impacts, including characteristics of the proposed Program and/or other existing regulatory programs. Last, we identify and discuss the potential mechanisms of impact to polar bears, which include disturbance, human-polar bear interactions, and exposure to spilled oil or other contaminants.

8.5.1 Polar Bear Use of the Coastal Plain of Arctic Refuge

Maternal Denning

Polar bears breed on sea ice from March to June, peaking in early April through mid-May (Schliebe et al. 2006). Pregnant females later move from areas and habitats occupied in late summer and autumn, which are generally on pack ice but increasingly on shore as sea ice conditions in late summer deteriorate (Rode et al. 2015), to prospect for den sites in suitable denning habitat in late October or early November (Derocher et al. 2004). Females excavate a den in drifted snow in fall or early winter (Amstrup and Gardner 1994), enter the den in late November, give birth in late December, and emerge in late March or April (Ramsay and Stirling 1988). After emerging from dens, most females with cubs remain near dens (within 100 m; Smith et al. 2007) for several days [range 1 – 18 days (Streever and Bishop 2014); mean 6 to 8 days (Smith et al. 2007] before permanently abandoning the den site.

Polar bears from the SBS subpopulation den on drifting pack ice, shorefast ice, and land (Amstrup and Gardner 1994), although only terrestrial dens, which can occur on barrier islands, along the coast, or inland, would occur within the Action Area (Figure 8.3). Key characteristics of maternal denning habitat are surface anomalies or topographic features that collect drifting snow in autumn and early winter, as dens require snow accumulations at least 1.5 m deep (Liston et al. 2015). Terrestrial dens occur on barrier islands and on the lee side of coastal bluffs and banks lining rivers, streams or lakes (Amstrup and Gardner 1994; Durner et al. 2001, 2003, 2006; Fischbach et al. 2007; summarized by USFWS 2010 and USFWS 2016).

Historical records of polar bear den sites provide insight into the characteristics of suitable denning habitat, the distribution and extent of suitable habitat, the distribution of known den sites, and the number of dens estimated to occur in the Program Area. Durner et al. (2001, 2003) identified characteristic habitat features of terrestrial maternal den sites and Durner et al. (2006) used high-resolution aerial photographs to inventory and map suitable denning habitat within Arctic Refuge.

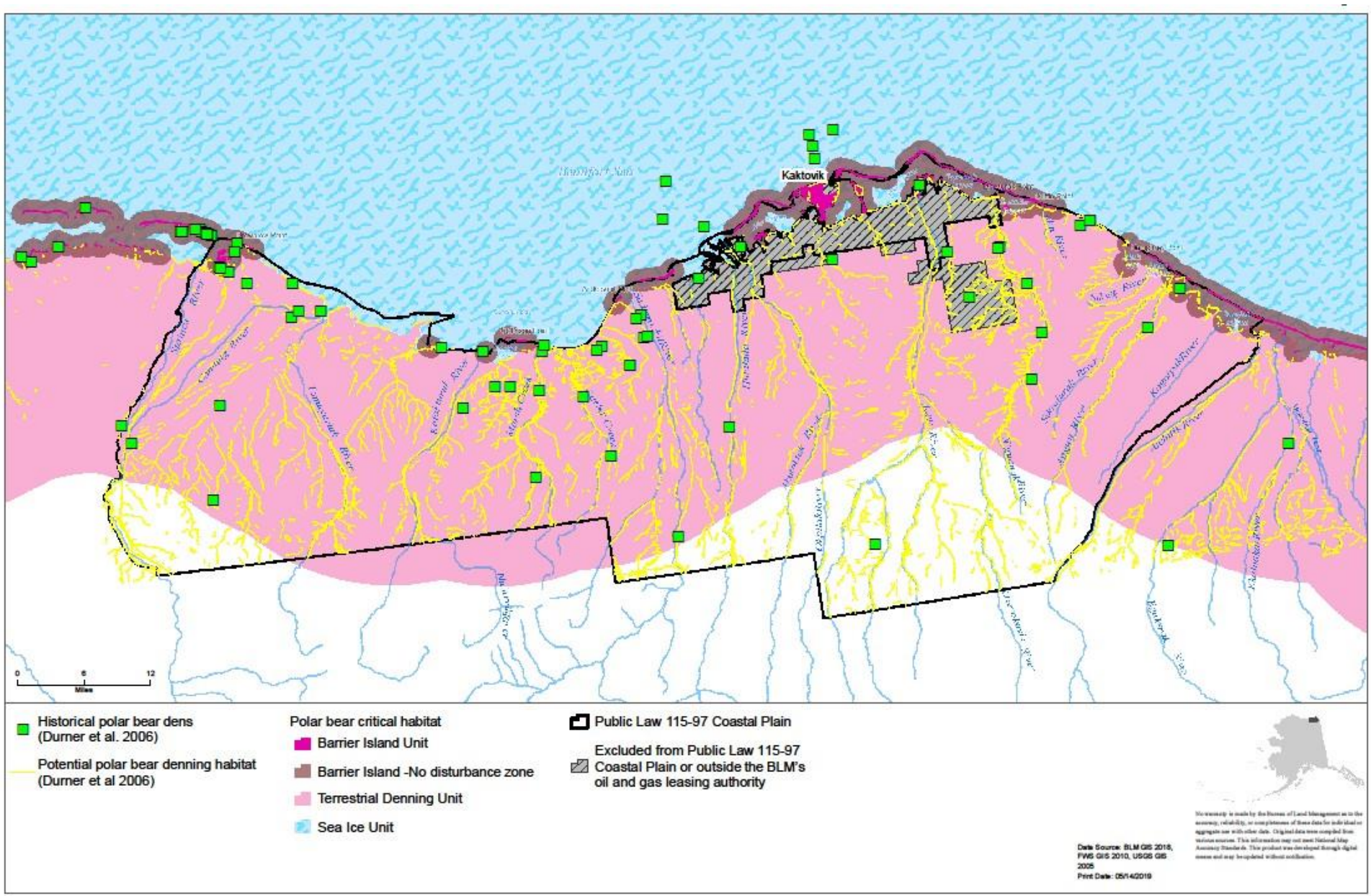

Figure 8.3. Historical polar bear dens (green), potential polar bear denning habitat (yellow), and polar bear critical habitat (pink) within the Coastal Plain of Arctic Refuge.

As elsewhere on the ACP, terrestrial den sites in Arctic Refuge occur on barrier islands and bluffs along the coast, river and stream banks, and lakeshores. Terrestrial habitat with features suitable for denning is broadly distributed, yet also relatively scarce on the landscape. Within the Coastal Plain of Arctic Refuge, suitable denning habitat was found to occur along 1,769 linear miles of banks (BLM 2019, based on Durner et al. 2001, 2006), with an area of 4,600 acres (assuming an average width of 21 feet, following Durner et al. 2001), which comprises less than 0.3 percent of the total area.

Historical records of polar bear den sites include dens found by several means, including targeted den searches, dens found incidentally during other human activities, and radio tracking of collared female polar bears. Because targeted den searches and incidental observations can overemphasize den sites near villages or industrial sites, and underemphasize dens in more remote areas, dens found by tracking females wearing radio collars, particularly those tracked by satellites, reduce or avoid biases associated with dens found opportunistically. Two maps (developed at different scales) based on den locations found by tracking females with radio collars illustrate the variation in density of terrestrial den sites across the landscape. Across the ACP, terrestrial den sites used by females from the SBS subpopulation have occurred disproportionately to the east, including within Arctic Refuge (Figure 8.4[11]). Within the Coastal Plain of Arctic Refuge, den density has been notably higher in two areas: 1) near the northwest corner of the Program Area, overlapping significantly with the Canning River Delta; and 2) in a broad area south of Camden Bay (Figure 8.5). Maternal dens have occurred in moderate density in a third area, in the eastern half of the Program Area, near and along several drainages including the Niguanak River (Figure 8.5).

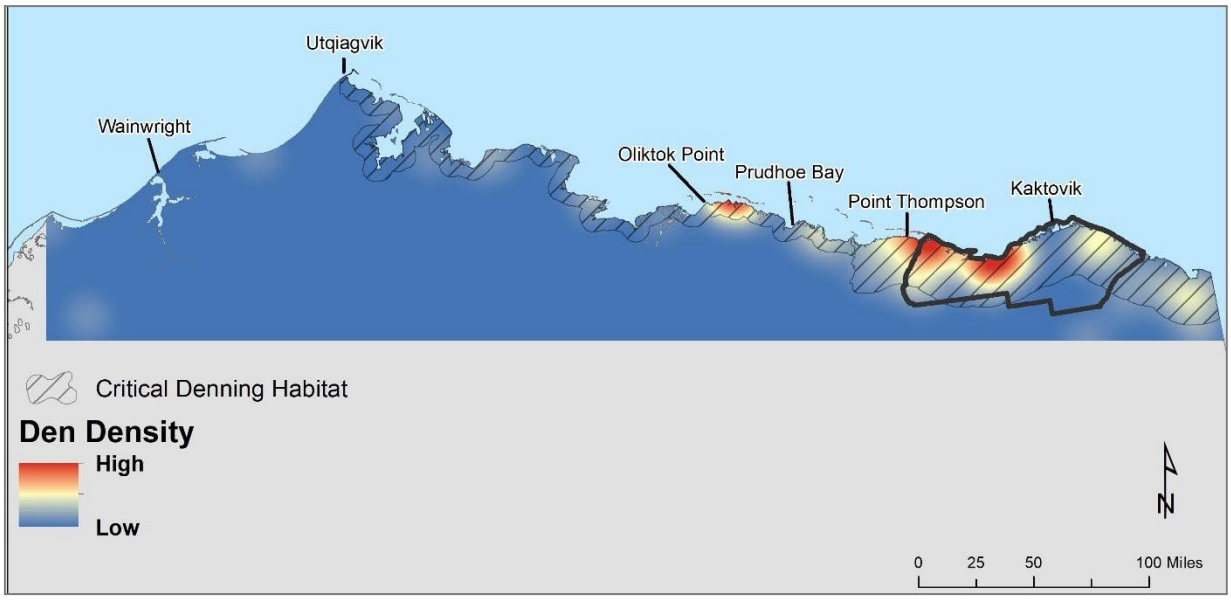

Figure 8.4. Relative density of polar bear maternal dens on the North Slope of Alaska.

[11] Figures 8.4 and 8.5 are density kernel maps developed Service and U.S. Geologic Survey scientists using Program R (R Core Development Team 2017) based on 33 den locations discovered by tracking VHF-radio telemetery and GPS collared females (den sites from Durner et al. 2010; G. Durner unpublished data).

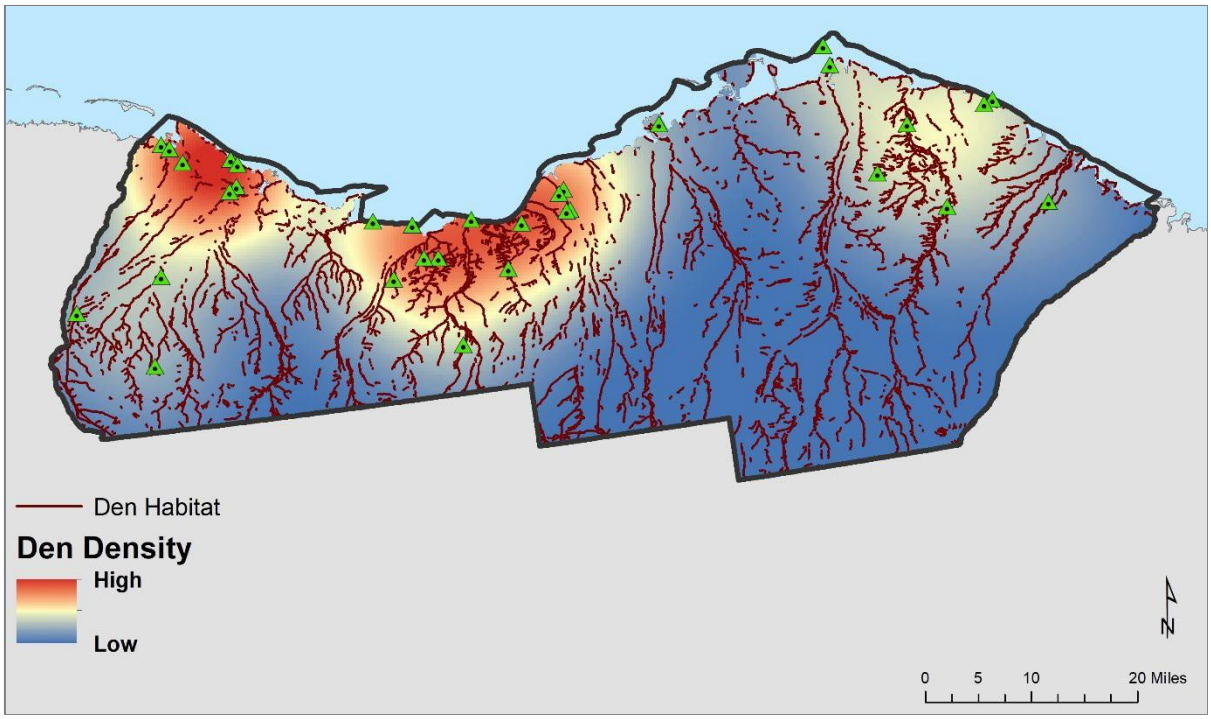

Figure 8.5. Relative density of polar bear maternal dens and suitable denning habitat within the Coastal Plain of Arctic Refuge.

Service scientists recently estimated the number of maternal polar bears occurring on the Coastal Plain of Arctic Refuge using a multi-step process (Service unpublished data). Olson et al. (2017), using radio collar data from 2007 – 2013, found that 55% (16 of 29) of females from the SBS subpopulation denned on land. Of dens from the SBS subpopulation that occurred on land, 23% (9 of 39 dens located with satellite collars in 2000 – 2010) were within the Coastal Plain of Arctic Refuge. Combining these estimates with a recent estimate of abundance of the SBS subpopulation (900 bears; Bromaghin et al. 2015), the proportion of adult females within the population (0.351; Regehr et al. 2010), and the proportion of adult females breeding (0.482; derived from Regehr et al. 2010), Service scientists estimate approximately 19 terrestrial maternal dens occur in the Coastal Plain of Arctic Refuge each year (USFWS unpubl. data).

Recent observations indicate the distribution of maternal dens in the Beaufort Sea region is shifting, from west to east on sea ice, and landward, from sea ice to onshore areas, in response to decreasing quality and stability of sea ice as arctic regions warm (Fischbach et al. 2007). As these trends continue, in the long-term it may become increasingly difficult for females to access terrestrial denning habitat in autumn and early winter as the distance between pack ice and coastal areas increases (Derocher et al. 2004; USFWS 2016; Olson et al. 2017). Continuing changes in sea ice will likely affect the future distribution of dens. However, the number or proportion of denning polar bears in the Coastal Plain of Arctic Refuge will likely increase unless or until the widening distance between the edge of pack ice and land reduces access to terrestrial denning habitat (Derocher et al. 2004; Rode et al. 2015; USFWS 2016).

Non-denning polar bears

Polar bears of the SBS subpopulation historically spent the majority of the year on sea ice (Amstrup 2000; Atwood et al. 2016). Amstrup (2000) noted that for the Chukchi and Beaufort sea areas of Alaska and northwest Canada, less than 10 percent of radio relocations were on land, the majority of which were females occupying maternal dens during winter. However, polar bears also use terrestrial habitat on the ACP during late summer and fall, particularly where and when sea ice conditions are poor. Schliebe et al. (2008) reporting on weekly aerial surveys of the coast between Utqiaġvik and the Canada border in September – October of 2000 – 2005, noted up to 8.6 bears/100 km or 122 polar bears total. Relative to estimates of the number in the SBS subpopulation at that time, Schliebe et al. (2008) estimated that an average of 3.7 percent (up to a maximum of 8 percent) of polar bears in the SBS subpopulation occurred along the coast of Alaska. The number observed when ice was farther from the coast, suggested continuing deterioration in sea ice conditions will result in increased use of terrestrial habitat in late summer and fall. Density was over six times higher in areas where subsistence-hunted whale carcasses were available, with the highest number (69% of total bears onshore) near Kaktovik, Cross Island, and near Utqiaġvik (Schliebe et al. 2008). Wilson et al. (2017), analyzed results from the same surveys but included later years and a longer interval (2000 – 2014), and reported the mean number of bears onshore was 140 (95% CI 127-157). As in earlier years, polar bears were concentrated near Kaktovik, with 63.8% of observations (95% CI 58.4 – 68.9%) on or adjacent to Barter Island, and 25.1% of observations (95% CI 14.4 – 38.8%) near Cross Island. Bears were more likely to occur in coastal areas with early ice retreat, whale carcasses, and barrier islands. Comparing counts to estimates of population size, Wilson et al. (2017) estimated about 15% of the SBS subpopulation occurred along the Alaska coastline during any given week between late Aug and late October. There was no trend in the number of bears using the coast but the highest number occurred in 2012, corresponding to the year with lowest sea ice extent.

Atwood et al. (2016) also examined use of the Beaufort Sea coast by polar bears in late summer and fall in the same interval (2000 – 2014) but using information from radio-collared female polar bears. They found a marked decline in sea ice during September in the southern Beaufort Sea and the average duration of the open-water season increased by 36 days. Although most individuals remained on sea ice during summer, the proportion of the population coming ashore tripled, from 5.8 to 20 percent in 15 years (with a high of 37 percent in 2013). Bears that came ashore did so earlier (5 days/decade on average), departed later (7days/decade on average) and stayed longer (7days/decade on average), and these changes related to declines in sea ice extent and changes in sea ice phenology. Including radio-tracking information from the late 1990s, when use of terrestrial habitat during open-water season was rare and limited to short intervals, the average time bears stayed on land increased by 31 days (Atwood et al. 2016). Importantly, Atwood et al. (2016), using radio telemetry data, found an increase in the *proportion* of the SBS subpopulation coming ashore, although Wilson et al. (2017), using counts in the same area in the same time interval, did not detect an increase in the *absolute number* along the shore. Multiple possible explanations exist, but Wilson et al. (2017) concluded that no detectable trend in the number counted comports with an increasingly larger proportion of a subpopulation (as found by Atwood et al. 2016) that was declining in abundance (from approximately 1,500 in 2004 to 900 in 2010, as found by Bromaghin et al. 2015).

Polar bears of the SBS subpopulation are also increasingly being found on-shore in winter, possibly in response to greater numbers of bowhead whale carcasses being left on-shore after autumn subsistence hunts. Herreman and Peacock (2013) used genetic mark-recapture methods near Utqiaġvik to document use, turnover, and the number, age, and sex of polar bears visiting carcasses, and estimated that 228 individual bears fed at the bone pile in the winter of 2010 – 2011 (November to February), possibly representing up to 15 percent or more of the SBS subpopulation. Extending their observations made near Utqiaġvik to bone piles elsewhere on the North Slope (i.e., Cross and Barter islands) Herreman and Peacock (2013) observed that increasing food subsidies from subsistence harvest remains may benefit polar bears but could also increase the risk of polar bears being killed in defense of life by hunters, residents, tourists, or industry workers.

8.5.2 Industry Activities

To facilitate analysis of effects from the Proposed Program, the BLM provided a hypothetical RFD based on Alternative B. Also relevant to potential effects are the associated Lease Notices, lease stipulations, and Required Operating Procedures that are incorporated into the BLM's Proposed Program. The RFD and associated provisions are discussed in detail in the *Project Description*, above, but a brief summary as it relates to effects to polar bears is provided here.

Phase 1 – Exploration

Exploration would include seismic surveys, exploratory drilling, and the development and use of temporary winter routes and support facilities. Seismic surveys would be conducted during winter using survey vehicles accompanied by mobile camps, which would be pulled by bulldozers or other tracked vehicles and would provide accommodations for survey personnel. The BLM predicts an area-wide 3D seismic exploration within the next two years, with additional lease-level seismic surveys likely to follow within three years after the first lease sale. Compared to other oil and gas activities, seismic surveys would likely be extensive in scale but short-term in duration.

Exploratory drilling would occur during winter from temporary ice pads; additional delineation wells could be drilled nearby in subsequent winters if encouraging results were found. After drilling and evaluation were completed, wells would be temporarily suspended for future use in production, or plugged and abandoned.

Seismic and exploratory activities would be supported by the construction and use of ice roads, packed snow trails, and aircraft, and temporary camps would provide for personnel. The location of exploratory and delineation wells are unknown, as are the routes of ice roads and snow trails to be used to connect exploration sites to existing developed areas, such as Point Thomson or Kaktovik, or future staging pads established along the coast. Seismic surveys, exploratory drilling, and the construction and use of winter routes would generally take place in winter, which would overlap with the maternal denning period for polar bears.

Phase 2 – Development

Development would include construction of production and support facilities that could occupy up to 2,000 acres of Federal lands within the Program Area. Facilities anticipated include up to four anchor fields, each of which would occupy an anchor pad of about 50 acres that would

contain one CPF, an airstrip, storage tanks, a communications center, waste treatment unit, and worker camp. Each CPF would support approximately 4 satellite pads (estimated 14 total), each of which would contain about 30 production wells and occupy about 12 acres. A seawater treatment plant could be constructed along the coast to provide saline water for various production functions.

The plant, if needed, would be expected to occupy about 15 acres and require a gravel access road and pipelines to CPFs. It is estimated that approximately 174 miles of gravel roads would be built to connect these facilities, and it is expected that the gravel would be extracted from multiple material sites throughout the Program Area. Heavy equipment and materials needed for development are likely to be transported from Dutch Harbor by barge during the open-water season (currently July – October) to a barge landing on the coast of the Coastal Plain of Arctic Refuge, which would occupy ~ 10 acres. Transport of materials in marine waters would occur along an established shipping route.

The locations of CPFs, satellite pads, and other infrastructure are currently unknown but would be refined over time as results of seismic surveys and exploratory wells become available. The ultimate locations of facilities would also be partially constrained by lease stipulations and ROPs.

Phase 3 – Production
Following construction of gravel infrastructure, facility construction and production drilling would begin. Each anchor pad would contain a CPF, generator, storage tanks, communications center, waste treatment units, and maintenance shop. Satellite (production) pads would contain about 30 wells, with about 8 drilled per year. Drilling could take place on multiple pads at once, depending on availability of drill rigs. Pipelines would connect satellite pads to the nearest CPF and each CPF would be connected by pipeline to the TAPS pipeline. Approximately 212 miles of pipeline, impacting up to 8 acres, are expected to be needed in the Program Area. Field production would be expected to last up to 50 years before abandonment.

Phase 4 – Abandonment and Reclamation
During decommissioning and abandonment, well casings would be cut off below grade, plugged, and buried. All equipment, facilities, solid waste, pipelines and VSMs would be removed. Gravel would be moved for use elsewhere or returned to mine sites.

Hypothetical Schedule
General timeframes over which Phases 1 – 4 would occur were estimated, with exploration, development, and production potentially persisting for up to 85 years, with abandonment and reclamation potentially occurring until up to 130 years after the ROD.

8.5.3 Factors Serving to Minimize Effects

Protections Inherent in the Project Description
The EIS presents several alternatives and multiple potential combinations of protective measures from which final decisions could be made in the final Record of Decision (BLM 2019). For the purposes of this BO, however, we evaluated potential impacts of the RFD under Alternative B, with its associated lease stipulations, timing limitations, Lease Notices, Required Operating

Procedures[12] and other standard terms and conditions that would directly or indirectly reduce impacts to polar bears. We refer the reader to the *Project Description* and the BA for more extensive discussions of the RFD and Alternative B but we briefly highlight here the important considerations that would affect the spatial and temporal intersect between activities of polar bears and industry.

The Tax Cuts and Jobs Act of 2017, Public Law 115-97 (PL 115-97): The legislation setting the Proposed Program in motion directs the Secretary of the Interior to develop the oil and gas leasing Program described in this BO. This law limits the area on Federal lands within the Program Area that could be covered by production and support facilities to 2,000 surface acres.

Several lease stipulations would apply additional protections to specific areas important to polar bears. Importantly, 359,400 acres (~23%) would be subject to no surface occupancy (NSO) restrictions, and 585,400 acres (~37%) would be subject to timing limitations (TLs). Specific lease stipulations relevant here include:

Lease Stipulation 1: This stipulation provides protection for specific identified rivers and streams by prohibiting permanent oil and gas facilities, including gravel pads, roads, airstrips, and pipelines within one mile of five rivers and ½ mile of four other rivers and one creek (Figure 4.1). On a case-by-case basis, essential pipelines and roads would be permitted, with specific additional limitations. This protection includes several drainages (Canning River Delta, Katakturuk River, Sadlerochit River, Jago River, and Marsh Creek) that overlap, at least in part, with high density polar bear denning areas, but does not include Carter Creek, which overlaps with a high density denning area, and the Niguarak River, which overlaps with a moderate density denning area (Figure 8.5).

Lease Stipulation 4: This stipulation prohibits exploratory well drill pads, production well drill pads, and CPFs in coastal waters, lagoons, or barrier islands within the boundaries of the Coastal Plain of Arctic Refuge. Other oil and gas facilities, specifically barge landings, docks, spill response staging and storage areas, pipelines, artificial islands, platforms, ice or other roads, and bridges and causeways may be approved on a case-by-case basis, after specific criteria designed to protect other resources and interests are met.

Lease Stipulation 9: A subset of the objective of this stipulation is to "minimize hindrance or alteration of polar bear use and movement in coastal habitats; and protect and minimize disturbance from oil and gas activities to coastal habitats for polar bears and seals." It also includes the requirement/standard that "Before beginning exploration within 2 miles of the coast, the lessee/operator/contractor would develop and implement an impact and conflict avoidance and monitoring plan to asses, minimize, and mitigate effects on the infrastructure and its use on these coastal habitats and their use by wildlife and people."

[12] All proposed ROPs will apply to any exploration and development actions that are not dependent on an oil and gas lease (e.g., the area-wide seismic survey contemplated in the June updates to the BA [BLM 2019b]), in the same manner the ROPs would apply to lease-based activities (BLM email dated October 23, 2019).

Many of the Required Operating Procedures (notably 1, 3, 4, 10, 25, and 46) will also serve to reduce potential impacts to polar bears either directly, or by reducing the potential for human-polar bear interactions.

PDCs

During this framework programmatic consultation with the BLM we developed and agreed upon four Project Design Criteria (PDCs) designed to minimize and monitor effects of the Proposed Program to polar bears (and other listed species) and to describe how compliance with section 7(a)(2) of the ESA will be ensured. The first two stem from lease notices that the BLM will issue in writing to all lessees[13], serving notice that all future activities to be authorized under the Program will be required to comply with the MMPA and ESA. The third and fourth reflect procedures developed and agreed to by the BLM and Service to be used when jointly managing the framework program as step-down consultations on future proposed activities are conducted. These four PDCs are repeated here because these measures are important aspects of the BLM's proposed action that figure prominently in our evaluation of the potential effects of the Proposed Program, discussed below.

1. Section 7 Consultation on Future Activities – The lease areas may now or hereafter contain plants, animals, or their habitats determined to be threatened or endangered. The BLM may require modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activities that would contribute to the need to list such a species or designate critical habitat for listed species. The BLM would not approve any activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the ESA, as amended (16 United States Code [USC] 1531 et seq.), including completion of any required procedure for conference or consultation.
2. The lease area and/or potential project areas may now or hereafter contain marine mammals. The BLM may require modifications to exploration and development proposals to ensure compliance with Federal laws, including the Marine Mammal Protection Act (MMPA). The BLM would not approve any exploration or development activity absent documentation of compliance under the MMPA. Such documentation shall consist of a Letter of Authorization, Incidental Harassment Authorization, and/or written communication from USFWS and/or NMFS confirming that a take authorization is not warranted.
3. The Service and the BLM will conduct programmatic reviews by meeting at least annually beginning one year after the first Lease Sale. These reviews will evaluate, among other things, 1) whether activities proposed are consistent with the RFD, as described, for the Proposed Program, 2) whether the nature and scale of predicted

[13] The requirements of Lease Notices 1 and 2, which form the basis of PDCs 1 and 2, will also apply to any exploration and development actions that are not dependent on an oil and gas lease (e.g., the area-wide seismic survey in the June updates to the BA [BLM 2019b]), in the same manner the Notices would apply to lease-based activities (BLM email dated October 23, 2019).

effects remain valid, and 3) whether the programmatic consultation, including the PDCs and determinations reached, remain adequate and appropriate. In addition, these meetings will provide a venue where any new information on the status of species, their critical habitat, or new methods to avoid or minimize impacts can be shared.

4. All activities, including plan development, study development, and consideration of exceptions, modifications, or waivers would include coordination with the FWS as the surface management agency and would comply with ESA. In addition, the BLM would coordinate with other appropriate federal, state, and North Slope Borough agencies, tribes, and Alaska Native Claims Settlement Act corporations.

MMPA

There are two regulatory programs implemented under authority of the MMPA that substantially limit potential impacts of the Proposed Program to polar bears. These programs, one giving the Service the authority to allow incidental (non-intentional) take of polar bears, and one that provides a mechanism for managing human-polar bear interactions to promote conservation of bears while protecting human safety, are summarized here.

Incidental Take Program. -- Section 101(a)(5) of the MMPA gives the Service the authority to allow the incidental, but not intentional, taking of marine mammals.[14] Under this authority, "upon request by citizens of the United States who engage in a specific activity (other than commercial fishing) within a specified geographical region, the Secretary shall allow, during periods of not more than five consecutive years each, the incidental but not intentional, taking by citizens while engaging in that activity within that region, small numbers of marine mammals of a species or population stock[15]" if it is found that "the total of such taking during each five-year (or less) period concerned will have a negligible impact on such species or stock and will not have an unmitigable adverse impact on the availability of such species or stock for taking for subsistence uses." If those conditions are met, the Service, acting on behalf of the Secretary, issues an incidental take regulation (ITR[16]) setting forth: (a) permissible methods of taking; (b) means of effecting the least practicable adverse impact upon the species or stock and its habitat,

[14] "Take" is defined somewhat differently under the MMPA than under the ESA. Not all acts that result in incidental take under the MMPA necessarily result in incidental take under the ESA. This distinction is relevant to this BO given the Proposed Program's requirement that lessees, operators, and contractors comply with the MMPA and its more protective definition of take. The distinction may also be important to step-down consultations that more specifically address incidental take under the ESA.

[15] The small numbers and negligible impact determinations for polar bears would be made at the stock scale, because for purposes of management under the MMPA, polar bears in the United States were delineated as comprising two stocks, the Chukchi Sea and Southern Beaufort Sea stocks. We note, however, that in the Polar Bear CMP and other Service documents the SBS stock is also referred to as the SBS subpopulation. Therefore, we consider these terms to be interchangeable and synonymous.

[16] Incidental, non-lethal harassment of marine mammals can also be authorized under section 101(a)(5)(D) of the MMPA by issuing Incidental Harassment Authorizations (IHAs). To qualify for an IHA, a proposed activity must meet the same protective standards (including no more than small numbers can be taken, causing no more than a "negligible impact" to the stock, conducted using means of effecting the least practicable impact on the species or stock and its habitat) required under the ITR/LOA process. IHAs cannot be issued for a period of longer than one year, however, so we have traditionally employed ITRs to allow incidental take of polar bears. We acknowledge that this alternate approach could be used at times, however.

and the availability of the species for subsistence harvest; and (c) requirements for monitoring and reporting (more detail is available at U.S.C. 1371(a)(5)(A) and 50 C.F.R. 18.27).

The terms "negligible impact," "small numbers," and "unmitigable adverse impact" are defined at 50 CFR 18.27. "Negligible impact" is defined as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival. "Small numbers" is defined as a portion of a marine mammal species or stock whose taking would have a negligible impact on that species or stock. However, we do not rely on that definition, as it conflates the terms "small numbers" and "negligible impact," which we recognize as two separate and distinct requirements. Instead, in our small numbers determinations, we evaluate whether the number of marine mammals likely to be taken is small relative to the size of the overall stock.

"Unmitigable adverse impact" is defined as an impact resulting from the specified activity 1) that is likely to reduce the availability of the species or stock to a level insufficient for a harvest to meet subsistence needs by (i) causing the marine mammals to abandon or avoid hunting areas, (ii) directly displacing subsistence users, or (iii) placing physical barriers between marine mammals and the subsistence hunters; and 2) that cannot be sufficiently mitigated by other measures to increase the availability of marine mammals to allow subsistence needs to be met. The term "least practicable adverse impact" is not defined in the MMPA or its enacting regulations. We ensure the least practicable adverse impact by requiring mitigation measures that are effective in reducing the effects of the proposed activities, but are not so restrictive as to make conducting the activities unduly burdensome or impossible to undertake and complete.

Since 1993, the oil and gas industry operating in the Beaufort Sea and adjacent northern coast of Alaska has requested, and been issued, ITRs for incidental take of polar bears in specific areas during specified activities. Under these ITRs, companies, groups, or individuals proposing to conduct specified activities, may request a "letter of authorization" (LOA) granting authorized non-lethal, incidental Level B take of polar bears. Requests must include an operations plan for the activity, a polar bear interaction plan, and site-specific monitoring and mitigation plan that specifies the procedures to monitor and mitigate the effects of the activities on polar bears. Each LOA is conditioned on specific circumstances for the activity and location to ensure the activity and level of take are consistent with the ITRs.

ITRs previously issued for the Beaufort Sea region, the most recent of which were issued in August, 2016 (81 FR 52276-52320), have not included the Coastal Plain of Arctic Refuge within the "specified geographical region" to which the ITRs applied. Therefore, a new ITR including this area would need to be developed prior to issuing any LOAs for activities associated with the Proposed Program, and doing so would require the necessary criteria (small numbers, negligible impact, etc.) to be met. Further, ITRs allowing incidental take of polar bears caused by the proposed Program would need to be renewed and re-evaluated at least every 5 years, and could be renewed only if doing so would again meet the "small number" and "negligible impact" standards at the stock (SBS subpopulation) scale. Additionally, promulgation of an ITR that would allow incidental take under the MMPA is a Federal action and therefore is subject to section 7 of the ESA, which entails assessment of the current status of the species and critical

habitat, environmental baseline, cumulative effects, and effects of the action. Thus, every 5 years or less, when a new ITR is promulgated to evaluate and authorize incidental take of polar bears, activities that would be likely to cause incidental take are reviewed relative to the standards of both the ESA and MMPA.

The substantive standards applied during the MMPA incidental take authorization process are in certain respects more stringent, i.e. more protective for polar bears, than those applied during ESA consultation. To comply with the "negligible impact" standard under the MMPA, the proposed action "cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock…" To avoid "jeopardy" under the ESA, the proposed action cannot result in "an appreciable reduction in the likelihood of both the survival and recovery of the listed species." Thus, the MMPA is more protective than the ESA in terms of the threshold for allowable impacts (*adverse effect* under the MMPA versus *appreciable reduction in the likelihood of survival and recovery* under the ESA) and the scale at which unallowable population-level impacts would occur (*species or stock* level for the MMPA versus the *listed species* level for the ESA). Hence, impacts that can be allowed under the incidental take provisions of the MMPA are not likely to jeopardize the continued existence of a marine mammal species *per* 7(a)(2) of the ESA.

Deterrence. -- In addition to the regulatory program allowing for incidental take of polar bears described above, the MMPA also provides a mechanism for managing human-polar bear interactions in order to promote conservation of bears while protecting human safety. This Deterrence Program, authorized under section 101(a)(4)(A) of the MMPA, provides Letters of Authorization (LOAs) that allow the use of deterrence actions to prevent polar bears from damaging private property or endangering personal safety. Under this authority, Federal, State and local government employees may deter polar bears for the welfare of the animal when acting in the course of their official duties, and private persons (such as employees of the oil and gas industry) may enter into cooperative agreements with the Service to carry out deterrence measures when acting in their capacity as designated persons under such an agreement and in full compliance with its terms and conditions. This program strives to: 1) prevent bears from associating food with humans and communities, 2) "condition" bears to avoid humans, human activities and communities, 3) promote movement of bears by actively redirecting them into corridors, such as coastal travel routes, 4) minimize extended use of areas near communities, and 5) minimize bear entry into communities.

Importantly, the program mandates that "active deterrence actions must not result in the death or serious injury of any marine mammal," and requires an application that includes: a) a detailed plan of operations, b) a site-specific plan to monitor effects of the activity on polar bears present during activities, and c) a site-specific polar bear interaction plan that outlines steps the applicant will take to limit animal-human interactions, increase site safety, and minimize impacts to polar bears. The program does not allow for the deterrence of polar bears for convenience or to aid project activities, and prior to conducting deterrence activities operators must make reasonable efforts to reduce or eliminate attractants (e.g., garbage, human waste, and food); move personnel to safety; ensure the bear has escape route(s); and begin with the lowest level of force or intensity that is effective and increase the force or intensity only as necessary to achieve the desired result. The program also contains specific training, monitoring, and reporting

requirements to minimize risk and impacts to polar bears. This program has been in place for decades, and although deterrence actions result in negative impacts to individual bears on rare occasions, the use of deterrence actions effectively reduces the need for lethal take of polar bears, and thus as a whole contributes to the conservation of polar bears.

For example, from January 1, 2001 through December 31, 2016, the oil and gas industry on the North Slope reported sightings of 4,371 polar bears, of which 848 (19%) were deterred. Of those deterred, the vast majority were subjected to noise or visual stimuli (e.g., vehicle horns, engine noise, yelling, spotlights, sirens, or discharge of cracker shells) intended to direct bears away from facilities or human activities. On rare occasions, when less-intrusive methods failed, "direct contact" rounds such as bean bags or rubber bullets were used. During 640 deterrence events by industry on the North Slope from 2001 – 2016, 42 polar bears were deterred with bean bags and 6 with rubber bullets. Injuries or lethal impacts are exceptionally rare. In 2011, a polar bear died because personnel mistakenly used a crackershell to deter a bear at close range rather than a beanbag round.

In sum, the Service manages two distinct but related programs under authority of the MMPA that result in significant conservation for polar bears in Alaska where human activities, including oil and gas development, take place. Combined, these programs entail a comprehensive review of the various mechanisms through which oil and gas activities directly or indirectly affect polar bears, which are evaluated when 1) reaching small numbers and negligible impact determinations, 2) crafting project-specific measures to avoid or minimize impacts in LOAs, and 3) providing monitoring and reporting requirements.

These Service has a long track record of implementing these programs in the Beaufort Sea region. During the 16-year interval between January 1, 2001 and December 31, 2016, 519 LOAs were issued for oil and gas work on the North Slope, and polar bears were observed during activities associated with 173 (33 percent) of the LOAs. Industry reported 2,731 observations of 4,371 polar bears, although some reports include multiple observations of the same bears, so this total over estimates the number of individual bears encountered. Analysis of reports indicated that of bears encountered, 24 percent (1,064) experienced Level B take including 236 Level B takes by incidental disturbance, 818 Level B takes by deterrence, and 8 Level B takes for which the cause was not reported. There were 2 Level A takes and 66 polar bears encountered for which the outcome was unknown. Based on this evaluation, combined with a detailed description of activities proposed for August 5, 2016 through August 5, 2021, we concluded that impacts of incidental take would affect only small numbers of polar bears, would result in a negligible impact to the SBS subpopulation, and would not have an unmitigatable adverse effect upon the availability of polar bears for subsistence users.

The Service would need to make these same findings with respect to polar bears in the Program Area prior to authorizing any Proposed Program-related activity with the potential to take polar bears. The Service's reviews would account for site-specific characteristics of the Program Area and any updated information concerning changing environmental conditions and changes to the status of the polar bear, and would identify the means of effecting the least practicable adverse impact upon the SBS stock of polar bear, and its habitat.

Summary of Factors Serving to Minimize Effects
In summary, the RFD contains lease stipulations, associated TLs and NSO provisions, Lease Notices, and ROPs that would directly or indirectly reduce impacts to polar bears. Additionally, four PDCs have been developed and implemented specifically to minimize and monitor effects of the proposed Action to listed species and marine mammals. These PDCs ensure, among other things, that future actions and activities to be authorized under the Proposed Program will comply with the ESA and MMPA. In particular, compliance with the MMPA requires authorization for take caused incidentally or through intentional deterrence actions, and requires that no more than small numbers of the SBS stock are taken, and that such taking would have no more than a negligible impact upon the SBS stock.

8.5.4 Effects to polar bears

Disturbance
Oil and gas activities could potentially disturb polar bears, impacting denning and non-denning individuals. Disturbance could result from noise associated with human activities including use of vehicles, aircraft, vessels or machinery, or by creating obstructions to movements. Disturbance could originate from stationary or mobile sources. Stationary sources could include construction, maintenance, repair, operations at staging pads, production and processing facilities, gas flaring, and drilling operations. Mobile sources could include vessel and aircraft traffic, seismic and geophysical surveys, ice and gravel road construction, vehicle traffic, tracked vehicles and snowmobiles, the movement of modules and other equipment to and from staging facilities, drilling, and dredging.

Industry activities could affect denning polar bears by obstructing or altering movements of pregnant females as they prospect for den sites; by disturbing females at den sites before cubs are born, which could force the female to search for an alternate site; or, by causing premature den site abandonment after cubs are born, which could cause the immediate death of cubs or reduced probability of survival over time, which would be difficult to detect or measure. Records from the North Slope (and elsewhere) suggest variable response to disturbance near dens, with some bears successfully denning near infrastructure or mobile sources of disturbance (such as seismic surveys), while others have abandoned dens outright or prematurely (81 FR 52292; BLM 2019). Some polar bears have apparently become habituated to nearby activities (Smith et al. 2007) but the extent to which habituation to disturbance could reduce impacts is unknown (Amstrup 1993). The Beaufort Sea ITRs include stipulations requiring polar bear den surveys before winter oil and gas activities commence, and impose a one mile (1.6 km) operational exclusion zone be established around detected dens restricting the timing and types of such activities, thereby minimizing or avoiding disturbance to denning bears. Similar measures can be applied to activities in the Program Area, if deemed appropriate during development of future ITRs (or IHAs). Thus far, ITRs for polar bears implemented under the MMPA described above have been effective at reducing impacts to denning polar bears, even when we account for the possibility that impacts may have been underestimated if effects occurred at undetected dens or if effects to fitness were manifested later, away from den sites.

Mobile sources of sound, such as transport of materials or geophysical surveys in nearshore marine waters, could disturb polar bears, although industry activities are typically conducted in relatively ice-free, open water. Polar bears regularly cross open water; for example, when

moving from pack ice to shore, but oil and gas industry records have indicated interactions between polar bears and industry activities in open water have been relatively rare (C. Putnam, USFWS - Marine Mammals Management Office, *pers. comm.*). Should encounters occur, polar bears would likely move away from the source of disturbance, resulting in a short-term temporary behavioral disturbance.

Aircraft traffic could disturb polar bears in winter during denning or along the coast in late summer/fall when and where non-denning bears concentrate. Low-level flights near denning habitat or occupied dens could cause premature den abandonment. The responses of non-denning polar bears to aerial surveys, generally flown at lower altitudes than aircraft associated with oil and gas activities, indicate that impacts would be limited to short-term changes in behavior, ranging from no response to departing the area in haste, depending on distance, flight altitude, type of aircraft (fixed-wing or helicopter), and other factors. As described above, the density of polar bears along the coast in late summer is greater near Kaktovik than elsewhere between Utqiaġvik and the Canada border, despite considerable air traffic in and out of the Barter Island Airport, which is located about 2.5 miles (4.0 km) from the bone pile where polar bears regularly exploit whale carcasses. This indicates some degree of tolerance or that some bears may habituate, at least in situations where aircraft follow predictable flight and landing patterns.

Industry facilities could also obstruct movements of bears, including movements of pregnant females moving from sea ice into terrestrial areas to prospect for den sites in autumn and early winter, or those of non-denning bears near or along the coast or barrier islands in late summer and autumn. However, polar bears regularly traverse oil and gas facilities along the Beaufort Sea coast to the west of the Proposed Program Area, crossing roads and causeways in some situations and moving around them in others. As a result, infrastructure appears to provide only small-scale, local obstructions that polar bears move through or circumvent, depending on location and other circumstances. Females and cubs returning to sea ice from terrestrial den sites may be more sensitive to disturbance than non-denning bears, due to the nutritional state of the female after months of fasting and the small size and other physiological limitations of cubs immediately after abandoning dens.

Quantitative evaluation of the potential effects of disturbance of polar bears from the proposed action is constrained by potential future changes in the abundance, distribution and response of polar bears, which is further compounded by uncertainty about the nature, location, and timing of activities that would be proposed. However, several factors, presented in greater detail above, will serve to limit impacts. Public Law 115-97 limits the surface area to be covered by production and support facilities to 2,000 Federal acres[17]. Lease stipulations 1, 4, and 9 associated with Alternative B collectively provide conservation measures for a subset of habitat used by polar bears, including terrestrial denning habitat along 10 rivers or creeks; coastal waters, lagoons and barrier islands, and areas within 2 miles of the coast; and require conflict avoidance and monitoring plans to minimize impacts to polar bear movements and habitat within 2 miles of the coast. PDCs 3 and 4 describe processes for the BLM and the

[17] This limit applies exclusively to Federal lands subject to leasing under the authority of PL 115-97 but not to private lands within the geographic boundary of the Coastal Plain of Arctic Refuge.

Service to use when implementing the programmatic framework consultation, specifically commitments to conduct annual program reviews and consult when developing program plans, studies, and authorizing exceptions, modifications, or waivers to lease stipulations or ROPs to ensure impacts to polar bears are considered and compliant with requirements of the ESA.

More important, however, are PDCs 1 and 2, which require that protections of the ESA and MMPA will be applied to all activities proposed under the Program. PDC 1 reiterates the BLM's commitment in Lease Notice 1 that activities under the Proposed Program will not be approved until applicable requirements of the ESA are met. This will provide for project-specific stepdown consultations that will in turn facilitate periodic re-evaluation of the adequacy of the framework programmatic consultation and ensure continued compliance with section 7(a)(2). The most important factor minimizing potential impacts of the Proposed Program to polar bears is PDC 2, which reiterates the BLM's commitment in Lease Notice 2 to require documentation of compliance with the MMPA prior to commencement of activities proposed and authorized under the Program. This is a very protective measure, and specifically applies to minimizing the impacts of disturbance. As described above, and demonstrated by the current Beaufort Sea ITRs for Alaska's existing oil and gas industry, the incidental take program administered under the MMPA provides a mechanism that allows for the incidental taking of polar bears but only after it is determined that doing so will only affect small numbers of the SBS stock, and will have at most, a negligible impact upon the stock. Any ITR (or IHA) issued for activities associated with the Proposed Program must also specify permissible methods of taking, along with other means of effecting the least practicable impact on the SBS stock of polar bear (as well as its habitat). Further, the mechanism most commonly used for authorizing incidental take of polar bears (i.e., ITRs) must be renewed at least every five years (or annually in the case of IHAs), ensuring periodic re-evaluation of the status of polar bears, impacts of the program, efficacy of the minimization measures contained in take authorizations, and review of the results of monitoring and reporting requirements.

The Beaufort Sea ITRs have a multi-decadal track record of analyzing potential impacts from oil and gas activities to polar bears and prescribing measures to achieve the least practicable adverse impact. While some impact to polar bears has occurred from such activities, in order to issue new five-year sets of regulations, the Service has had to determine that the predicted level of impact would affect no more than small numbers of polar bears from the SBS stock and have no more than a negligible impact. Given that this determination has been made prior to issuance of each new set of ITRs, it demonstrates that the level of impact is well below a jeopardy level for the overall polar bear species. It is reasonable to assume that any ITRs/LOAs and/or IHAs developed to authorize incidental take from activities authorized by BLM under the Proposed Program that is the subject of this consultation would be achieve similar results. The recurring, project-specific reviews required under the MMPA and the Proposed Program will enable the Service to account for any unique characteristics of the Program Area and to respond to changes in the status of the polar bear. Further, LOAs or IHAs authorizing incidental take from actions or activities proposed under the Program would include additional, project-specific requirements and mitigation measures as necessary to make determinations under the MMPA. For example, projects proposed in suitable habitat during denning season (such as seismic surveys or ice road construction) could require den searches or timing restrictions to protect dens and aircraft overflights during non-denning season could include restrictions to avoid areas where bears

concentrate. In the unlikely event that a proposed activity cannot be designed or mitigated in a manner that meets the MMPA's substantive standards, then that project would require modification or additional mitigation, or the incidental take could not be authorized.

Despite our inability to quantitatively evaluate potential impacts of disturbance to polar bears from the proposed RFD, based on PDC 2, we conclude that because any permit will require compliance with the MMPA, the effects of disturbance will have to be limited to individual-level impacts to a small number of polar bears that would cause no more than a negligible impact to the SBS stock.

As noted in the Conservation Management Plan for polar bears, it is expected that polar bear populations will decline as sea ice conditions decline. The recovery strategy is intended to manage human-caused impacts with the goal of not appreciably increasing the rate of decline such that the species can stabilize at a lower population size, consistent with a lower carrying capacity. Given that we have concluded that the Proposed Program will cause no more than a negligible impact to the SBS stock of polar bears, it is reasonable to conclude that the Proposed Program will not appreciably affect the rate of decline and therefore will not appreciably affect the prognosis for recovery of the SBS subpopulation and of the species overall.

Human-Polar Bear Interactions

Based on the BA, and drawing from our experience implementing the most recent ITRs for polar bears for the Beaufort Sea region (81 FR 52276 – 52320), we consider how the proposed RFD may result in potentially harmful interactions between humans and polar bears, specifically: collisions with vehicles on winter routes or gravel roads, collapse of undetected dens caused by winter equipment movements, attraction of bears to facilities or human activities, and deterrence actions, which could result in injury or death of polar bears in defense of human life. In the following discussion, we will combine the topics of the attraction of polar bears to facilities or human activities and deterrence actions, as they are inextricably linked.

The BA identified that traffic on ice roads (and presumably gravel roads) could pose a collision risk to polar bears. However, with the exception of concentrations in late summer and autumn along the coast, particularly near Kaktovik, polar bears generally occur at low density on the landscape. Further, activities are generally tightly regulated in industry developments, including speed limits on in-field thoroughfares. Therefore, although we acknowledge the possibility, we conclude that vehicle-polar bear collisions would be extremely rare.

Tracked or rubber-tired vehicles moving over snow in winter could encounter and collapse undetected dens. Although vehicles used on snow are designed to distribute ground pressure, dens in drifted snow would be unlikely to withstand any considerable additional weight, therefore, if equipment were to encounter an undetected den, the den would likely collapse, resulting in injury or death of the cubs and/or female. The likelihood of one or more such events would be proportional to a 1) the density of dens in the Program Area (estimated to be approximately 19 dens each winter in the Coastal Plain of Arctic Refuge; USFWS unpubl. data), and 2) the area impacted by winter tundra travel. This risk could be eliminated by avoiding winter tundra travel within denning habitat, or by delaying tundra travel in denning habitat until after females and cubs naturally abandon den sites. Alternately, risk could be reduced through

den searches and establishing protective buffers around dens until they are abandoned. However, the efficacy of the latter approach would be proportional to the probability of detecting all dens during searches. Thus, if activities requiring winter tundra travel (e.g., seismic surveys or ice road construction) are proposed to overlap with denning habitat and the period of den occupancy, there would be the potential for den destruction, at least with current methods of den detection.

Facilities and human activities, including those associated with industry, occasionally attract polar bears, which may be motivated by hunger or curiosity. This could have consequences for bears drawn to human activities if deterrence or defense of life actions result. However, proactive measures to identify and minimize attractants are required components of applications for take authorizations under the MMPA, including authorizations for both incidental take and deterrence actions. For example, LOA applications for incidental take under the most recent Beaufort Sea ITRs require "an approved polar bear safety, awareness, and interaction plan on file with Service's Marine Mammals Management Office" and this plan must include a "food, waste, and other "bear attractants" management plan" (USFWS 2016). In addition, several Required Operating Procedures described in the BLM's BA and Final EIS address food and waste management.

As when evaluating disturbance, we find quantitatively evaluating potential effects of human-polar bear interactions from the Proposed Program to be constrained by uncertainties regarding the future abundance, distribution and response of polar bears, compounded by uncertainty about the nature, location, and timing of activities that would be proposed under the Program. Again, however, the same factors serve to limit the consequences of human-polar bear interactions. These are the Federal surface area limit associated with Public Law 115-97, and the conservation benefits afforded by Lease Notices, Lease Stipulations, and Required Operating Procedures associated with Alternative B. Additionally, PDCs 3 and 4 would enhance the conservation benefits accrued during step-down section 7 consultations to be conducted on future activities proposed and/or authorized under the Program. Further, and more importantly, PDCs 1 and 2 require the protections of, and compliance with, the ESA and MMPA be applied to all future activities proposed under the Program. PDC 1 reiterates the BLM's commitment that activities under the Proposed Program would not be approved until applicable requirements of the ESA are met. This would provide for periodic re-evaluation of the adequacy of the framework programmatic consultation and ensures continued compliance with section 7(a)(2). The most important factor minimizing potential impacts of the Proposed Program is PDC 2, which reiterates the BLM's commitment to require documentation of compliance with the MMPA prior to commencement of activities to be authorized under the Program. When managing human-polar bear interactions, MMPA compliance is likely to include acquiring and complying with LOAs for incidental take and deterrence actions. Based on the success of these programs to date in the Beaufort Sea region west of the Program Area, we expect compliance with the MMPA would effectively prevent 1) winter vehicles from encountering and destroying dens, 2) chronic, harmful attraction of polar bears to industry activities and/or facilities, and 3) the need for injurious or lethal deterrence actions. Therefore we conclude, based implementation of PDC 2, that effects of human-bear interactions would be limited to individual-level impacts to a small number of polar bears.

Spills of oil and other petroleum products
Accidental spills of oil or other petroleum products resulting from activities during all phases of the RFD could originate from anchor fields (e.g., CPF and satellite pads), terrestrial pipelines, and vessels operating in the Action Area. Spills of contaminants could reach the marine habitat of polar bears, including sea ice, marine waters, and coast lines including barrier islands, through spills from vehicles on sea ice, spills from vessels in marine waters, or spills in terrestrial areas being transported downstream to coastal areas or marine areas.

Exposure to oil could impact polar bears in several ways, depending on the volume, location, and timing of a spill, and the severity and manner of exposure. Polar bears could make direct contact with spilled oil or ingest it through grooming fouled fur, nursing, or by ingesting contaminated prey, or inhaling vapors (Engelhardt 1983). Consequences could include irritation to eyes, mouth, and mucus membranes, irritation and damage to respiratory organs from inhalation, kidney and liver damage from ingestion of contaminated prey (Ortisland et al. 1981), loss of ability to thermoregulate, hair loss, anemia, anorexia, increased metabolic rate, elevated skin temperatures, and stress response (Derocher and Stirling 1991; St. Aubin 1990). Exposure could range from short-term, sub-lethal impacts to long-term impacts on health including death, depending on the substances contacted, the magnitude and duration of exposure, and the health of exposed individuals.

Records of polar bears encountering spilled oil or other toxic substances in Alaska suggest exposure could occur from the Proposed Program but would likely be infrequent and/or impact small numbers of individual bears. Since 1993, the Service has interacted with the oil and gas industry in northern Alaska to evaluate, regulate, and monitor effects of oil and gas exploration, production, and processing on polar bears. In this interval, large oil spills impacting polar bears have not occurred. One polar bear died in 1988, after exposure to ethylene glycol and dye (Amstrup 1989), and two bears died in 2012 after chemical exposure, including Rhodamine B (81 FR 52297). Although this compound is used by the oil and gas industry, it is also used by others on the North Slope, so the 2012 events cannot be attributed to industry (81 FR 52297). Between July 1, 2009 and June 30, 2014, spills averaging about 59,000 gallons per year were reported by industry on the North Slope, with approximately 5.6 percent of the volume comprised of crude oil (81 FR 52299). None of these spills were documented to have injured or killed polar bears.

Although small spills (< 500 bbl) associated with the RFD could occur during winter exploration, and year-round development and production activities, due to measures required by Lease Stipulations 4 and 6, and ROPs 1-3, 21, and 46, spills are expected to be uncommon (BLM 2019). Furthermore, due to low density of polar bears throughout most of the Action Area, we expect the likelihood of polar bears encountering oil from small terrestrial or marine spills would be low (with an exception to this generalization discussed below). Small spills would be more likely to occur than large spills, and the BLM expects the majority of small spills would occur on production pads, be confined to a small area, and be remediated quickly. Small marine spills (e.g., at barge landings) would be expected to be contained or weather quickly (i.e., within 24 hours; BLM 2019), and small onshore spills would likely be fully recovered (e.g., oiled tundra would be entirely removed and disposed of; BLM 2019). Although disturbance of polar bears

could occur during spill response efforts, this disturbance is expected to be minor and temporary as polar bears would be expected to move away to a safe distance. In their proposed RFD, the BLM did not project spills >500 bbl, therefore the consequences of a large spill are not considered to be reasonably certain to occur.

Although polar bears generally occur at low density in the Action Area, an average of 140 polar bears (up to 15 percent of the SBS subpopulation) occur in late summer and fall along the Beaufort Sea coast between Utqiaġvik and the U.S./Canada border, with a substantial proportion (about 64%) of observations occurring on or near Barter Island on the northern edge of the Coastal Plain of Arctic Refuge. Thus, in the event that oil spilled on sea ice, in marine waters, or in freshwater streams or rivers that could transport oil to the coast, the potential for polar bears to be exposed to spilled petroleum products exists. However, several factors serve to limit potential exposure. Lease Stipulations 4 and 6, and ROPs 1-3, 21, and 46 will serve to reduce the likelihood of spills occurring, particularly in areas where polar bears den or feed (BLM 2019).

Further, the Proposed Program does not allow for exploration, production, or processing facilities are prohibited in offshore waters or on barrier islands, which would limit the location of potential spills to terrestrial habitat, and this would greatly restrict transportation of spilled oil. Finally in 2016, the Service, working with numerous partners, developed a detailed species-specific oil spill response (OSR) plan in the event a spill occurs. This plan provides guidance for the Service's Alaskan Regional Spill Response Coordinator in determining potential risk to polar bear populations and advising the Federal On-Scene Coordinator on recommended response measures. The OSR plan includes information on preventative measures to keep bears out of oil, such as early detection and deterrence, as well as guidance on treatment of oiled bears, such as washing and holding protocol. Appendices include information on collecting and removing oiled wildlife carcasses; location/inventory of equipment and supplies; and a list of potential holding facilities and response partners that would be called upon to assist as needed. Service response efforts would be conducted using the standard three-tiered spill-response approach:

1) **Primary response** – identifying bear use areas and making recommendations to the Incident Command System where to focus containment, dispersion, burning, or clean-up of oil to minimize impacts to polar bears;
2) **Secondary response** – using hazing, herding, preventative capture/relocation, or additional methods to remove un-oiled polar bears from affected or potentially-affected areas; and
3) **Tertiary response** – capture, cleaning, treatment, and release of oiled polar bears.

In summary, we note that spills of oil and other petroleum products are expected to be infrequent and of low volume, small spills are expected to be contained or weather quickly, and material handling, spill prevention, and response measures required by the BLM through Lease Stipulations and ROPs include numerous measures to minimize impacts to polar bears in the event of a spill.

Further, prohibitions against oil and gas exploration, production, and processing in offshore waters and/or on barrier islands indicates that most spills would occur in terrestrial areas, where the density of bears is low and containment and response efforts are likely to be effective. Also,

polar bear density in the Action Area is generally low, minimizing the number of bears potentially exposed to spills. Additionally, a polar bear-specific response plan has been developed to guide response efforts in the unexpected event that a spill with potential to affect polar bears occurs.

Finally, as with disturbance and human-polar bear interactions, implementation of the four PDCs will ensure periodic re-evaluation of activities proposed under the Program. This will require compliance with the MMPA and section 7(a)(2) of the ESA, as described in detail above. In particular, when issuing ITRs allowing for incidental take of polar bears under the MMPA, assessment of all factors causing take, including impacts from oil spills in the Action Area and elsewhere that affect the SBS will be required. Therefore, we conclude the effects of exposure to spilled oil and other petroleum products would be limited to individual-level impacts to a small number of polar bears, which will cause no more than a negligible impact to the SBS stock.

Impacts to Polar Bear Prey Species

The fecundity or survival rates of polar bears could be affected if the proposed action affects polar bear prey populations. Polar bears are top predators in the Arctic marine ecosystem, and in the SBS region, they prey primarily on ringed, and to a lesser extent, bearded seals, although other food sources, including beach-cast and subsistence-harvested marine mammal carcasses are occasionally important (USFWS 2016). We note that the NMFS manages ringed and bearded seals under the authorities of the MMPA and ESA, and we defer to their impact analyses regarding the effects of the proposed action to these species now, and when future oil and gas activities are proposed. However, because impacts to ringed and bearded seal populations could indirectly affect polar bears, it is relevant to consider the potential impacts on ice seals upon which polar bears depend.

The NMFS currently identifies[18] the following mechanisms by which the Proposed Program could affect ice seals: acoustic disturbance from aircraft, seawater treatment facilities, exploratory vibroseis surveys, vessel traffic in the MTR, contamination from small oil spills, harassment or harm from vehicles during vibroseis surveys, vessel strikes in the MTR; and impacts at barge landings (BLM memorandum dated September 11, 2019). Because ringed and bearded seals in U.S. waters off Alaska's coast are classified as threatened under the ESA (77 FR 76706 and 77 FR 76740), NMFS and the BLM have initiated a framework programmatic consultation under section 7 of the ESA. Therefore, we assume PDCs 1 and 2 would require NMFS and BLM to ensure that impacts to ringed and bearded seals remain compliant with the regulatory standards of the ESA and MMPA which ensures proposed activities would not jeopardize the continued existence or recovery of ringed and bearded seals, which in turn ensures they will be available as prey for polar bears. Further, PDCs 1 and 2 require the BLM and the Service to ensure that all effects of the Program to polar bears, including impacts to prey species, remain compliant with the regulatory standards of the ESA and MMPA.

[18] NMFS is currently evaluating these impacts under section 7 of the ESA at the time of this consultation, therefore final results of their initial framework programmatic consultation are not reflected in this BO.

Summary

We identify the following four primary mechanisms by which the Proposed Program could affect polar bears: disturbance, human-polar bear interactions, spills of oil and other petroleum products, and impacts to polar bear prey. We also identify the multiple aspects of the Proposed Program (lease stipulations, associated TLs and NSO provisions, Lease Notices, ROPs, and four PDCs) that will serve to limit potential impacts to polar bears. In evaluating effects from the Proposed Program, we draw on our experience evaluating, regulating, and monitoring similar activities in northern Alaska, including in the Chukchi Sea region and Beaufort Sea region to the west of the Program Area, where we have worked cooperatively with the oil and gas industry since 1993 to implement regulatory programs provided for under the MMPA and to conserve polar bears in the face of considerable industrial development. As described above, these regulatory programs require periodic (every 5 years) region- and stock-specific review of the impacts to ensure the regulatory requirements of the MMPA are continuing to be met. The vast majority of impacts caused by industrial activities have been non-injurious and non-lethal, although unintended and unexpected outcomes causing injuries or death have very rarely been documented, and additional injurious or lethal impacts may have occurred but gone undetected or unreported. Known examples include defense-of-life actions and possible undetected impacts of disturbance at undetected dens or females abandoning dens with cubs prematurely, with unknown impacts to the fitness of cubs. Information concerning such events, provided by industry and otherwise available has resulted in continued refinement of the protective measures required of industry. We expect the regulatory programs administered under the MMPA to continue to refine and prescribe permissible methods of taking and other means of effecting the least practicable adverse impacts on polar bears, and thus continue to ensure conservation.

In sum, the Service's experience in regulating similar oil and gas activities in the Beaufort Sea region informs our evaluation of effects and supports our expectation, as explained in the subsections above, that activities conducted under the Proposed Program would not individually or collectively cause population-level effects to the polar bear. We conclude the combination of factors incorporated into the Proposed Program would serve to address and directly or indirectly reduce effects to polar bears, ensuring that no more than small numbers of the SBS stock are taken, and that such taking would have no more than a negligible impact upon the SBS stock.

8.6 Effects to Polar Bear Critical Habitat

Within the Program Area, a total of 1,271,600 acres are designated as critical habitat for polar bears, including subsets of all three designated units. The Program Area contains 7,600 acres within Unit 1, Sea Ice Habitat; 1,193,600 acres within Unit 2, Terrestrial Denning Habitat; and roughly 1,400 acres within Unit 3, Barrier Island Habitat (BLM 2019). Additionally, effects of the action could extend outside the boundaries of the Program Area if proposed activities on sea ice or in the Marine Transit Route (MTR) would occur in, or affect, designated critical habitat outside the discrete Program Area.

To evaluate potential effects of the Proposed Program to polar bear critical habitat, we separately consider the Sea Ice, Terrestrial Denning Habitat, and Barrier Island units. For each unit, we consider potential impacts to the physical and biological features (PBFs) of the habitat that were identified within the designation. Also, for the Terrestrial Denning Habitat and Barrier Island

units, we consider whether human presence or activities could compromise the value of critical habitat, because absence of disturbance was described as an attribute of both units.

8.6.1 Unit 1, Sea Ice Habitat

Sea Ice Habitat comprises roughly 114,885,222 total acres, of which, 7,600 acres (~0.006 percent) occurs within the Program Area (BLM 2019). When designating polar bear critical habitat, we "determined that sea ice that moves or forms over the shallower waters of the continental shelf (300 meters (982.2 feet) or less)," and that contains adequate prey resources (primarily ringed and bearded seals) to support polar bears. Sea ice is an essential physical feature for polar bears in the southern Beaufort, Chukchi, and Bering seas for food and physiological requirements (75 FR 76086 – 76137). Activities resulting from the Proposed Program could affect this essential physical feature through three mechanisms: 1) damage to the physical characteristics of sea ice caused by vehicular travel across ice, 2) spills of oil or other petroleum products into marine waters that form ice, or directly onto ice, and, 3) impacts to ringed and bearded seals, caused by disturbance or spills of oil or other petroleum products. These impacts could affect sea ice in Unit 1 within the limited area of overlap with the Program Area, or elsewhere within the broader Action Area.

Based on the BLM's RFD and supplementary information (email from C. Perham, BLM, dated August 28, 2019), vehicular transport of materials, equipment, or personnel across sea ice during winter could occur. Sea ice routes would presumably consist of narrow linear trails occupying an extremely small proportion of the ice surface. Further, we assume that measures required to ensure safety of personnel and heavy equipment transported across sea ice would require thick, strong ice capable of supporting considerable additional weight, which would presumably ensure at most negligible impacts to the physical features of sea ice. Therefore, we conclude impacts to the physical features of sea ice due to vehicular traffic would be insignificant, and we do not evaluate this hypothetical threat further.

Based on the RFD, it is also plausible that oil or other petroleum products could be spilled during vehicular transport across sea ice, from vessels crossing marine waters within the boundaries of the sea ice unit during summer, when ice is broken or absent, or in terrestrial habitats within the Program Area, possibly allowing spilled oil to be transported into the sea ice unit by fluvial waters or other means. If spills were incompletely remediated, oil or other petroleum products could contaminate sea ice after freeze up in fall/winter. Spilled products could also affect ice seals, which are an identified component of sea ice habitat for polar bears. Finally, vehicular traffic on sea ice or in marine waters within the boundaries of the unit could conceivably disturb ice seals, potentially affecting fecundity or survival.

As with our evaluation of other effects of the Program, uncertainty regarding specific activities to be proposed and conducted prevents precise quantitative analysis of impacts to the Sea Ice Unit of critical habitat. Nonetheless, the same factors that serve to minimize effects of the action to polar bears would also apply to effects of the action on the Sea Ice Unit of critical habitat. Although the discussions above provide more detail, we find that Lease Stipulation 1 (protective corridors along selected rivers and streams) would reduce the risk of spilled oil reaching marine waters, and Lease Stipulation 4 (prohibiting exploration, production, and processing of oil in

coastal waters, lagoons and barrier islands) reduces the risk of oil and other petroleum products

being spilled in marine waters.

More importantly, PDCs 1-4 further reduce the potential for impacts to sea ice critical habitat. Specifically, PDCs 3 and 4 would enhance the conservation benefits accrued during step-down section 7 consultations to be conducted on future activities proposed under the Program. Further, and most importantly, PDCs 1 and 2 (also Lease Notices 1 and 2) require that protections of the ESA and MMPA would be applied to all activities proposed under the Program. Notably, Lease Notices 1 and 2 apply to polar bears but also ringed and bearded seals, ensuring that impacts to polar bears, polar bear critical habitat, and their primary prey species will be subject to the protective benefits of these Lease Notices and PDCs. In summary, we conclude that potential impacts to sea ice habitat caused by spilled oil or other petroleum products, and potential impacts to ice seals caused by spills and/or disturbance, would be effectively managed under the regulatory protections of the ESA and MMPA. These regulatory protections would be co-administered by three Federal Agencies (BLM, NMFS, and the Service), required under two Federal legal authorities (MMPA and ESA), and repeatedly re-evaluated to ensure compliance with the MMPA and section 7(a)(2) of the ESA.

8.6.2 Unit 2, Terrestrial Denning Habitat

Terrestrial Denning Habitat comprises roughly 3,620,558 total acres, 1,193,600 acres (~33 percent) of which occurs within the Program Area (BLM 2019). When designating polar bear critical habitat, we "determined that terrestrial denning habitat includes the following features essential to the conservation the species: coastal bluffs and river banks with (a) steep, stable slopes (range 15.5 – 50.0 degrees), with heights ranging from 1.3 to 34 meters (4.3 to 111.6 feet), and with water or relatively level ground below the slope and relatively flat ground above the slope; (b) unobstructed, undisturbed access between den sites and the coast; (c) sea ice in proximity of terrestrial denning habitat prior to the onset of denning during fall to provide access to terrestrial den sites; and, (d) the absence of disturbance from humans and human activities that may attract other bears (75 FR 76086 – 76137)."

We identify no mechanisms by which the Proposed Program would affect the availability of sea ice proximal to terrestrial denning habitat. (Note that greenhouse gas emissions resulting from consumption of petroleum produced at particular drilling sites are not considered effects of production; Service Policy Memorandum dated May 14, 2008). Therefore, in this evaluation we will discuss possible impacts to banks that comprise suitable denning habitat, and disturbance of polar bears, which could dissuade or obstruct movements of females between den sites and the coast, or could attract non-denning bears to denning habitat.

When considering potential impacts of the Proposed Program to the physical characteristics of terrestrial denning habitat (banks with suitable macrohabitat features), it is important to note that there have been several situations in which polar bears have denned, usually successfully, in snow drifts formed by abandoned or even active industrial infrastructure in the Beaufort Sea region of Alaska. Examples include eight dens in nine years on the margins of an abandoned gravel pad about 4.3 miles (7 km) northeast of Milne Point CPF (USFWS unpublished data), and individual successful dens (i.e., females abandoned dens with cubs naturally) on an industrial island under construction (USFWS 2012); on ENI's Spy Island Development (Burke 2011); on an abandoned exploration gravel pad on Cross Island; on a runway ramp at the Bullen Point

Long-range Radar Site (USFWS 2012); along an active road causeway (DeMarban 2017); and under a bridge at Endicott Island at Prudhoe Bay (USFWS 2017b).

These examples illustrate that whether or not industrial facilities would affect the physical characteristics of denning habitat, preventing its future use for denning, would likely vary with the situation. Some facilities, such as gravel mine sites, large pads with CPFs and other large structures would presumably preclude maternal denning by polar bears, but it is difficult to separate the effects of changes to the landscape from the effects of human presence and activities in rendering the habitat unsuitable. Regardless, those facilities would account for a very small proportion of the Program Area, and an even smaller proportion of polar bear critical habitat.

As with evaluating potential effects of the Proposed Program to polar bears and other units of critical habitat, uncertainties regarding the nature, location, and timing of future activities proposed under the Program prevent precise quantitative analysis of potential effects to terrestrial denning habitat. Therefore, our analysis again relies on factors built into the Proposed Program that serve to minimize potential effects to terrestrial denning habitat, including impacts to the physical characteristics of denning habitat, and impacts to polar bear behaviors that could affect their access or exploitation of denning habitat. Public Law 115-97 limits the area that would be covered by production and support facilities to 2,000 Federal acres.

Lease stipulations 1 and 9 associated with Alternative B would reduce potential for effects to suitable denning habitat by providing setbacks for facilities along 10 rivers or creeks, and in areas within 2 miles of the coast; and would require conflict avoidance and monitoring plans to minimize impacts to polar bear movements and habitat within 2 miles of the coast. Additionally, PDCs 3 and 4 describe and strengthen the process that the BLM and the Service would use when implementing the programmatic framework consultation. Further, PDC 1 reiterates the BLM's commitment that activities under the Proposed Program would not be approved until applicable requirements of the ESA are met. This ensures that step-down section 7 consultations would be conducted on any activities that may affect polar bears or their critical habitat, and ensures that individual activities and the program as a whole must remain in compliance with section 7(a)(2).

Also importantly, PDC 2 requires compliance with the MMPA, including potential impacts to terrestrial denning habitat, and impacts to behaviors that influence polar bear access to, and use of, denning habitat. First, when issuing ITRs which authorize incidental take of polar bears under the authority of section 101(a)(5) of the MMPA, the ITRs must include "means of effecting the least practicable adverse impact upon the species or stock and its habitat." This provision requires, where appropriate, mitigation measures in LOAs to protect important features of habitat. Second, ITRs are not promulgated under the MMPA until disturbance of polar bears caused by the activities being considered is adequately evaluated and mitigated. For example, the current Beaufort Sea ITRs west of the Program Area included analysis of whether industry facilities act as physical barriers that obstruct polar bear movements, and concluded these facilities appear to present "only a small-scale, local obstruction" to movements (81 FR 52293). Further, LOAs issued under the existing ITRs carry conditions that include, but are not limited to, "measures to protect pregnant polar bears during denning activities (e.g., den selection, birthing, nurturing of cubs, and departing the den site;" 81 FR 52278). Similar measures would likely be applied in future ITRs such as any developed for the Action Area. Finally, prior to

issuing LOAs allowing incidental take and/or intentional take of polar bears under the deterrence program, applicants must provide and receive approval of, a project-specific polar bear safety, awareness, and interaction plan that includes "a food, waste, and other 'bear attractants' plan."

We conclude that MMPA compliance would result in: 1) protection of the physical characteristics of terrestrial denning habitat by requiring measures to effect the least practicable impact upon the species or stock and its habitat, 2) careful evaluation and minimization of disturbance, including both behavioral interruption and physical obstruction of movements, and, 3) evaluation and approval of project-specific polar bear interaction plans to ensure that non-denning bears are not attracted to terrestrial denning habitat.

8.6.3 Unit 3, Barrier Islands

When designating critical habitat for polar bears, the Service identified barrier islands as a "physical feature essential to the conservation of polar bears in the United States." The unit was described as "barrier island habitat used for denning, refuge from human disturbance, and movements along the coast to access maternal den and optimal feeding habitat, which includes all barrier islands along the Alaska coast, and their associated spits, within the range of the polar bear in the United States, and the water, ice, and terrestrial habitat within 1.6 kilometers (1 mile) of these islands (no-disturbance zone)" (75 FR 76086 – 76137). Unit 3, Barrier Island Habitat comprises roughly 2,613,139 total acres along the Alaska coast within the range of the polar bear. The BA (BLM 2019) estimated approximately 1,400 acres of Unit 3 occur within the Program Area[19].

Based on the description of barrier islands at designation, we consider the physical feature of barrier islands to include the physical characteristics of islands, accompanied by refuge from disturbance necessary for denning, resting, and unimpeded movements. In this light, we consider potential impacts of the proposed RFD to barrier island habitat to include construction of facilities on barrier islands, human activities on, near, or over barrier islands that could disturb or impact use by polar bears, and the risk of spills of oil or other petroleum products reaching barrier islands.

As with other effects of the action, uncertainty regarding future activities that would be proposed under the Program prevents precise quantitative analysis of impacts to the Barrier Island Unit of critical habitat. Nonetheless, there is considerable overlap in the importance of the same factors that serve to minimize other effects of the action. Specifically, Lease Stipulation 4 prohibits "exploratory well drill pads, production well drill pads, or a CPF for oil and gas" on barrier islands. Although Lease Stipulation 4 does reference a process through which the BLM, after consultation with the Service (and/or NMFS, as appropriate), may approve "infrastructure necessary for oil and gas activities in these critical and sensitive coastal habitats, such as barge landing, docks, spill response staging and storage areas, and pipelines," such activities are not currently permitted under the Proposed Program Therefore, this stipulation prevents exploration,

[19] It is important to note that barrier islands frequently shift in extent, location, and shape. In fact, the current location and extent of barrier islands used to define the northern boundary of the Program area are misaligned with the maps of barrier islands used to define and depict the critical habitat unit at the time of designation. We note that this misalignment has caused substantial imprecision in the estimate of the overlap between designated critical habitat and the Program area. This however, does not affect the obligation to evaluate the effects of the proposed

action on critical habitat, including Unit 3, for compliance with the MMPA and ESA.

production, and processing of oil on barrier islands, and would require interagency consultation prior to authorizing construction of other facilities that could affect polar bears, their habitat, or their prey.

In regard to the risk of spilled oil or other petroleum products reaching barrier islands, we find that Lease Stipulation 4 (prohibiting exploration, production, and processing of oil in coastal waters, lagoons and barrier islands) also reduces the risk of oil and other petroleum product spills in marine waters. Lease Stipulation 1 (protective corridors along selected rivers and streams) would reduce the risk of oil spilled in terrestrial areas being transported to the marine environment by fluvial waters.

Additionally, and more importantly, PDCs 1-4 serve to reduce potential impacts to barrier island habitat. PDCs 3 and 4 enhance the conservation benefits accrued during future step-down section 7 consultations on activities proposed and/or authorized under the Program. Further, and most importantly, PDCs 1 and 2 require that protections of the ESA and MMPA be applied to all activities proposed under the Program. In summary, we conclude that potential impacts to barrier island habitat, caused by construction of facilities on barrier islands, disturbance on or within 1 km of barrier islands, and the risk of spilled oil or other petroleum products reaching barrier islands, would be effectively managed under the regulatory protections of the MMPA.

9. CUMULATIVE EFFECTS

Under the ESA, cumulative effects are the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the Action Area considered in this BO. However, future Federal actions are not considered because they will require separate consultation under the ESA. It is also important to note that cumulative effects will also be assessed and updated each time a step down section 7 consultation is developed pursuant to this programmatic consultation. These step down consultations will provide a real time assessment of cumulative effects when an activity is proposed. However, it is likely that the following types of activities may occur in the action area in the future, and their potential cumulative effects pursuant to the ESA are considered here.

Oil and Gas Development

Oil and gas development, whether in Federal or State waters or in the terrestrial environment on State, private, Native-owned, or Federal lands, would require Federal permits (e.g., section 404 of the Clean Water Act authorization from the U.S. Army Corps of Engineers [USACE], and National Pollution Discharge Elimination System permits from the Environmental Protection Agency) and, therefore, are not considered cumulative impacts under the ESA.

Community Growth

While many communities on the North Slope are growing, the population of Kaktovik is relatively stable going from 239 in the 2010 census to an estimated 256 in 2018 (U.S. Census data accessed at www.census.gov). As populations increase so do community footprints, along with associated infrastructure such as roads, powerlines, communication towers, landfills, and gravel pits. The scale of potential adverse impacts will depend not only on the amount of

growth, but the location as it relates to eider nesting habitat. However, the area around Kaktovik and the majority of the terrestrial Action Area is classified as wetlands (https://www.fws.gov/wetlands/data/mapper.html). Therefore, a section 404 permit from the USACE would likely be necessary for any large scale community development projects. The issuance of these permits would also trigger consultation under the ESA. Smaller projects may not require a Federal permit, but are also likely to have a smaller, if any, impact to listed eiders.

As the population of North Slope communities increases so does the number of subsistence hunters. This could adversely affect listed eiders through direct shooting of these birds and contamination of habitat if lead shot is illegally used. However given that few listed eiders are present in the Action Area and both the harvest and use of lead shot for waterfowl hunting is illegal, significant impacts are not anticipated.

Similarly, as populations of Arctic coastal communities increase, so does the probability of human-polar bear encounters, and/or subsistence harvest of polar bears. Since 2010, USFWS has provided funding and technical support to the North Slope Borough for implementing a Polar Bear Patrol program in rural communities, including Kaktovik. This program has been successful, and provides critical safety coastal communities and has contributed to polar bear conservation by repeatedly deterring polar bears from the village without having to use lethal methods (Miller et al. 2018). This program will likely continue into the future, but the impact of any changes to the Program will also be evaluated in future step-down consultations.

Commercial fishing

Reduction in the extent and duration of sea ice may increase the potential for commercial fishing within the MTR portion of the Action Area, but the likelihood and magnitude of these activities are unknown at this time. Future commercial fisheries in the action area would likely be managed by the National Marine Fisheries Service, and the issuance of regulations would require section 7 consultations, and are therefore not considered cumulative effects.

Increased Marine Traffic

As the extent of arctic sea ice in the summer has declined, and the duration of ice free periods has increased, interest in shipping within and through arctic waters has increased (Brigham and Ellis 2004). Increased shipping along the Northern Sea Route (part of the Northeast Passage that follows Norway and Russia's coast down into the Chukchi and Bering seas), and the Northwest Passage (which follows Canada's eastern coast north along Canada and Alaska's Beaufort Sea coast) could result in increased fragmentation of sea ice habitat and disturbance/injury to marine mammals, increased human-bear encounters, and the introduction of waste/litter, and toxic pollutants, including spilled oil (PBRS 2015). All of these threats could potentially affect polar bears and listed eiders.

The Arctic Council conducted a comprehensive Arctic marine shipping assessment for the Arctic Ocean, focusing on potential impacts on humans and the arctic environment (AMSA 2009). The AMSA Report includes a comprehensive estimate of the number of ships (excluding naval vessels) operated in the Arctic by year, and identified Arctic natural resource development and regional trade as the key drivers of future Arctic marine activity. The release of oil was identified as one of the most significant environmental threats related to shipping. The report

specifically recommended that Arctic countries address impacts on marine mammals from shipping, and work with the International Maritime Organization (IMO) to develop and implement mitigation strategies.

Since then, significant advances have been made in implementing recommendations set forth in the AMSA Report. For example, several reports that identify Arctic marine areas of special ecological and cultural importance have been published (Smith et al. 2010), and voluntary guidelines to reduce underwater noise to avoid adverse impacts on marine biota have been developed (PAME 2015). Additionally, vessel routing and speed restrictions have been recognized as effective measures to mitigate impacts on marine mammals (Brigham and Sfraga 2010). In 2015, the IMO adopted the environmental provisions of the Polar Code, which include standardized safety procedures addressing design, construction, equipment, operational, training, environmental protection standards, and use of designated shipping lanes. The Polar Code was entered into force on January 1, 2017 (IMO 2019).

Increased Scientific Research

Scientific research across the Arctic is increasing as concern about effects of climate change in the arctic grows. While research is often conducted by universities and private institutions, these activities will require permit authorizations from Arctic Refuge, or from the BLM if scientific activities are related to oil and gas development. Based on recent figures the Arctic Refuge estimates < 20 scientific research permits would be issued each year (Josh Rose, Arctic Refuge, Pers. Comm.). Large scale projects in the marine environment along the MTR are generally funded by the National Science Foundation or operate off USCG ice breaking vessels. These activities have been and/or will be considered in separate section 7 consultations.

Recreation

All commercial guiding or outfitters operating in the Arctic Refuge require commercial use permits. In 2017, four commercial air service operators provided air taxi service for 1,400 Refuge visitors; another seven operators chartered polar bear viewing excursions for 1,600 visitors. Air taxi service supported recreation for 850 river floaters, 300 backpackers, 40 base campers, and 100 hunters (BLM 2018b). Visitor use in the Program Area has increased in recent years with the emergence of polar bear viewing on waters immediately surrounding Kaktovik. Before the season for polar bear viewing, more than 90 percent of visitors access the Program Area via airplane, with more than 80 percent of all visitors arriving via chartered planes (Christensen and Christensen 2009). Other visitors accessed recreation opportunities in the program area via boat or on foot.

Activities that involve the use of guides or commercial air operations for access or egress to the Refuge are subject to refuge permitting requirements and therefore are not cumulative effects under the ESA. In contrast, purely private actions within the Refuge or on private lands within or adjacent to the Refuge but within the Coastal Plain meet the definition of cumulative effects under the ESA. Visitors to the Refuge or users of nearby private lands could disturb a few individual listed eiders each year but eiders occur at such low density that we believe the likelihood of encounters or impacts is very low. As polar bears become more common onshore during summer and fall, there is potential for increased human–polar bear interactions, including in the Refuge and on nearly private lands. In response, Refuge managers are developing a

programmatic section 7 consultation to monitor impacts and develop ways to avoid and minimize impacts on polar bears as needed. Similarly, we anticipate that local leaders in Kaktovik will continue to improve oversight of polar bear viewing activities on private lands near the village, including management of subsistence carcasses and deterrence actions used to protect human safety and minimize conflict. We anticipate that these efforts by Refuge managers and local leaders will continue to increase commensurate with changes in impacts to polar bears and risk to village residents and visitors, regardless of whether the underlying human activities are purely private or subject to Federal permitting requirements

Conclusion

In summary, we anticipate the scope and scale of oil and gas development, community growth, scientific activities, and recreation in the Action Area will continue, and may increase in the future. Most notably, activities with potential to affect significant numbers of individuals of listed species (such as oil and gas development and community growth) are expected to require consultation under the ESA; whereas those that may not require consultation (e.g., small projects in developed areas such as home renovation) will likely have at most minor impacts to listed species or will entail responsible oversight by local leaders.

10. CONCLUSION

This section provides our opinion regarding whether the effects of the Proposed Program are likely to jeopardize listed species or result in the destruction or adverse modification of critical habitat. We considered the potential effects of the Program as a whole, while recognizing that specific actions and activities that would be proposed under the Program remain uncertain. Therefore, we conducted a framework programmatic consultation, which required the identification of potential program effects and the development of guidelines to minimize effects to listed species and critical habitat. Thus, “step-down” consultations would be required when specific actions and activities are proposed and project-specific information is provided, and we defer enumeration and authorization of incidental take until that time.

Our opinion as to whether the action is likely to jeopardize listed species or result in the destruction or adverse modification of critical habitat was formulated by adding the effects of the action and cumulative effects to the environmental baseline, in light of the status of the species and critical habitat. These determinations were made by applying regulations (50 CFR 402.02) that implement section 7(a)(2) of the ESA and define “jeopardize the continued existence of” as “to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.” “Destruction or adverse modification of critical habitat” is defined as a “direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.”

We note that we determined that the Proposed Program is not likely to adversely affect the southwest Alaska DPS of northern sea otters or critical habitat for northern sea otters, spectacled eiders, or Alaska-breeding Steller’s eiders. Therefore, we do not revisit or provide conclusions for sea otters or critical habitat for sea otters, spectacled eiders, and Steller’s eiders here.

10.1 Spectacled eiders

In evaluating impacts of the RFD to listed eiders, we identified potential adverse effects from long-term habitat loss, disturbance, and collisions. Using methods explained in the *Effects of the Action* section, over the 135-year life of the Program, we estimate:

- Loss of production from 35 nests due to long-term habitat loss and associated disturbance;
- Loss of production from 25 nests from on-tundra aircraft operations; and,
- Loss of a total of 17 adult or fledged juvenile spectacled eiders from collisions attributed to the RFD (5 due to collisions with structures and 12 due to collisions with vessels).

We acknowledge these estimates could change as the species' status changes over the Program's duration, and specific details of actions and activities are identified. Therefore, re-evaluation during step-down consultations will be necessary. Nonetheless, because 1) this estimate is based on the best information currently available, 2) this loss would occur over an estimated 135-year Program, and 3) the overall estimated loss is a small proportion of the estimated North Slope-breeding population of spectacled eiders (13,501–16,128, 90% CI; Stehn et al. 2013); we believe spectacled eider loss that may result from the Proposed Program would not significantly affect the likelihood of survival and recovery of this species. Therefore, after reviewing the current status of spectacled eiders, the environmental baseline for the action area, the effects of the Proposed Program, and the cumulative effects, it is the Service's biological opinion that the Program, as proposed, is *not likely to jeopardize the continued existence* of spectacled eiders by reducing appreciably the likelihood of survival and recovery in the wild by reducing reproduction, numbers, or distribution of this species.

10.2 Steller's eiders

In evaluating impacts of the proposed RFD to Steller's eiders, the Service identified potential adverse effects from collisions with vessels. Using methods explained in the *Effects of the Action* section, the Service estimates potential loss of 1 adult and or fledged juvenile Steller's eider over the life of the project. Given that this loss would occur over an estimated 135-year Program, and the estimated loss is a small proportion of the estimated population of Alaska-breeding Steller's eiders (292-859, 90% CI; Stehn and Platte 2009), we believe Steller's eider loss that may result from the Proposed Program and associated RFD, would not significantly affect the likelihood of survival and recovery of this species. Therefore, after reviewing the current status of Steller's eiders, the environmental baseline for the action area, the effects of the Proposed Program, and the cumulative effects, it is the Service's biological opinion that the Program, as proposed, is *not likely to jeopardize the continued existence* of Alaska-breeding Steller's eiders by reducing appreciably the likelihood of survival and recovery in the wild by reducing reproduction, numbers, or distribution of this species.

10.3 Polar bears

In evaluating impacts of the Proposed Program to polar bears, we have identified potential adverse effects from disturbance, human-polar bear interactions, spills of oil and other petroleum products, and impacts to prey. Quantifying these effects is very difficult given uncertainties regarding the nature, location and timing of future oil and gas activities that would be proposed under the Program, coupled with likely future changes in the status, abundance, and distribution

of polar bears in response to deteriorating arctic sea ice. Nevertheless, we performed a qualitative impacts analysis based on the RFD, which provided reasonable projections for the Proposed Program in the future, and our past experience evaluating and regulating analogous oil and gas activities in other portions of the Beaufort Sea region.
We find that a host of exploration, development, production, and decommissioning activities associated with the Proposed Program would intermittently incidentally expose small numbers of polar bears of the SBS stock to disturbance, and that such impacts would recur over time as additional Proposed Program-related activities proceed. We also find that most of those exposures would not be biologically significant. The spatial and temporal distance between disturbance events would limit the potential for impacts to be biologically significant to individual bears and further reduce the potential for biologically significant impacts to individual bears to compound to effects at the stock level, let alone the species level. We acknowledge the Proposed Program-related activities could affect an increasingly higher proportion of the SBS stock of polar bear in the future (due to polar bears' increased use of terrestrial areas as sea ice decreases, a decline in the SBS stock population, or other factors). We also acknowledge that polar bears in the action area could become increasingly sensitive to disturbance or other impacts due to food stress or other factors indirectly associated with climate change. Regardless, we anticipate that the activities authorized under the Proposed Program would continue to impact small numbers of individual polar bears within the SBS stock and would not appreciably affect the survival and recovery of the polar bear species as a whole. When considering effects from the Proposed Program in combination with cumulative effects, we arrive at a similar conclusion because any such activities with the potential for significant effects are likely to have a federal nexus and therefore will require a separate section 7 consultation. Other smaller scale activities, which may not have a federal nexus, are likely to have smaller impacts and therefore would not make a significant contribution to cumulative effects. It is important to note these smaller scale activities are likely to still be managed locally and by the Arctic National Wildlife Refuge.

Our analysis also finds that several aspects of the Proposed Program would serve to limit its potential for associated oil and gas development actions and activities to impact polar bears. Key protections inherent in the Project Description include: the spatial limit on the footprint of production and support facilities on Federal lands; lease stipulations which prohibit, restrict, or discourage disruptive activities in areas where polar bears are more likely to be present (i.e., coastal waters, coastal areas, lagoons, barrier islands, river and stream corridors); and required operating procedures that prescribe safe and environmentally responsible methods for conducting oil and gas activities.

Another key protection built into the Proposed Program is the BLM's commitment, as expressed through PDC 2 and Lease Notice 2, to not approve any exploration or development activity with the potential to take polar bears unless the applicant/operator applies for relevant take authorizations under the MMPA, and provides documentation of compliance. The burden to seek authorization for take under the MMPA typically falls solely upon the parties proposing to engage in activities that would result in take. For this Program, however, the BLM has taken the step of requiring applicant/operators to apply for an MMPA take authorization for any activity that may cause take of marine mammals, and to show compliance with the MMPA. This is important because proposed activities must meet several protective standards in order to qualify for an MMPA incidental take authorization. The Service may not grant such an authorization

unless it finds that the activity would take only a small number of polar bears, would cause no more than a "negligible impact" to the SBS stock of polar bears, and would not have an "unmitigable adverse impact" on the availability of polar bears for subsistence uses. As explained in more detail above, the requirement to find "negligible impact" at the SBS stock scale (which is one of 19 subpopulations comprising the species) applies a more protective standard than the jeopardy standard under the ESA, which is evaluated at the broader species scale. If the incidental take associated with an action meets the MMPA standard of negligible impact to the stock, there should be little potential for the incidental take from that action to jeopardize the continued existence of polar bears as a species. Because activities authorized under the Proposed Program would either (a) not result in incidental take of polar bears, or (b) would result in the incidental take of a small number of polar bears from the SBS stock, it follows that the Proposed Program has little potential to jeopardize the polar bear species.

In conclusion, we find that the Proposed Program contains protective measures that provide a significant conservation benefit for polar bears by effectively limiting the capacity of Program-related oil and gas exploration or development activities to cause adverse effects. We expect that the spatial limit on development, lease stipulations protecting areas more highly utilized by polar bears will limit the potential for the Proposed Program to negatively impact polar bears. We also expect that the requirement to obtain MMPA incidental take authorization prior to engaging in any activity that may take polar bears will help ensure that Program-related impacts remain negligible, even at the stock level, as opposed to the species level at which the potential for "jeopardy" is evaluated.

Based on these factors, and after reviewing the current status of polar bears, the environmental baseline for the action area, the effects of the proposed Program, and the cumulative effects, it is the Service's biological opinion that the Program, as proposed, is *not likely to jeopardize the continued existence* of polar bears by reducing appreciably the likelihood of survival and recovery in the wild by reducing reproduction, numbers, or distribution of this species.

We further note that additional consultations required under the framework programmatic approach applied to this Proposed Program will help ensure that the Program remains complaint with section 7(a)(2) going forward. The BLM and the Service will conduct step-down consultations on all future activities proposed and authorized under the Program that may affect listed species or designated critical habitat. This is required in all framework programmatic consultations but has been intentionally strengthened and reiterated through PDC 1 (which also comprises Lease Notice 1), and PDCs 3 and 4, which are additional procedures to be used to ensure adequacy of the future consultation process. Meanwhile, intra-Service consultations would also be required prior to the issuance of any incidental take authorizations under the MMPA. These future consultations would result in repeated evaluation of the effects of the Program, each based on project-specific information, updated species status and environmental data, and an increased understanding of how oil and gas activities in the Coastal Plain of the Arctic Refuge affect polar bears. These consultations would also provide additional opportunities to integrate the ESA and MMPA regulatory processes to better address the conservation needs of the polar bear and ensure the Program remains in compliance with applicable Federal laws.

10.4 Polar bear critical habitat

In evaluating impacts of the Proposed Program to polar bear critical habitat, we separately considered potential effects of the Proposed Program to all three units, which are Sea Ice, Terrestrial Denning, and Barrier Island habitat. For all three units, we evaluated potential adverse effects to the physical and biological features of the habitat. For the Terrestrial Denning and Barrier Island units, we also evaluated the potential for human presence and activities to affect the value of critical habitat through disturbance, which could dissuade use or prevent access. As with analyzing effects to polar bears, we found that evaluating impacts of the Proposed Program to polar bear critical habitat is difficult due to uncertainties regarding the nature, location and timing of oil and gas activities that would be proposed under the Proposed Program. Nevertheless, we analyzed impacts qualitatively based on the RFD, which provided reasonable projections about the potential nature of future oil and gas exploration and development, and our past experience evaluating and regulating analogous oil and gas activities in other portions of the Beaufort Sea region. A summary, by unit, of the considerations that informed our conclusions follows.

Unit 1, Sea Ice Habitat

When designating polar bear critical habitat, we determined sea ice that moves or forms over shallower waters of the continental shelf and that contains adequate prey resources (primarily ringed and bearded seals) to support polar bears is an essential physical feature for polar bears in the southern Beaufort, Chukchi, and Bering seas (as described in more detail in Effects of the Action). Although there is little overlap between the Program Area and Unit 1, we identified that activities resulting from the proposed Program could potentially affect this essential physical feature through three mechanisms: 1) damage to the physical characteristics of sea ice caused by vehicular travel across ice, 2) spills of oil or other petroleum products into marine waters that form ice, or directly onto ice, and, 3) impacts to ringed and bearded seals, caused by disturbance or spills of oil or other petroleum products.

Uncertainty regarding specific actions and activities to be proposed and conducted prevents precise quantitative analysis of impacts to the Sea Ice Unit of critical habitat. Nonetheless, the same factors that serve to minimize effects of the action to polar bears would also apply to effects of the action on the Sea Ice Unit of critical habitat. Lease Stipulation 4 generally prohibits surface occupancy of any leases within coastal waters, lagoons, or barrier islands, thus limiting the potential that the physical characteristics of sea ice would be damaged by oil and gas infrastructure, much less associated vehicle travel (which by its nature would only cause insignificant impacts). While the BLM could still approve certain necessary infrastructure (i.e. barge landings, docks, spill response and staging and storing areas, and pipelines) in these areas within or near sea ice habitat, it could only do so on a case-by-case basis after consultation with USFWS and NMFS, and the footprint and degree of disturbance associated with such infrastructure would be limited. Lease Stipulation 4 and Lease Stipulation 1 (protective corridors along selected rivers and streams) would also reduce the risk of oil or other petroleum products spilled in the terrestrial environment reaching marine waters. These constraints on potential oil and gas activities would serve to limit potential disturbance- and spill-related impacts to polar bears as well as to the ringed and bearded seals on which they prey.

Meanwhile, PDC 2 and Lease Notice 2 would require MMPA compliance for actions and activities to be authorized under the Program. This would ensure impacts to polar bears and their habitat, including sea ice, along with ringed and bearded seals, would be considered on a project-specific basis prior to authorizing any oil and gas activities that may take marine mammals in or near sea ice. The substantive standards imposed by the MMPA as a prerequisite to issuing incidental take authorizations (i.e., small numbers of take, negligible impacts to the stock, and no unmitigable adverse impact on the availability of the stock for subsistence uses), as well the requirement that any such authorization include "means of effecting the least practicable adverse impact upon the species or stock and its habitat," provide further assurance that the polar bear's Unit 1 habitat would not be appreciably diminished.

Unit 2, Terrestrial Denning Habitat

When designating polar bear critical habitat, we determined that terrestrial denning habitat includes the following features essential to the conservation the species: coastal bluffs and river banks with (a) steep, stable slopes with water or relatively level ground below the slope and relatively flat ground above the slope; (b) unobstructed, undisturbed access between den sites and the coast; (c) sea ice near terrestrial denning habitat prior to the onset of denning during fall to provide access to terrestrial den sites; and, (d) the absence of disturbance from humans and human activities that may attract other bears (75 FR 76086 – 76137).

We identified that activities resulting from the Proposed Program could potentially affect these essential physical features by impacting banks that comprise suitable denning habitat, and by disturbing polar bears, which could affect movements of females between den sites and the coast, or by attracting non-denning bears to denning habitat. We identified no mechanisms by which the Proposed Program would affect the availability of sea ice proximal to terrestrial denning habitat.

We find two factors that reduce the potential for the Proposed Program to affect the physical features of banks to the extent that denning is discouraged. First, it is not apparent, based on the history of the oil and gas industry in the Beaufort Sea region, that oil and gas infrastructure reduces the habitat's capacity to support denning. There are a number of cases of polar bears denning, usually successfully, in drifts created in the lee of infrastructure. Therefore, the degree to which the presence of structures would affect the value of denning habitat is unknown (although human presence and activities associated with structures is known to affect the use of habitat).

Second, several restrictions built into the Proposed Program would serve to minimize the likelihood that infrastructure would be built where it would affect suitable denning habitat. Public Law 115-97 limits the area that would be covered by production and support facilities to 2,000 Federal acres, which pre-emptively limits the amount of terrestrial denning habitat that could be directly affected. Meanwhile, two lease stipulations would effectively steer the siting of infrastructure away from suitable denning habitat that exists in the Program Area (there is < 0.4 percent overlap between suitable terrestrial denning habitat and the Program Area). Lease stipulation 1 would reduce potential effects to suitable denning habitat by prohibiting surface occupancy by permanent oil and gas facilities including gravel pad, roads, airstrips, and pipelines within specified streambeds and within a prescribed setback distance of either 1 mile or 0.5 miles. This is important because much of the terrestrial denning habitat available within

the Program Area exists within these NSO zones. Lease Stipulation 9 would further require that, prior to beginning exploration or development within 2 miles of the coast (another area containing a relatively higher degree of terrestrial denning habitat compared with the Program Area as a whole), the lessee/operator/contractor must develop a conflict avoidance and monitoring plan to assess, minimize and mitigate the effects of any infrastructure and its use on polar bear habitat (among other resources).

We also find that the project-specific reviews that would occur under the framework programmatic approach guiding this Proposed Program would enable lessees, the BLM, and the Service to effectively site the inherently limited amount of facilities away from any discrete suitable denning habitat that exists in portions of the Program Area not subject to NSO or conflict avoidance requirements.

PDC 2 and Lease Notice 2 reinforce this expectation by requiring compliance with the MMPA and its substantive standards (i.e. small numbers, negligible impacts to the stock, etc.). MMPA incidental take authorizations must also include "means of effecting the least practicable adverse impact upon the species or stock and its habitat" and would entail, as needed, mitigation measures to protect important features of habitat. We find that PDC 2 and Lease Notice 2 provide the mechanism and requirement that siting decisions protect the physical features of suitable terrestrial denning habitat. These requirements also provide further assurances that disturbance of polar bears, which could affect movements of females between the coast and denning habitat, and/or attract non-denning polar bears to denning habitat, would be effectively managed.

The current Beaufort Sea ITRs that apply to the oil and gas industry operating west of the Program Area are instructive in this regard. The ITRs include analysis of whether industry facilities act as physical barriers that obstruct polar bear movements, and concludes these facilities appear to present "only a small-scale, local obstruction" to movements (81 FR 52293). Further, LOAs issued under the existing ITRs carry conditions that include, but are not limited to, "measures to protect pregnant polar bears during denning activities (e.g., den selection, birthing, nurturing of cubs, and departing the den site;" 81 FR 52278). Similar measures would likely be applied in future incidental take authorizations developed for the Action Area. Finally, prior to authorizing incidental take and/or intentional take of polar bears under the deterrence program, applicants must provide and receive approval of, a project-specific polar bear safety, awareness, and interaction plan that includes "a food, waste, and other 'bear attractants' plan."

Thus, MMPA compliance would result in: 1) protection of the physical characteristics of terrestrial denning habitat by requiring measures to effect the least practicable impact upon the species or stock and its habitat, 2) careful evaluation and minimization of disturbance, including both behavioral interruption and physical obstruction of movements, and, 3) evaluation and approval of project-specific polar bear interaction plans to ensure that non-denning bears are not attracted to terrestrial denning habitat.

In sum, we expect that limitations inherent to the Proposed Program, including the requirement to comply with the MMPA, will serve to preclude oil and gas activities from appreciably diminishing the value of Unit 2 of polar bear critical habitat as a whole.

Unit 3, Barrier Islands
When designating critical habitat for polar bears, the Service identified barrier islands as a "physical feature essential to the conservation of polar bears in the United States." The unit was described as "barrier island habitat used for denning, refuge from human disturbance, and movements along the coast to access maternal den and optimal feeding habitat, which includes all barrier islands along the Alaska coast, and their associated spits, within the range of the polar bear in the United States, and the water, ice, and terrestrial habitat within 1.6 kilometers (1 mile) of these islands (no-disturbance zone)" (75 FR 76086 – 76137).

Based on the description of barrier islands at designation, we consider the physical feature of barrier islands to include the physical characteristics of islands, accompanied by refuge from disturbance necessary for denning, resting, and unimpeded movements. In this light, we consider potential impacts of the proposed RFD to barrier island habitat to include construction of facilities on barrier islands, human activities on, near, or over barrier islands that could disturb or impact use by polar bears, and the risk of spills of oil or other petroleum products reaching barrier islands.

As with other effects of the action, uncertainty regarding future activities that would be proposed under the Program prevents precise quantitative analysis of impacts to the Barrier Island Unit of critical habitat. Nonetheless, there is considerable overlap in the importance of the same factors that serve to minimize other effects of the action. Specifically, Lease Stipulation 4 subjects leases with nearshore marine, lagoon, and barrier island habitats to NSO provisions which prohibit "exploratory well drill pads, production well drill pads, or a CPF for oil and gas" on barrier islands and surrounding areas. While Lease Stipulation 4 also allows a BLM Authorized Officer to approve "infrastructure necessary for oil and gas activities in these critical and sensitive coastal habitats, such as barge landing, docks, spill response staging and storage areas, and pipelines," the physical footprints and associated zones of disturbance of such facilities would be limited, and such facilities could only be approved on a case-by-case basis after consultation with the USFWS or NMFS or both, as appropriate. Therefore, this stipulation generally precludes exploration, production, and processing of oil from affecting barrier island habitat, and would require interagency consultation prior to authorizing construction of other, smaller facilities that could affect barrier island habitat, or the polar bears and polar bear prey that utilize these areas.

In regard to the risk of spilled oil or other petroleum products reaching barrier islands, we find that Lease Stipulation 4 (prohibiting exploration, production, and processing of oil in coastal waters, lagoons and barrier islands) reduces the risk of oil and other petroleum product spills in marine waters, and Lease Stipulation 1 (protective corridors along selected rivers and streams) would similarly reduce the risk of oil spilled in terrestrial areas being transported to the marine environment by fluvial waters.

It bears repeating that PDC 2 and Lease Notice 2 require that lessees demonstrate compliance with the MMPA. As for the other units of polar bear critical habitat previously discussed, this aspect of the Proposed Program would add to the conservation of the physical features of barrier islands resulting from the lease stipulations discussed above.

In sum, we expect that limitations inherent to the Proposed Program, including the requirement to comply with the MMPA, will serve to preclude oil and gas activities from appreciably diminishing the value of Unit 3 of polar bear critical habitat as a whole.

Determination

In conclusion, we find that the Proposed Program contains protective measures that provide significant conservation benefits for polar bear critical habitat by effectively limiting the capacity of Program-related oil and gas exploration or development activities to cause adverse effects. We expect that the spatial limit on development and lease stipulations that directly or indirectly protect areas more highly utilized by polar bears (e.g., offshore habitats, river corridors, and barrier islands) would limit the potential for the Proposed Program to negatively impact critical habitat. We also expect that the requirement to obtain MMPA incidental take authorization prior to engaging in any activity that may take polar bears will also contribute to the protection of critical habitat, directly by requiring means to effect least practicable impacts but also indirectly by minimizing disturbance, which could otherwise affect access to or use of critical habitat for denning, resting, or movements. Based on these factors, and after reviewing the current status of polar bear critical habitat, the environmental baseline for the action area, the effects of the proposed Program, and the cumulative effects, it is the Service's biological opinion that the Program, as proposed, is *not likely to destroy or adversely modify* polar bear critical habitat.

We further note that additional consultations required under the framework programmatic approach applied to this Proposed Program will help ensure that the Program remains compliant with section 7(a)(2) going forward. The BLM and the Service will conduct step-down consultations on all future activities proposed and authorized under the Program that may affect listed species or designated critical habitat. This is required in all framework programmatic consultations but has been intentionally strengthened and reiterated through PDC 1 (which also comprises Lease Notice 1), and PDCs 3 and 4, which are additional procedures to be used to ensure adequacy of the future consultation process. Meanwhile, intra-Service consultations would also be required prior to the issuance of any incidental take authorizations under the MMPA. These future consultations would result in repeated evaluation of the effects of the Program, each based on project-specific information, updated assessments of the status of critical habitat and environmental data, and an increased understanding of how oil and gas activities in the Coastal Plain of the Arctic Refuge could affect critical habitat. These consultations would also provide additional opportunities to integrate the ESA and MMPA regulatory processes to better address the conservation needs of the polar bear and its critical habitat to ensure the Program remains in compliance with applicable Federal laws.

11. **CONSERVATION RECOMMENDATIONS**

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information to be used in managing listed species. BLM is encouraged to:

1. Continue to monitor threatened eiders, polar bears, and BLM special status species in the Arctic Refuge. Results will allow the Service and BLM to better evaluate abundance, distribution, and population trends of listed eiders, polar bears, and other special status species. These efforts will enhance the likelihood that future oil and gas development within the Arctic Refuge will not jeopardize listed species, impact the conservation value of critical habitat, or increase the need to list additional species.
2. Work with the Service and other Federal and State agencies in implementing recovery actions identified in the Steller's and spectacled eider recovery plans and the Polar Bear Conservation Management Plan. Research to determine habitat requirements, sensitivity to disturbance and other program-related impacts, and response to current population threats is an important step toward minimizing conflicts with current and future North Slope oil and gas activities.

We request notification of the implementation of any conservation recommendations by the BLM to keep the Service informed of actions minimizing or avoiding adverse effects or benefiting listed species and their habitats.

12. **REINITIATION NOTICE**

As provided in 50 CFR §402.16, re-initiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law), and re-initiation may be required if:

1. New information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
2. The action is modified in a manner causing effects to listed or critical habitat designated that may be affected by the action; or
3. A new species is listed or critical habitat designated that may be affected by the action.

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APPENDIX A

Below we provide the approach and calculations used to estimate impacts to listed eiders resulting from collisions with barges associated with the RFD.

Listed eiders

As discussed in the *Environmental Baseline*, migratory birds suffer considerable mortality from collisions with anthropogenic objects. Listed eiders migrating east during spring and west during summer/fall would be at risk of colliding with barges in the marine environment. We expect most eiders would remain offshore during spring migration because they are thought to follow open water leads in pack ice during spring migration to breeding grounds (Woodby and Divoky 1982, Johnson and Richardson 1982, Oppel et al. 2009, M. Sexson, USGS, pers. comm.). During post-breeding migration in summer and fall, we anticipate male eiders would have the greatest collision risk in the action area. Satellite telemetry studies from the eastern ACP indicated male spectacled eiders depart early in summer and generally remain close to shore, sometimes crossing overland, during westward migration (TERA 2002; see also Petersen et al. 1999). When females and juveniles migrate during late summer/fall, decreasing daylight and frequent foggy weather conditions could increase collision risk. Longer nights increase the duration that eiders are vulnerable to collisions with unseen vessels, and may compound susceptibility to attraction and disorientation from vessel lighting. Overall, we anticipate risk of listed eider mortality from collisions with barges under the RFD would be low.

Nonetheless, using the best available information, we provide an estimate of collision risk for listed eiders from barging operations during the Program. We begin by calculating the risk of collision per barge operating during a single season in the Chukchi and Beaufort seas, based on observed eider (king and common) collisions during Royal Dutch Shell's 2012 Exploratory Program, and the estimated number of eiders migrating through the region. We then multiply the estimated collision rate (collisions per vessel per season) by the estimated abundance of spectacled and Steller's eiders within the action area. Next we approximate the number of collisions expected for listed eiders from an estimated total of 270[20] vessels, over the life of the Program. Finally, because barges would be expected to operate over a longer period each season than the duration of Shell's 2012 open-water campaign, we adjust the calculations to estimate collisions over an extended period of operations (approximately 150-days[21] of predicted open-water barging per season). These calculations are presented in detail below.

[20] BLM predicts an average of two barge transports per year (BLM 2018a). Therefore, over a 135-year Program, approximately 270 vessel trips would be expected.

[21] A typical open-water season is approximately 150 days. We expect the proposed barging operations would be of shorter duration (likely much shorter) than the length of a typical open-water season. We also acknowledge the timing of barge operations would be difficult to estimate with precision due to a number of factors including seasonal variation in sea ice conditions and marine forecasts. Therefore, lacking greater certainty in project timing, we have conservatively extrapolated our estimate to cover a full open-water season. We believe this represents an overestimation of collision risk to listed eiders. Furthermore, because appreciable collision risk to listed eiders is not expected despite this acknowledged overestimation, we expect actual collision risk to listed eiders may be considerably less than the level predicted.

Although limited, the best available information with which to estimate collision risk between marine vessels and migratory birds are observations recorded during Royal Dutch Shell's (Shell) exploratory oil and gas activities in 2012. Ten vessels operating in the Chukchi Sea for 108 days recorded 131 total bird-vessel encounters, 17 of which were fatal collisions between eiders (13 king and 4 common eiders) and vessels. Of these 17 collisions, 2 involved mobile offshore drilling units, while the other 15 involved support vessels, which are reasonably similar to the proposed icebreakers. Considering that 10 vessels were involved in 15 fatal eider collisions, we estimate average collision rate per vessel to be 1.5 (i.e., 15 ÷ 10 = 1.5 collisions/vessel) over a 108-day season.

These rates are based on reported collisions for king and common eiders during a single shortened industry season in the Chukchi Sea. Listed eider species were not among the seaduck collisions recorded in 2012, however listed eiders moving through the Bering, Chukchi, and Beaufort seas during the proposed Program would also be at risk of colliding with barges, presumably in proportion to their relative abundance in seaduck populations. Assuming listed eiders are equally as vulnerable to collisions as king and common eiders, and because there is no basis to assume otherwise, we believe information on collision rates of much more abundant king and common eiders can be used to reasonably approximate collision rate for less abundant spectacled and Steller's eiders. To do this, we considered the number of observed collisions for eiders during Shell's 2012 exploratory season in the Chukchi Sea, combined with the estimated number of eiders migrating through the region, which were theoretically exposed to collision risk.

Based on a total of 705,380 eiders (529,271 king and 176,109 common eiders) recorded during migration counts near Utqiaġvik in late summer and fall of 2002 (Quakenbush et al. 2004[22]), we very roughly estimate the risk of collision, per eider passing through the Chukchi Sea, for each vessel operating offshore to be:

> 1.5 collisions per vessel per season ÷ 705,380 eiders = 0.0000021 collisions per vessel per season

We can then roughly estimate the risk of collision for listed eiders migrating through the Bering, Chukchi, and Beaufort seas, by multiplying the individual eider collision rate (described above), by the estimated abundance of spectacled and Steller's eiders from pre-nesting aerial survey data for the North Slope (Stehn et al. 2013)[23]. These surveys estimate spectacled and Steller's eiders number approximately 14,814 (90% CI = 13,501-16,128; Stehn et al. 2013) and 680 (Stehn et al. 2013), respectively. Therefore, we estimate listed eider collision rates would be:

[22]This survey was based on observed counts from a fixed location. It employed a subset of time intervals and extrapolated the data to account for intervals during which no observations were made. Because the majority of king and common eiders nest in Northern Canada, we believe these counts reasonably estimate the number of king and common eiders passing through Arctic Alaska. Listed eiders were not detected during these migration counts, presumably due to the comparative scarcity and identification challenges for spectacled and Steller's eiders.

[23] These surveys were based on aerial observations of a subset of available nesting habitat on the North Slope. The data were then extrapolated to account for available nesting habitat that was not surveyed.

14,800 spectacled eiders × 0.0000021 collisions per vessel per season = 0.031 spectacled eiders per vessel per season

680 Steller's eiders × 0.0000021 collisions per vessel per season = 0.0014 Steller's eiders per vessel per season

If these figures represent the number of collisions expected per vessel moving through the Chukchi Sea, we can then approximate the number of collisions expected for a total of 270 vessels, over the life of the Program, moving through the marine transit route:

0.031 spectacled eiders per vessel × 270 vessels = 8.37 spectacled eiders

0.0014 Steller's eiders per vessel × 270 vessels = 0.38 Steller's eiders

Because the figures above are based on an approximately 108-day season during Shell's 2012 campaign, we have adjusted the calculations to estimate collisions over approximately 150-days of a typical open-water season as follows:

8.37 spectacled eider collisions ÷ 108 days = 0.078 collisions per day; therefore,
0.078 collisions per day × 150 days = 11.63 spectacled eider collisions

0.38 Steller's eider collisions ÷ 108 days = 0.004 collisions per day; therefore,
0.004 collisions per day × 150 days = 0.53 Steller's eider collisions

Therefore, the Service roughly estimates loss of 12 adult and/or fledged juvenile spectacled eiders, and one adult and/or fledged Steller's eider from collisions with vessels over the life of the Program.

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David Bernhardt, Secretary of the Interior
U.S. Department of the Interior
1849 C Street N.W.
Washington, D.C. 20240

William Perry Pendley, Acting Director
U.S. Bureau of Land Management
1849 C Street N.W.
Washington, D.C. 20240

Chad Padgett, State Director
Bureau of Land Management, Alaska
222 West 7th Avenue, Stop 13
Anchorage, AK 99513

August 24, 2020

RE: Notice of Violation of the Endangered Species Act Section Associated with Oil and Gas Leasing Activities on the Coastal Plain of the Arctic National Wildlife Refuge

Dear Mr. Bernhardt, Mr. Pendley, and Mr. Padgett,

On behalf of the Gwich'in Steering Committee, Alaska Wilderness League, Alaska Wildlife Alliance, Canadian Parks & Wilderness Society, Defenders of Wildlife, Environment America, Friends of Alaska National Wildlife Refuges, National Audubon Society, National Wildlife Refuge Association, Northern Alaska Environmental Center, Sierra Club, The Wilderness Society, and Wilderness Watch (collectively "Petitioners"), and pursuant to 16 U.S.C. § 1540(g)(2)(A), Trustees for Alaska and Sierra Club submit the following 60-day notice letter to inform you that Petitioners intend to sue the U.S. Department of the Interior and the Bureau of Land Management (BLM) for violating the Endangered Species Act (ESA), 16 U.S.C. §§ 1531–1544. Your agencies have violated ESA Section 7(a)(2) requirements by failing to ensure that the authorization of an oil and gas leasing program on the Arctic National Wildlife Refuge Coastal Plain will not jeopardize the

1026 W. Fourth Avenue, Suite 201, Anchorage, AK 99501
Phone: 907.276.4244 Fax: 907.276.7110 www.trustees.org

survival and recovery of polar bears or destroy or adversely modify the species' designated critical habitat.[1]

The Coastal Plain of the Arctic National Wildlife Refuge is the biological heart of one of the largest remaining intact ecosystems in the world and provides critical habitat for ESA-listed polar bears. After decades of bipartisan support protecting this iconic place from development, a rider in the December 2017 tax bill ("Tax Act") enabled BLM to develop a program for oil and gas leasing on the Coastal Plain. On September 12, 2019, BLM made public the final environmental impact statement (EIS) for the Coastal Plain Leasing Program. In the final EIS, BLM identified the least protective, most intensive-use alternative as its preferred alternative — Alternative B. Alternative B would offer the entire 1.5 million acre Coastal Plain for oil and gas leasing with the fewest protections for wildlife, habitat, or wilderness values. BLM issued a record of decision (ROD) for the leasing program adopting Alternative B on August 17, 2020.

In authorizing this leasing program, BLM consulted with the U.S. Fish and Wildlife Service (FWS) on the effects of its proposed action on those ESA-listed species under FWS' jurisdiction. This consultation resulted in a BiOp being issued on March 13, 2020.[2] BLM's legal violations noticed in this letter stem, in part, from its reliance on this opinion purporting to analyze the effects of the Coastal Plain leasing program on threatened polar bears. As the agency authorizing oil and gas leasing on the Coastal Plain, BLM has an ongoing, substantive duty under Section 7(a)(2) of the ESA to ensure that its actions are not likely to jeopardize the continued existence of listed species or result in destruction or adverse modification of critical habitat.[3]

The BiOp is legally flawed in a variety of ways: it relies on uncertain mitigation measures to avoid jeopardy; it fails to consider the best available scientific data; it fails to analyze the total impacts of the whole oil and gas program on critical habitat; and it fails to consider impacts from increased greenhouse gas emissions in making its "no jeopardy" determination. Because an action agency's reliance on a legally flawed BiOp to authorize an action violates its substantive duty to ensure against jeopardy, BLM violates the ESA by relying on the legally flawed BiOp.

Further, BLM cannot reasonably or lawfully rely on the BiOp because BLM has repudiated its authority to enforce conditions on which FWS premised the BiOp's conclusions and has changed its position regarding a key limitation on which the BiOp relied. Per BLM's interpretation of the Tax Act, its decision about which lands to make available for leasing is the last point at which BLM has authority to preclude harmful activities or infrastructure from

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[1] 16 U.S.C. § 1536(a)(2).
[2] Fairbanks Fish and Wildlife Field Office, U. S. Fish and Wildlife Service, Biological Opinion for Coastal Plain Oil and Gas Leasing Program Arctic National Wildlife Refuge (Mar. 13, 2020) ["Biological Opinion" or "BiOp]. This document was finalized and issued on March 13, and publicly released with BLM's Record of Decision for the leasing program on August 17, 2020.
[3] 16 U.S.C. § 1536(a)(2).

occurring in designated polar bear critical habitat. Even though subsequent authorizations are required for those activities, BLM has taken the position that it cannot deny such authorization for any activity or infrastructure that is "necessary" for "access" to leased oil and gas.

The BLM's approval of a leasing program that may jeopardize the survival and recovery of the polar bear or cause the destruction or adverse modification of its designated critical habitat violates the ESA and its implementing regulations, and is arbitrary, capricious, and not in accordance with law.

FACTUAL BACKGROUND

The polar bear (*Ursus maritimus*) was listed as threatened under the ESA in 2008 and is also federally protected under the Marine Mammal Protection Act (MMPA).[4] Of the two polar bear populations (or stocks) found in the United States, the Southern Beaufort Stock (SBS) population is the most likely to occur on the Coastal Plain.[5] Threatened polar bears den on the Coastal Plain and are using it with increasing frequency for other activities. The majority of the Coastal Plain (approximately 77 percent) is designated as critical habitat for the species.[6] The vast majority of the area of the Coastal Plain subject to BLM's Oil and Gas Leasing Program is land designated as polar bear critical habitat.

Polar bear populations have already been reduced to a precarious state due to impacts from climate change, which will only increase as warming in the Arctic region continues. Polar bears are particularly vulnerable to sea ice melt given their life history and specialized habitat needs. The U.S. Geologic Survey concluded that reduced sea ice could result in the loss of approximately two-thirds of the world's polar bears within 50 years, and Alaska's polar bears will likely be extirpated under current emission scenarios.[7] These predictions are already coming to pass. In fact, the SBS population has suffered dramatic losses in sea ice and is in decline.[8] The most recent estimate for the SBS population was 900 bears in 2010, representing a roughly 40 percent decline since the 1980s.[9] As sea ice is reduced, these bears are increasingly coming ashore to den on the Coastal Plain.[10]

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[4] 73 Fed. Reg. 28212 (May 15, 2008); 75 Fed. Reg. 76086 (Dec. 7, 2010).
[5] 75 Fed. Reg. at 76090.
[6] *Id*. at 76086.
[7] S.C. Amstrup *et al.*, Forecasting the Range-wide Status of Polar Bears at Selected Times in the 21st Century, U.S. Geological Survey Administrative Report (2007).
[8] J. F. Bromaghin *et al.*, *Polar bear population dynamics in the southern Beaufort Sea during a period of sea ice decline*, 25 Ecological Applications 634 (2015).
[9] *Id.*; E.V. Regehr *et al.*, *Polar bear population status in the southern Beaufort Sea*, Open-File Report 2006-1337 at 1 (2006).
[10] J. W. Olson *et al.*, *Collar temperature sensor data reveal long-term patterns in southern Beaufort Sea polar bear den distribution on pack ice and land*, Mar Ecol Prog Ser 564:211-224 (2017); 75 Fed. Reg. 76086.

Separate from its leasing program, BLM received a proposal from SAExploration for an area-wide three-dimensional (3-D) seismic exploration on the Coastal Plain, intended to start in December 2018. BLM made that application public in July of 2018. SAExploration also petitioned FWS for an Incidental Take Regulation (ITR) under the MMPA to authorize "take" of threatened polar bears, as that term is defined under the MMPA. The applicants subsequently modified their proposal to begin in the 2019–20 winter season instead. To date, there has been no public information provided by the agencies on the status of this incidental take application or seismic exploration proposal.

In its final EIS for the program, BLM identified the least protective, most intensive-use alternative as its preferred alternative—Alternative B. Alternative B will offer the entire 1.5 million acre Coastal Plain for oil and gas leasing with the fewest protections for wildlife, habitat, or wilderness values. Throughout the final EIS, BLM states that section 20001(c)(2) of the Tax Act prevents it from denying a permit where the access is necessary for oil and gas development.

FWS characterized the BiOp on the Coastal Plain leasing program as programmatic, and therefore did not include an incidental take statement.[11] That release of liability can only be obtained via subsequent "step-down" ESA consultations that must occur prior to BLM permitting exploration and development activities. The BiOp concludes that BLM's decision to open the entire Coastal Plain to leasing as described in Alternative B, and its subsequent lease sale, will not jeopardize polar bears or result in destruction or adverse modification of polar bear critical habitat. Those conclusions required two key conditions: (1) BLM must not approve any on-the-ground activity until after the lessee/operator obtains an MMPA authorization from FWS for any incidental take, or a letter from FWS indicating such take will not occur; and (2) BLM must also complete additional "step-down" ESA consultations with FWS prior to authorizing any on the ground activity that may affect a listed species.[12] The BiOp does not engage in any quantitative analysis of harms to polar bears, asserting that the locations of site-specific exploration and development activities are too uncertain or unknown at the leasing stage. The BiOp also assumes that compliance with the MMPA will prevent any destruction or adverse modification of critical habitat and otherwise provides only a cursory and misleading discussion of impacts to critical habitat.

The BiOp does not quantitatively analyze impacts from seismic exploration, stating that the timing locations of specific exploration and development activities are unknown at the leasing stage. The BiOp makes these statements despite assuming that the entire Coastal Plain would be subject to at least one 3D seismic survey within two years of signing of the ROD.[13] The BiOp entirely failed to acknowledge a recent study to quantify those impacts. In December 2019, FWS and USGS scientists released a study, "Seismic Survey Design and Effects on

[11] BiOp at 10.
[12] *Id*. at 25.
[13] *Id*. at 15.

Maternal Polar Bear Dens," that attempted to quantitatively model impacts on polar bears from seismic surveys on the Coastal Plain.[14] That study concluded that an area-wide seismic survey could only comply with the MMPA if the seismic did not occur in high-density denning habitat until the last few weeks of the winter exploration season, when polar bears would have already left their dens, but snow conditions may be too deteriorated to actually conduct seismic.

The BiOp also relies on the future implementation of measures from past Letters of Authorization issued pursuant to the Beaufort Sea ITR. The BiOp assumes that oil and gas operators will avoid denning polar bears and maintain a buffer distance between detected dens and the crews undertaking seismic survey activities.[15] The BiOp does not discuss or acknowledge a recent study finding that aerial FLIR (Forward Looking Infra-red) surveys, conducted by the oil and gas industry to locate and hence protect maternal dens from disturbance, have been missing over half of the polar bear dens known to be within surveyed areas.[16]

Finally, the BiOp does not consider the impacts of the direct or indirect emissions from the Coastal Plain oil and gas development or production on exacerbating climate change related impacts on polar bears. Instead, it relies on a May 14, 2008 FWS policy memo to say that analysis of indirect emissions is not required.[17]

On August 17, 2020, BLM issued its ROD, adopting the Leasing Program for the Coastal Plain. BLM's ROD opens the entire Coastal Plain to oil and gas leasing. Following this rushed environmental review process, we understand that DOI intends to hold the first lease sale for the area.

LEGAL STANDARDS

Congress enacted the ESA to ensure the protection and conservation of threatened and endangered species.[18] The fundamental, express purpose of this federal statute is to conserve endangered and threatened species and the ecosystems upon which they depend.[19] The obligations imposed by the ESA on federal agencies are clear: "Each Federal agency, shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded or carried out by such agency … is not likely to jeopardize the continued existence of any

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[14] R. Wilson *et al.*, *Seismic Survey Design and Effects on Maternal Polar Bear Dens*, Journal of Wildlife Management (2020) [Attachment A].
[15] BiOp at 112.
[16] T. Smith et al., *Efficacy of aerial forward-looking infrared surveys for detecting polar bear maternal dens*, PLOS ONE (2020) [Attachment B].
[17] BiOp at 122.
[18] 16 U.S.C. § 1531(b).
[19] *Id.*

endangered species or threatened species or result in the destruction or adverse modification of [critical] habitat ….”[20] The action agency’s duty to consult with either FWS or the National Marine Fisheries Service (the “wildlife agency”) is triggered when it has determined that its actions “may affect” a threatened or endangered species.[21]

The action agency is responsible for initiating formal consultation[22] and is responsible throughout the consultation process for providing the best available scientific and commercial data to the wildlife agency.[23] Formal consultation under the ESA concludes with the wildlife agency’s issuance of a BiOp.[24] In a BiOp, the wildlife agency must determine whether the federal action subject to the consultation is likely to jeopardize the listed species or destroy or adversely modify critical habitat.[25] The BiOp must include a summary of the information upon which the opinion is based, an evaluation of the current status of the listed species, the effects of the action, and the cumulative effects.[26] The wildlife agency is also obligated to use the best available scientific and commercial data throughout the consultation process.[27]

The ESA regulations require that the consultation process consider “all consequences to listed species or critical habitat that are caused by the proposed action,” meaning “it would not occur but for the proposed action and it is reasonably certain to occur.”[28] Cumulative effects “are those effects of future State or private activities . . . that are reasonably certain to occur within the action area of the Federal action subject to consultation.”[29]

The ESA requires the wildlife agency to prepare a BiOp that uses the best scientific and commercial data available to evaluate whether an agency action is likely to jeopardize the continued existence of any endangered or threatened species or destroy or adversely modify designated critical habitat.[30] A likelihood of jeopardy is found when “an action [ ] reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.”[31] A jeopardy analysis requires the wildlife agency to consider the aggregate effects of past and ongoing human activities that affect the current status of the species and its habitat (“environmental baseline”); the consequences to listed species or critical habitat

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[20] *Id.* § 1536(a)(2).
[21] *Id.* § 1536(a)(3); 50 C.F.R. § 402.14.
[22] 50 C.F.R. § 402.14(a), (c).
[23] *Id.* § 402.14(d).
[24] *Id.* § 402.02.
[25] 16 U.S.C. § 1536(b)(4).
[26] 50 C.F.R. § 402.14(g)(2), (g)(3).
[27] 16 U.S.C. § 1536(a)(2).
[28] 50 C.F.R. § 402.02.
[29] *Id*.
[30] 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.14(g)(8).
[31] 50 C.F.R. § 402.02.

that are caused by the proposed action ("effects of the action"); and the effects of future state and private activities that are reasonably certain to occur ("cumulative effects").[32] The wildlife agency must consider all of these factors in the BiOp in context of the current status of the species and its designated critical habitat. Only where the wildlife agency concludes that all of these elements added together do not threaten a species' survival and recovery may it issue a no jeopardy opinion.[33]

If that BiOp relies upon mitigation measures to reach a no jeopardy conclusion, those mitigation measures must be "reasonably certain to occur."[34] To demonstrate that mitigation measures satisfy the reasonable certainty requirement, they must, inter alia, be achieved through "specific and binding plans," and constitute "solid guarantees."[35]

The action agency's duties under Section 7(a)(2) do not end with the completion of formal consultation and the issuance of a BiOp by the wildlife agency. Section 7(a)(2) imposes an ongoing, substantive duty on an action agency to ensure against jeopardy so long as it maintains discretionary control over its action.[36] Although an action agency satisfies its "*procedural* obligations under the ESA" by engaging in formal consultation, it "may not rely solely on a . . . biological opinion to establish conclusively its compliance with its *substantive* obligations under section 7(a)(2)."[37] An agency violates its substantive section 7(a)(2) duty by relying on an invalid BiOp.[38]

Where the BiOp is facially flawed, the action agency's reliance on it is arbitrary.[39] "Where the opinion's flaws are '*legal* in nature' . . . '[d]iscerning them requires no technical or scientific expertise,' and the failure to do so may result in 'an action based on reasoning 'not in

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[32] *Id.* §§ 402.14(g), 402.02.
[33] *See Pac. Coast Fed'n of Fishermen's Ass'n v. U.S. Bureau of Rec.*, 426 F.3d 1082, 1093 (9th Cir. 2005) (the proper "analysis is not the proportional share of responsibility the federal agency bears for the decline in the species, but what jeopardy might result from the agency's proposed actions in the present and future human and natural contexts").
[34] *Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, 524 F.3d 917, 936 n.17 (9th Cir. 2008) (*NWF v. NMFS*).
[35] *Rock Creek All. v. U.S. Fish & Wildlife Serv.*, 663 F.3d 439, 444 (9th Cir. 2011) (quoting *NWF v. NMFS*, 524 F.3d at 935–36) (internal quotation marks omitted).
[36] *Cottonwood Envtl. Law Ctr.*, 789 F.3d 1075, 1087–88 (9th Cir. 2015).
[37] *Pyramid Lake Paiute Tribe of Indians v. U.S. Dept. of the Navy*, 898 F.2d 1410, 1415 (9th Cir. 1990); *see also Fla. Key Deer v. Paulison*, 522 F.3d 1133, 1145 (11th Cir. 2008).
[38] *Wild Fish Conservancy v. Salazar*, 628 F.3d 513, 532 (9th Cir. 2010).
[39] *Ctr. for Biological Diversity v. BLM*, 698 F.3d 1101, 1127–28 (9th Cir. 2012); *City of Tacoma, Wash., v. FERC*, 460 F.3d 53, 75–76 (D.C. Cir. 2006); *Wild Fish Conservancy*, 628 F.3d at 532.

accordance with law' and . . . thus arbitrary and capricious.'"[40] An agency acts arbitrarily where it "should have understood the legal errors of the Biological Opinion's analysis" before acting.[41]

An agency's reliance on a BiOp is also unreasonable and fails to satisfy its substantive duty to ensure against jeopardy where the action agency has failed to discuss information about the action that would undercut the conclusions of the BiOp.[42] An agency cannot lawfully rely on a BiOp when the agency does not abide by conditions on which the conclusions regarding jeopardy or critical habitat depend.[43]

LEGAL VIOLATIONS

The BiOp purports to analyze the impacts of the Coastal Plain leasing program on polar bears and concludes that the proposed program is not likely to jeopardize the continued existence of polar bears.[44] However, for the reasons outlined below, among others, this conclusion is arbitrary and capricious and not in accordance with the ESA or its implementing regulations. The BiOp prepared by FWS was both legally flawed and inadequate with regard to evaluating the potential impacts of the oil and gas program on polar bears. As a result, in rendering its decision as set forth in the ROD in reliance on this BiOp, BLM violated its substantive duty to ensure that its leasing program will not jeopardize the continued existence of threatened polar bears or destroy or adversely modify designated critical habitat.

First, BLM violated the ESA because it cannot ensure that it retains the authority to preclude activities on the Coastal Plain as part of its leasing program and as a result may not be able to preclude activities that may jeopardize polar bears. BLM asserts throughout the final EIS and ROD that its discretion to preclude activities on leases is constrained as a result of the Tax Act. Yet, the BiOp reaches its no jeopardy conclusion based on the assumption that BLM will refuse to authorize oil and gas activities unless the operator demonstrates compliance with the MMPA. Because BLM has repudiated its authority to refuse to permit projects that are "necessary," it cannot lawfully rely on the BiOp to show that it has met its substantive duties.

Second, BLM violated its duty to ensure against destruction or adverse modification of polar bear critical habitat by changing its interpretation of the Tax Act's 2,000 acre limit on Coastal Plain surface disturbance. In the final EIS and BiOp, explicit assumptions were made and relied on regarding limitations on the extent of infrastructure that could be present at any given point in time. BLM altered its interpretation in the ROD, making it unclear the extent to which the agency will allow surface disturbing activities on the Coastal Plain and potentially

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[40] *Wild Fish Conservancy*, 628 F.3d at 532 (quoting *Defenders of Wildlife v. EPA*, 420 F.3d 946, 976 (9th Cir. 2005), *rev'd on other grounds*, *Nat'l Ass'n of Home Builders v. Defenders of Wildlife*, 551 U.S. 644 (2007)).
[41] *Defenders of Wildlife v. U.S. Envt'l Protection Agency*, 420 F.3d 946, 976 (9th Cir. 2005).
[42] *Ctr. for Biological Diversity*, 698 F.3d at 1127–28.
[43] *See, e.g.*, *Oregon Nat. Desert Ass'n v. Tidwell*, 716 F. Supp. 2d 982, 1004 (D. Or. 2010).
[44] BiOp at 131.

allowing for impacts far beyond the limits that FWS considered in the BiOp. BLM cannot ensure that the impacts to critical habitat will be limited as the BiOp assumed, and therefore cannot lawfully rely on a no jeopardy conclusion predicated in part on a limitation that BLM has disavowed.

Third, BLM violated the ESA by unreasonably relying on a legally deficient BiOp. The BiOp is legally deficient for at least four independent reasons:

> (i) It relies on mitigation measures without evaluating whether BLM has legal authority to enforce or implement those measures, and thereby arbitrarily ignores information indicating those measures are uncertain.
>
> (ii) It fails to analyze the full impacts of the whole agency action on critical habitat. The BiOp relies upon future MMPA permitting and future ESA consultations that will only consider impacts on a piece-meal basis. The BiOp fails to consider the impacts of the whole leasing program that will accrue and accumulate over decades, including all the direct and indirect effects dictated by its decision about what lands will be open or closed to leasing. The remainder of the "analysis" suffers from contradictions, misrepresentations, and omissions that make it arbitrary and capricious.
>
> (iii) It fails to consider and analyze the best available scientific data, in violation of the statute's express requirement.[45] Specifically, it failed to consider studies relevant to determining impacts to polar bears from winter seismic exploration, including a study by FWS and USGS scientists. FWS had ample information to assess likely impacts from seismic exploration, which the agencies anticipated will occur across the entire Coastal Plain within the next two years.
>
> (iv) It entirely failed to consider the climate change impacts from oil and gas activities on the Coastal Plain and how such activities would exacerbate impacts to SBS polar bears. FWS has sufficient information to discuss how such increased greenhouse gas emissions would impair the recovery and survival of the species, but failed to consider it. The failure to address this readily available information in the BiOp violates the ESA.

Pursuant to Section 7(a)(2), BLM is required to "insure" that any of its actions or approvals are "not likely to jeopardize the continued existence of . . . any threatened species,"[46] including polar bears. This substantive duty applies to BLM's permitting, management, and authorization of the Coastal Plain leasing program. As BLM interprets the Tax Act, its decision about which lands to open or close to leasing is the last point at which it retains the authority to preclude impacts. That decision therefore irretrievably commits resources. By relying on the flawed and legally deficient BiOp to support the leasing program, BLM is failing to ensure its

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[45] 16 U.S.C. § 1536(a)(2).
[46] *Id*.

actions will avoid the likelihood of jeopardy to polar bears and the destruction or adverse modification of their critical habitat. Therefore, BLM has violated Section 7(a)(2) of the ESA.[47]

BLM must withdraw the ROD and halt any further actions depending on the ROD, and BLM and FWS must reinitiate section 7 consultation to address the problems and legal deficiencies identified in this letter. Any one of these violations standing alone is sufficient to warrant such action.

I. BLM violated its ESA Section 7(a)(2) duty to ensure against jeopardy by unreasonably relying on the BiOp despite repudiating its own authority to enforce a requirement on which the no jeopardy conclusion depends

The BiOp's no jeopardy conclusion for polar bears rests on the premise that BLM will not authorize any on-the-ground activities unless and until the lessee/operator first obtains MMPA authorization from FWS for any incidental take resulting from the activities or a letter from FWS finding that incidental take will not occur.[48] Yet BLM repeatedly states that it interprets the Tax Act as precluding it from denying authorization for any on-the-ground activity "necessary" for "access" to leased oil and gas. This renders the foundational premise of the BiOp's no jeopardy conclusion a nullity. An agency "may not make empty promises, secure a no jeopardy BiOp, and then go forward with the proposed action—absent the . . . enforcement promised—simply because a no jeopardy BiOp has issued."[49] "An agency cannot meet its section 7 obligations . . . by failing to discuss information that would undercut the opinion's

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[47] *Id*.

[48] *See* March 13, 2020 FWS Cover Memo to BiOp at 2 ("These PDCs form the basis of the analysis *and must be implemented by the BLM in full for the conclusions of the BO to remain valid*.") (emphasis added); BiOp at 114 ("The most important factor minimizing impacts… to polar bears is PDC 2."); *Id*. at 115 ("Despite our inability to quantitatively evaluate potential impacts of disturbance to polar bears from the proposed RFD, based on PDC 2, we conclude that because any permit will require compliance with the MMPA, the effects of disturbance will have to be limited to individual-level impacts to a small number of polar bears that would cause no more than a negligible impact to the SBS stock . . . . Given that we have concluded that the Proposed Program will cause no more than a negligible impact to the SBS stock of polar bears, it is reasonable to conclude that the Proposed Program will not appreciably affect the rate of decline and therefore will not appreciably affect the prognosis for recovery of the SBS subpopulation and of the species overall."); *Id*. at 122 ("Further, and most importantly, PDCs 1 and 2 (also Lease Notices 1 and 2) require that protections of the ESA and MMPA would be applied to all activities proposed under the Program."); *Id*. at 123–24 ("Also importantly, PDC 2 requires compliance with the MMPA, including potential impacts to terrestrial denning habitat, and impacts to behaviors that influence polar bear access to, and use of, denning habitat."); *Id*. at 130–31, 133–34, and 136.

[49] *Oregon Nat. Desert Ass'n v. Tidwell*, 716 F. Supp. 2d at 1004 (citing *Res. Ltd., Inc. v. Robertson*, 35 F.3d 1300 (9th Cir.1993)).

conclusions."[50] Yet that is exactly what BLM has done here. As a result, BLM's reliance on the BiOp is unreasonable and violates Section 7(a)(2).

A) BLM repeatedly repudiates its authority to preclude oil and gas activities on the Coastal Plain.

In both the final EIS and the ROD, BLM repeatedly states its position that it lacks authority post-leasing to deny authorization for any on-the-ground activity, such as constructing a road or pipeline or undertaking any other "necessary" activity to access leased oil and gas. For example, in the final EIS, BLM states:

> While the BLM may grant a waiver, exception, or modification of a stipulation through the permitting process, it may also impose additional requirements through permitting terms and conditions to meet the objectives of any stipulation. This would be the case if the BLM Authorized Officer considers that such requirements are warranted to protect the land and resources, in accordance with the BLM's responsibility under relevant laws and regulations. *Note that PL 115-97 requires that the BLM authorize rights-of-way (ROWs) for essential roads and pipeline crossings, and other necessary access, even in areas closed to leasing or with a NSO* [*No Surface Occupancy*].[51]

BLM qualified its statement that it may impose additional requirements to meet the objective of any stipulation with the position that the Tax Act prevents it from imposing a condition that would result in denial of "necessary access."

In explaining the effect of Lease Stipulation 1 requiring permanent oil and gas facilities be set back from sensitive resources, BLM again asserts that the stipulation would give way for a "necessary" activity because the Tax Act requires authorization of such activities:

> Requirement/Standard: (NSO) Permanent oil and gas facilities, including gravel pads, roads, airstrips, and pipelines, are prohibited in the streambed and within the described setback distances outlined below, from the southern boundary of the Coastal Plain to the stream mouth. For streams that are entirely in the Coastal Plain, the setback extends to the head of the stream, as identified in the National Hydrography Dataset. *Essential pipelines and road crossings would be permitted through setback areas in accordance with Section 20001(c)(2) of PL 115-97, which requires issuance of rights-of-way or easements across the Coastal Plain*, including access to private land used in support of the federal oil and gas leasing

[50] *Ctr. for Biological Diversity*, 698 F.3d at 1127–28 (9th Cir. 2012) (citing *Wild Fish Conservancy*,628 F.3d at 532 (9th Cir. 2010)).
[51] U.S. Dep't of the Interior, Bureau of Land Mgmt., Coastal Plain Oil and Gas Leasing Program Final Envtl. Impact Statement at 2–3 to 2–4 (Sept. 2019) [hereinafter FEIS] (emphasis added).

> program, for the exploration, development, production, or transportation necessary to carry out Section 20001.[52]

Even though Lease Stipulation 1 would bar permanent facilities within the setback area for streams, permanent facilities "essential" for "access" would *not* be barred from those areas because BLM interprets provision 20001(c)(2) as mandating that it authorize such access if "necessary" to carry out the oil and gas leasing program.

BLM also includes numerous responses to public comments on its draft EIS that reiterate its position that it lacks authority post-leasing to deny authorizations for any on-the-ground activities "necessary" for access to leased oil and gas. For example, in response to a question from the public asking for clarification of whether the "No Surface Occupancy" (NSO) stipulation described in the draft EIS would enable BLM to prevent surface activities adjacent to the NSO parcel that have spillover surface impacts on the parcel, BLM stated:

> Section 20001(c)(2) of the Tax Act states the Secretary shall issue any rights-of-way or easements across the Coastal Plain for the exploration, development, production, or transportation necessary to carry out this section; therefore, if an operator were required to access resources that required a right-of-way within the Coastal Plain, prohibiting such access would not comply with the Tax Act.[53]

In rejecting comments from FWS suggesting the addition of stipulation language to prevent oil and gas structures near the Hulahula River, BLM stated:

> Section 20001(c)(2) of the Tax Act states the Secretary shall issue any rights-of-way or easements across the Coastal Plain for the exploration, development, production, or transportation necessary to carry out this section. Therefore, if an operator were required to access resources east of the Hulahula River, they may need a right-of-way across the river; *prohibiting such access would not comply with the Tax Act*.[54]

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[52] FEIS at 2-5 to 2-6 (emphasis added).

[53] FEIS Appendix S at S-223 (Response to Public Comment Row #245); *see also id*. at S-331 (Response to Public Comment Row #461).

[54] FEIS Appendix S at S-350 (Response to Public Comment Row #503) (emphasis added); *see also id*. at S-351 (Response to Public Comment Row #505) ("Section 20001(c)(2) of the Tax Act states the Secretary shall issue any rights-of-way or easements across the Coastal Plain for the exploration, development, production, or transportation necessary to carry out this section. For example, if an operator were required to access resources east of the Hulahula River, they may need a right-of-way across the river; *prohibiting such access would not comply with the Tax Act*.") (emphasis added); *id*. at S-371 (Response to Public Comment Row #547) ("The tex [sic] in ROP 19t [sic] has been revised as needed. Section 20001(c)(2) of the Tax Act states the Secretary shall issue any rights-of-way or easements across the Coastal Plain for the exploration,

Furthermore, BLM's comment responses did not repudiate public comments asserting that BLM lacked authority to regulate "necessary" access. One commenter stated:

> The BLM does not retain substantial rights allowing it to regulate rights-of-way and easements. The DEIS should have noted that reasonable regulations may not be permitted in some cases, since Section 20001(c)(2) of PL 115-97 mandates that rights-of-way or easements across the Coastal Plain are to be issued with no mention of protecting surface resource values.[55]

BLM's response did not deny or reject the comment's assertion.

In response to a public comment asserting that the draft EIS was ambiguous with regard to how rights of way for access and pipelines would be approached, and that the ambiguous language could be "off-putting to potential lessees," BLM stated:

> Section 20001(c)(2) of the Tax Act states the Secretary shall issue any rights-of-way (ROW) or easements across the Coastal Plain for the exploration, development, production, or transportation necessary to carry out this section. Thus; [sic] ROWs necessary for both access and construction of facilities, such as pipelines, will be granted, including in unleased areas.[56]

Thus, once again, BLM asserted its position that it cannot deny authorization for such access.

The ROD entrenches this position. The ROD qualifies the assertion that lease stipulations and ROPs provide further protections for resources with the caveat that "PL 115-97 requires that the BLM issue rights-of-way for essential roads and pipeline crossings, and other necessary access, even in areas subject to an NSO stipulation."[57] The ROD flatly asserts the position that

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development, production, or transportation necessary to carry out this section. Therefore, applicants may need a right-of-way across rivers; prohibiting such access would not comply with the Tax Act."); *id*. at S-391 (Response to Public Comment Row #573) ("Section 20001(c)(2) of the Tax Act states the Secretary shall issue any rights-of-way or easements across the coastal plain for the exploration, development, production, or transportation necessary to carry out this section. For example, if an operator were required to access resources east of the Hulahula River, they made need a right-of-way across the river; prohibiting such access would not comply with the Tax Act.").

[55] FEIS Appendix S at S-790 (Public Comment Row #59).

[56] *Id*. at S-1017 (Response to Public Comment Row #5).

[57] U.S. Dep't of the Interior & BLM, Coastal Plain Oil and Gas Leasing Program Record of Decision (2020) at 3 n.4 [hereinafter ROD]; *see also id*. at 19 (stating that the NSO stipulations give way for any "facilities necessary to be located in such areas, such as essential road and pipeline crossings of streams or rivers as required by Section 20001(c)(2)"); *id*. at Appendix A,

BLM lacks discretion to deny such rights-of-way, and further clarifies that it lacks authority to deny such rights-of-way *not only for lease holders*, but *any* request for "access" deemed necessary to carry out the leasing program:

> Congress went beyond the authorizations applicable to the NPR-A and required that necessary rights of way, easements and production and support facilities be authorized; thus, in contrast to the legislation and regulations establishing an oil and gas leasing program for the NPR-A, Section 20001(c) provides three striking differences.
> … Section 20001(c)(2) states that the Secretary, acting through the BLM, "shall issue any rights-of-way or easements across the Coastal Plain for the exploration, development, production, or transportation necessary to carry out this section." The BLM interprets the plain language of this provision as requiring that it authorize any such rights-of-way necessary to carry out the Coastal Plain oil and gas program established by Section 20001 of PL 115-97.
>
> Clearly Congress intended that successful implementation of the mandated oil and gas program should not be frustrated by an unavailability of necessary access. This directive is unlike the NPR-A, where issuance of such rights-of-way are at the BLM's discretion. This directive is not limited to development under a particular lease, but rather any right-of-way necessary to carry out the section. It would, for example, apply to a request for a road or pipeline right-of-way, even if sought by a non-leaseholder.[58]

The ROD makes no attempt whatsoever to reconcile the position that BLM lacks authority to deny authorization for any structures and activities "necessary" for "access" with the assertion that BLM will deny authorization for on-the-ground activities absent the applicant obtaining MMPA authorization.

In sum, BLM claims that it lacks authority to preclude any future activities that are "necessary" for oil and gas leasing, but FWS' no jeopardy opinion relies on the assumption that BLM could and would preclude all activities on leases unless MMPA compliance is demonstrated before those activities can commence. As a result, BLM cannot reasonably rely on the no jeopardy determination.

Moreover, DOI's position with regard to the MMPA has been that the MMPA regulates the *taking* of marine mammals, but not the activities that cause the taking. In *Center for*

A-4 (qualifying statement that BLM may impose protective measures at the permitting stage with caveat that "PL 115-97 requires that the BLM authorize rights-of-way (ROWs) for essential roads and pipeline crossings and other necessary access, even in areas closed to leasing or with an NSO stipulation.").

[58] *Id*. at 9-10.

Biological Diversity v. Salazar, a court agreed with DOI's explanation that industry could move forward without an incidental take regulation in place, and such take merely would be subject to MMPA liability.[59] In evaluating the impacts of the MMPA incidental take regulation in that case, FWS assumed for the purposes of an Environmental Assessment that the oil and gas activities, and resultant take, would happen regardless of whether FWS promulgated an incidental take regulation to shield that take from liability. The agency's position was that the MMPA did not regulate the oil and gas activities themselves, but rather such regulation was imposed by the permitting agency with jurisdiction over the oil and gas activity itself.[60] But here, that permitting agency has disavowed having authority under the statute it is implementing (i.e., the Tax Act) to actually prohibit the activities.

Thus, DOI's position regarding the MMPA, and its interpretation of the legal effect of a lease notice[61] are not consistent with BLM relying on the BiOp when its no jeopardy conclusion turns on the condition that BLM will require operators/lessees to obtain MMPA authorization prior to authorizing on the ground activities. It violates Section 7(a)(2) for BLM to agree to enforce a condition on which the no jeopardy conclusion depends when BLM has averred that it lacks legal authority to enforce that condition in any situation where the activity is "necessary" for "access."

B) It is foreseeable to FWS and BLM that obtaining MMPA authorization for oil and gas activities will be "problematic" for extensive areas BLM opened to leasing.

It is reasonably foreseeable that BLM will offer to sell leases for which the activities entailed to access the leased oil and gas cannot comply with the MMPA. FWS informed BLM in a memo dated April 8, 2019 that operators/lessees obtaining MMPA authorization for seismic surveys on the Coastal Plain of the Arctic Refuge would be "problematic" for an extensive area of high polar bear denning density, which happens to overlap entirely with areas thought by BLM to have high and medium hydrocarbon potential.[62] FWS recommended that BLM <u>exclude</u>

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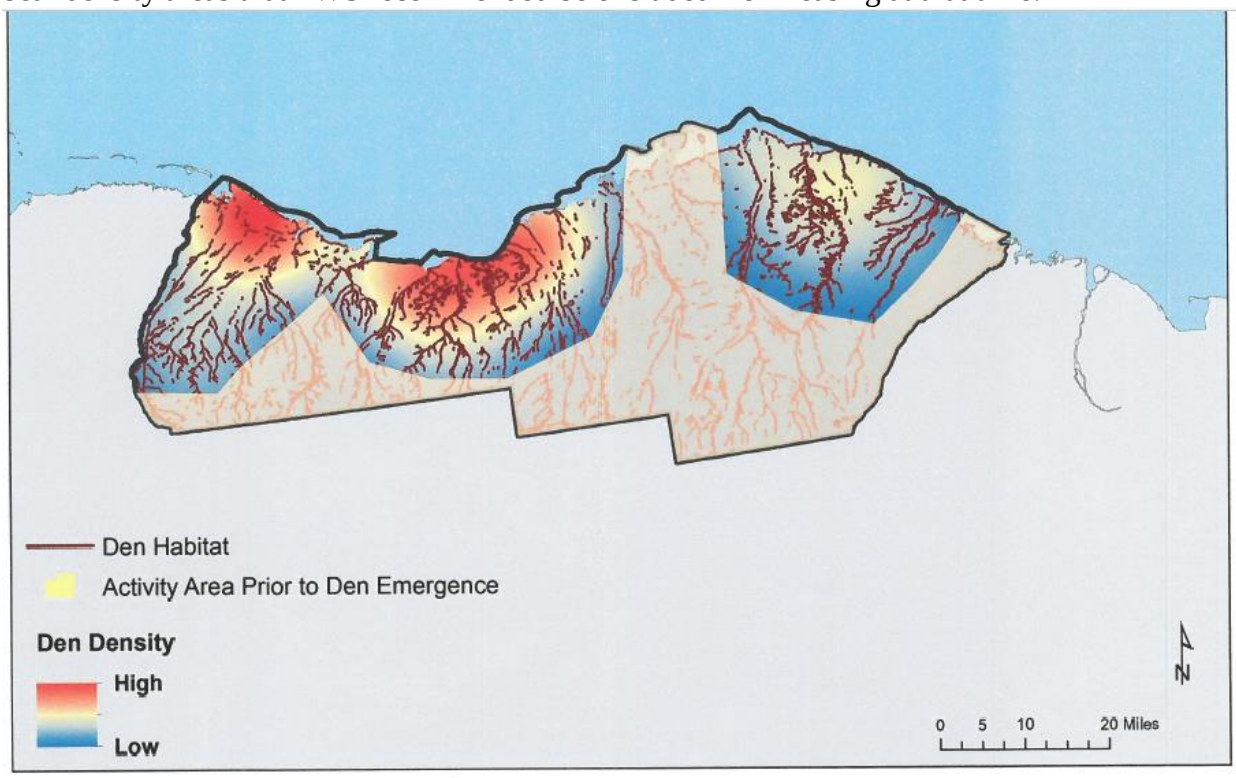
[59] *See Ctr. for Biological Diversity v. Salazar*, 695 F.3d 893, 915–16 (9th Cir. 2012) ("Plaintiffs fault the EA for assuming that oil and gas exploration would continue under the no-action alternative. … The EA …notes that 'because the [regulations] do not explicitly permit or prohibit oil and gas activities, Industry could continue to conduct exploration activities.' … As the 2008 final rule explains, *the incidental take regulations 'do not authorize, or 'permit,' the actual activities associated with oil and gas exploration in the Chukchi Sea"; they simply shield the proposed activities from take liability* under the MMPA.'" (emphasis added)).
[60] *See id.*
[61] *See infra* at 20-21.
[62] *See* U.S. Fish and Wildlife Service. Memorandum Regarding Recommendations for No Leasing Areas to Create an 800,000 Acre Alternative in the 2018 Draft Environmental Impact Statement (DEIS) for the Coastal Plain Oil and Gas Leasing Program for the Arctic National Wildlife Refuge, Alaska. (2019) [Attachment L]. The Tax Act dictates that BLM hold two lease sales, and that the first two lease sales each offer at least 400,000 acres for leasing, starting with

from leasing areas that overlap with high to medium polar bear denning density because "these areas will be problematic for permitting winter activities under Marine Mammal Protection Act."[63]

That FWS memo provided this map depicting the location of the high to medium polar bear density areas that FWS recommended be excluded from leasing at that time:



In additional comments from FWS to BLM dated August 9, 2019, FWS repeated that all permanent oil and gas facilities should be excluded from being within one mile of all suitable denning habitat within the high density denning areas shown on the map above,[64] because FWS

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those areas that have the "highest potential for the discovery of hydrocarbons." *See* Title II of the Tax Cuts and Jobs Act, Public Law 115-97 § 20001(c)(1)(B). BLM has identified areas of the Coastal Plain as "high," "medium", and "low" hydrocarbon potential, and estimates there are 427,900 acres projected to have high potential and 658,400 acres have medium potential. FEIS at ES-4.

[63] *See* Attachment L, *supra* note 62.

[64] The version of the FWS comments that BLM provided to the public did not contain the maps referred to in that comment; however, in response to a FOIA request from Defenders of Wildlife, FWS stated that the map referred to was the same map above, attached to the April 8, 2019 memo.

believed lessees otherwise would not be able to comply with the MMPA.[65] In BLM's final EIS for the Coastal Plain Oil and Gas Leasing program, BLM identifies stipulations (conditions) to apply to leases. Lease Stipulation 1 provides setbacks applicable to "permanent oil and gas facilities" to establish areas with No Surface Occupancy limitations on such facilities. With regard to Lease Stipulation 1, the FWS Regional Director-Alaska Region stated: "We reiterate our recommendation for a one mile buffer for all streams and rivers encompassed by the high density area for polar bear denning as provided in the FWS produced maps. Without these restrictions, it is unlikely that leaseholders will be able to comply with MMPA and/or ESA requirements for polar bears."[66]

BLM's response to that comment was merely to assert that "Lease Notice 2" requires operators/lessees to obtain MMPA authorization. BLM's response does not explain whether or how the Lease Notice will be enforceable in light of BLM's position, asserted in the final EIS, that it cannot deny authorization for on-the-ground activities that are "necessary" for access.[67]

FWS made plain its conclusion that activities within one mile of suitable denning habitat in the high-medium denning density areas will be a problem to permit under the MMPA and that compliance with the MMPA will require keeping activities and noise-causing permanent facilities at least one mile from all suitable denning habitat in that extensive region. The area identified in FWS comments as "problematic" for permitting would require exclusion of seismic activities from at least what appears to be approximately 150,000 acres of land in the Coastal Plain identified by BLM as having high and medium hydrocarbon potential, taking into account the need for a one-mile buffer around stream and creek banks in the higher density denning area identified by the FWS memo. Thus, as FWS indicated that facilities and exploration activities would be entirely excluded from what appears to be approximately 150,000 acres in the midst of the high and medium hydrocarbon potential portions of the Coastal Plain, there is substantial reason at present for BLM to know that leasing parcels in that area, and even leasing parcels in any area that could require noise-causing facilities to cross that area or explore within that area, will lead to a situation where a lessee is unable to obtain MMPA authorization for incidental take, and where BLM will have to deny permission for on the ground activities. Yet BLM repeatedly denied it has authority to do just that. BLM's reliance on the BiOp's no jeopardy

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[65] *See* U.S. Fish and Wildlife Service. Memorandum Regarding Comments on the Preliminary Final Environmental Impact Statement (EIS) for the Coastal Plain Oil and Gas Leasing Program for the Arctic National Wildlife Refuge, Alaska (2019) [Attachment I].

[66] *Id*. at 11, Comment #29 (emphasis added); *see also* BLM and Cooperating Agency Comments on the Administrative Draft Final EIS at 40, Comment #140 (same statement) [hereinafter Cooperating Agency Comments] [Attachment J].

[67] *See* Cooperating Agency Comments, *supra* note 66 at 40, Comment #140 ("Regardless of the buffer width, pursuant to Lease Notice 2 operators will have to obtain MMPA authorization prior to conducting operations in denning habitat. The EIS analyzes a range of alternatives. If Alternative B is the selected alternative in the Record of Decision, then the decision maker may select mitigation measures from other alternatives as necessary.").

conclusion for polar bears therefore violates its Substantive section 7(a)(2) duty to ensure against jeopardy.

BLM should specifically have consulted with FWS on the impacts of BLM adopting its stated interpretation of the Tax Act. Section 20001(c)(2) of the Tax Act does not state unambiguously that BLM lacks authority to deny authorizations for "necessary" activities. A reasonable interpretation of that provision is that Congress was merely indicating that it is BLM, rather than the primary land manager FWS, that "shall" make the decisions about rights of way and easements, but only when the easement or right of way is necessary for the oil and gas program. As BLM's interpretation is not mandated by the text of the Tax Act, its decision to adopt that interpretation should have been part of the program-level decision that was subject to Section 7 consultation. BLM therefore also violated Section 7(a)(2) by failing to consult with FWS regarding the impact of that interpretation.

Per BLM's interpretation of the Tax Act articulated in the ROD, once BLM decides which lands are available to leasing, BLM must offer the lands with the highest hydrocarbon potential in the first lease sale, and cannot deny authorization for any activities and infrastructure "necessary" for "access" to the leased oil and gas. Consequently, the decision in the ROD to open extensive areas of polar bear terrestrial denning critical habitat in both the "high" and medium hydrocarbon potential areas to leasing means that BLM has committed to surface impacts and disturbances in that critical habitat. In the absence of authority to enforce Lease Notice 2, BLM cannot ensure that the impacts to polar bears will be limited as the BiOp assumed. BLM cannot lawfully rely on a "no jeopardy" opinion predicated on a condition that BLM believes it lacks authority to implement or enforce.

II. <u>BLM violated its ESA Section 7(a)(2) duty to ensure against destruction or adverse modification of polar bear critical habitat by changing its position on a limitation relied on in the BiOp</u>

BLM cannot lawfully rely on the BiOp to satisfy its Section 7(a)(2) duties for the selection of lands for leasing because the ROD removes the 2,000 acre upper limit on direct footprint impacts that the BiOp's conclusions depended upon. An agency cannot meet its section 7 obligations by relying on a BiOp that is legally flawed or by failing to discuss information that would undercut the opinion's conclusions.[68]

The BiOp repeatedly relies on the "2,000 acre" limitation imposed by the section 20001(c)(3) of the Tax Act in assessing the extent of impacts to species and critical habitat.[69] It

[68] *Ctr. for Biological Diversity,* 698 F.3d at 1127–28 (citing *Wild Fish Conservancy,* 628 F.3d at 532).

[69] *See* BiOp at 113 (listing the 20001(c)(3) limitation as one of the factors that "serve to limit impacts" on polar bears); *id.* at 123 (listing 20001(c)(3) as a factor on which the analysis of

reflects the understanding that the 2,000 acre limit would apply to infrastructure built during the development phase, not just the production phase.[70] Moreover, the BiOp reflects the understanding that the direct footprint from the program would be limited to a maximum of 2,000 acres at any point in time.[71]

The ROD upends the premise that section 20001(c)(3) will limit the direct footprint of impacts from the RFD scenario to 2,000 acres. It expressly rejects the interpretation provided in the final EIS and relied upon in the BiOp.[72] Rather than clarifying BLM's interpretation of the 2,000 acre limit, the ROD attempts to punt on that issue and leaves the extent of infrastructure and activity permissible on the Coastal Plain an open question. The ROD creates uncertainty about whether structures built to support the development phase, or for transportation not specifically tied only to the production phase, would be restricted by the 2,000 acre limitation. [73]

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critical habitat impacts "relies"); *id.* at 133 (relying on understanding that the 2,000 acre limitation "pre-emptively limits the amount of critical habitat that could be directly affected").

[70] *See id*. at 104–05.

[71] *See id*. at 86 (stating that maximum direct impacts to wetlands from the extraction or placement of gravel fill would be 2,000 acres); *id*. at 87 (discussing how impacts to eiders were estimated based on "2,000 acres of development projected to occur under the RFD" and the associated zones of influence around that development); *id*. at 133 (the 2,000 acre limitation "pre-emptively limits the amount of [polar bear] critical habitat that could be directly affected"). The FWS memorandum transmitting the BiOp states that FWS based the BiOp on information BLM provided in the DEIS and Biological Assessment, as well as two e-mails from BLM, dated February 25, 2020 and March 3, 2020, "which clarify the scope and provisions of BLM's proposed action relative to Section 20001(c)3." FWS has not made these e-mails available to the public.

[72] *See* ROD at 2, 4 ("The ROD also does not adopt the interpretive assumptions made in the Leasing EIS as to the implementation of Section 20001(c)(3) of PL 115-97.")

[73] *See id*. at 11 ("There are a broad range of actions potentially carried out during the entire life of an oil and gas program which may necessitate authorization of facilities related to exploration, development, transportation, production, and related facilities…. Future BLM determinations about which facilities benefit from the 2,000-surface acre mandate, and which do not, could potentially influence the total extent of development in the Coastal Plain and, thus, the potential environmental impacts stemming from the leasing program."); *id*. at 12 ("Had Congress decided to encompass a broad range of facilities for various aspects of an oil and gas program into 20001(c)(3) it knew how to do so. 'Production and support facilities' are not 'exploration and support facilities,' nor are they 'transportation and support facilities,' or facilities that support some other aspect of the program that is not 'production and support.'"); *id*. at 13 ("Depending on the precise facts of a future proposal, certain other types of facilities that the BLM assumed were included within the 2,000 acre limit in the EIS, such as gravel roads not required for production, barge landing and storage, and gravel pits and stockpiles, may or may not be 'production and support facilities,' depending on particular circumstances at issue.").

The consequence is that the direct footprint from the program will not be "pre-emptively limit[ed]" to 2,000 acres, as the BiOp presumed.[74]

With regard to polar bears, the BiOp indicated that the limitation of impacts to a direct footprint of no more than 2,000 acres was a factor on which FWS relied to reach its no destruction/adverse modification conclusion regarding critical habitat despite "uncertainties regarding the nature, location, and timing of future activities proposed under the Program [that] prevent precise quantitative analysis of potential effects to terrestrial denning habitat."[75]

Thus, despite apparently representing to FWS that section 20001(c)(3) would limit the total direct footprint of facilities in polar bear critical habitat to no more than 2,000 acres at any point in time, BLM's ROD opens the entirety of the critical habitat within the program areas to surface impacts while simultaneously stripping away that limitation. Per BLM's interpretation of the Tax Act articulated in the ROD, BLM cannot deny authorization for any activities and infrastructure "necessary" for "access" to the leased oil and gas. Consequently, the decision in the ROD to open the entire Coastal Plain to leasing means that BLM has committed to surface impacts in critical habitat.[76] Without the 2,000 acre limitation "pre-emptively limiting" the total footprint of the impacts, BLM cannot ensure that the impacts to critical habitat will be limited as the BiOp assumed. BLM cannot lawfully rely on a BiOp whose conclusions are predicated in part on a limitation that BLM has disavowed.

III. <u>BLM violated its Section 7(a)(2) duty by unreasonably relying on a legally deficient BiOp that relies on a mitigation measure that is uncertain.</u>

The BiOp's no jeopardy conclusion for polar bears relies on the requirement that BLM will not authorize any on-the-ground activities unless and until the lessee/operator first obtains MMPA authorization, as discussed above. Problematically, to effectuate that requirement, the BiOp relies on a "lease notice" with language intended to notify lessees that BLM will not authorize on the ground activities until after the applicant/lessee provides proof to BLM that FWS has either authorized the incidental take resulting from such activities or determined that incidental take will not occur.

BLM's reliance is arbitrary and capricious because the BiOp entirely failed to evaluate whether a "lease notice" alone is a sufficient basis for BLM to deny a permit on the ground that the applicant has not yet obtained a release of MMPA liability. A BiOp cannot rely on mitigation

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[74] BiOp at 133.
[75] *Id*. at 123.
[76] As discussed in detail below, almost the entirety of the high and medium hydrocarbon potential areas in the Program Area are lands designated as terrestrial denning critical habitat, such that this is not a situation where it may be possible to avoid locating facilities in critical habitat post-leasing.

measures to support a "no jeopardy" conclusion unless they are reasonably certain to occur.[77] Mitigation measures are not sufficiently certain to occur where the action agency lacks the capacity to enforce those requirements.[78]

With regard to "lease notices" for on-shore oil and gas leasing outside the Arctic Refuge, BLM regulations state:

> An information notice *has no legal consequences, except to give notice of existing requirements*, and may be attached to a lease by the authorized officer at the time of lease issuance to convey certain operational, procedural or administrative requirements relative to lease management within the terms and conditions of the standard lease form. *Information notices shall not be a basis for denial of lease operations*."[79]

Further, with regard to lease notices for leases issued under the NPRA, BLM has stated in the Integrated Activity Plan Final EIS: "A lease notice provides information to permittees, including how the BLM intends to assure compliance with certain laws (e.g., Endangered Species Act of 1973 [ESA]) and regulations that may apply to oil and gas activities conducted pursuant to the lease. *Lease notices do not impose new requirements*." BLM has yet to issue any regulation to define the effect of a lease notice for a lease issued under the Tax Act. And, as described above, DOI and FWS' interpretation of the MMPA is that the statute prohibits taking but does not regulate the oil and gas activities that may cause such taking. Thus such activities could proceed at risk of violating the MMPA, subject to the statute regulating the oil and gas activity itself—here the Tax Act. The BiOp does not reflect consideration of whether the Tax Act provides BLM with the authority, or discretion, on which to base the requirement of Lease Notice 2. As a result, the BiOp is arbitrary and capricious because it relies on a measure that lacks the requisite certainty regarding its enforceability by the action agency.

Rather than address the question of whether BLM can actually deny a permit for a "necessary" activity based on the failure or inability to obtain upfront MMPA authorization, the BiOp offers a nonsensical statement that: "In the unlikely event that a proposed activity cannot be designed or mitigated in a manner that meets the MMPA's substantive standards, then that project would require modification or additional mitigation, or the incidental take could not be authorized."[80] The BiOp in no manner squares the assertion that failure to obtain MMPA authorization is "unlikely" with its own comments to BLM identifying that extensive areas of

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[77] *See, e.g.*, *NWF v. NMFS*, 524 F.3d at 936 n.17 (9th Cir. 2008). To demonstrate that mitigation measures satisfy the reasonable certainty requirement, inter alia, they must be achieved through "specific and binding plans," and constitute "solid guarantees." *Rock Creek All.*, 663 F.3d at 444 (quoting *NWF v. NMFS*, 524 F.3d at 935–36) (internal quotation marks omitted).

[78] *See, e.g.*, *Oregon Nat. Desert Ass'n*, 716 F. Supp. 2d at 1002–04 (action agency improperly relied on BiOp where "no jeopardy" conclusion depended on misrepresentations by action agency to FWS about enforcement of binding mitigation measures against permittees).

[79] 43 C.F.R. § 3101.1-3 (emphasis added). .

[80] BiOp at 115.

high density denning habitat should be excluded from oil and gas activities in light of MMPA permitting being "problematic." Nor does this statement evaluate whether BLM actually has authority to deny a permit where the activity or structure is "necessary" and yet MMPA authorization cannot be obtained.

Reliance on future "step-down" ESA consultations cannot provide the certainty required by the Ninth Circuit where the BiOp has engaged in no analysis whatsoever to evaluate what discretion to "inure to the benefit of the species" BLM will actually retain post-leasing. The BiOp does not consider or evaluate this problem at all, or consider how the Tax Act affects the authority of BLM to make decisions once it has found that an area should be offered for leasing, and leased the area.

Given BLM's own significant uncertainty about whether the agency will be able to enforce the relied upon measures via a lease notice, and the absence of anything in the BiOp to address or evaluate the legal authority underpinning enforcement and implementation of Lease Notice 2 (and hence PDC 2), BLM's reliance on the no jeopardy conclusion is unreasonable and violates the ESA.

IV. BLM violated its Section 7(a)(2) duty by unreasonably relying on a BiOp that fails to analyze the impacts of the whole agency action

The programmatic BiOp unlawfully failed to consider the impacts of the BLM's whole action — leasing and development of the Coastal Plain — on threatened polar bears and their critical habitat. Courts are clear: a BiOp cannot limit its review of an agency action in a manner that segments the jeopardy analysis and thereby allows for a piecemeal approach.[81] In *American Rivers v. U.S. Army Corps of Engineers*, the court found that the consultation on impacts of a dam annual management plan that limited effects analysis to one isolated year impermissibly segmented the section 7 evaluation.[82] Specifically, the district court explained, "[i]f FWS were allowed to apply such a limited scope of consultation to all agency activities, any course of agency action could ultimately be divided into multiple small actions, none of which, in and of themselves, would cause jeopardy." The court determined that "such impermissible segmentation would allow agencies to engage in a series of limited consultations without ever undertaking a comprehensive assessment of their overall activities on protected species."[83] Similarly in *Intertribal Sinkyone Wilderness Council v. National Marine Fisheries Service*, the district court explained, "a series of short-term analyses can mask the long-term impact of an agency action" where "there could be 'some impact,' but not an appreciable impact, 'in each of several

[81] *See, e.g.*, *Wild Fish Conservancy*, 628 F.3d at 522; *Intertribal Sinkyone Wilderness Council v. National Marine Fisheries Service*, 970 F.Supp.2d 988, 1007 (N.D. Cal. 2013).
[82] *American Rivers v. U.S. Army Corps of Engineers*, 271 F. Supp. 2d 230, 255 (D.D.C. 2003).
[83] *Id*.

subdivided periods' of an operation that cumulatively would have 'an undeniable impact.'"[84] Moreover, where an action agency is taking "incremental steps" toward completing a larger action, FWS regulations make clear that the action agency cannot proceed with any step unless a forward-looking analysis in a BiOp has first determined that "[t]here is a reasonable likelihood that the entire action will not violate section 7(a)(2) of the Act."[85] Here, the BiOp failed to consider the impacts of leasing program on polar bears, and also failed to consider the impacts of the entire program on designated critical habitat. These failures are discussed in turn below.

A) The BiOp fails to consider the impacts of BLM's entire leasing program on polar bears.

While the programmatic BiOp purports to analyze the impacts of exploration and leasing on the entire Coastal Plain under the reasonably foreseeable development ("RFD") scenario, it lacks any meaningful analysis of how the sum total of the impacts from those actions will affect polar bears over the up to 130-year lifespan of the program.[86] Instead, it relies on qualitative assertions, speculation, and the assertion that no individual on-the-ground activities will be authorized unless the lessee/operator first obtains MMPA authorization for incidental taking and the individual BLM authorization is subject to a "step-down" consultation. This reliance is misplaced. FWS regulations limit cumulative effects analysis to exclude future activities requiring federal authorization, so individual "step-down" consultations will not entail any forward-looking analysis of how future exploration, development, and production activities associated with that lessee *and other lessees* will combine to affect the Southern Beaufort Sea population over the duration of the entire program. Similarly, the ESA consultations for MMPA authorizations will not consider the impacts of separate future activities occurring beyond the five-year window of the ITR that will require federal authorizations. Instead, FWS will only consider the incremental impact of the individual activity added on top of the baseline of past activities. The approach taken here thereby amounts to the same kind of impermissible segmentation of the impacts of a broader agency decision, which inevitably conceals whether the impact of the whole action would result in jeopardy.

Here, BLM elected to open the entirety of the Coastal Plain to oil and gas development impacts by opening the whole Coastal Plain to leasing and by interpreting the Tax Act to mandate it grant authorizations for access and infrastructure "necessary" to access the leased oil and gas. The result of these agency actions by BLM means that seismic exploration across even the most sensitive denning habitat and the construction of pipelines and other permanent facilities deemed "necessary" across designated critical habitat for terrestrial denning would be permissible. Critical habitat is so widespread across the high and medium oil potential areas that it is difficult to understand any assertion that critical habitat could be avoided post-leasing. The BiOp does not assess the combined effect of seismic surveys and the development footprint

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[84] ; *Intertribal Sinkyone Wilderness Council*, 970 F.Supp.2d at 1007 (quoting *Wild Fish Conservancy*, 628 F.3d at 522).
[85] 50 C.F.R. § 402.14(k).
[86] BiOp at 22.

under the RFD scenario on the likelihood of survival and recovery of the Southern Beaufort Sea population. Rather, the BiOp assumes that all impacts from activities will be subject to future MMPA authorizations and that therefore the level of impact will never exceed the "negligible impact" standard imposed by the MMPA.

This assumption fails to acknowledge that, the MMPA authorization considers only past, existing, and contemporaneous impacts in determining whether an activity will have more than a negligible impact on the population; it does not consider reasonably foreseeable future activities that are beyond the time-window of the ITR itself.[87] This means that each MMPA authorization will at most consider only the contemporaneous impacts during the five-year period of an ITR, added to the baseline of past or existing impacts. Yet the BiOp acknowledges that the development activities and infrastructure will be present for decades.[88] Again, this will allow a series of "negligible" impacts to accumulate over time up until the point where the shifting baseline has become so eroded that the next increment of impacts cannot obtain MMPA authorization. At no point in this sequential five-year MMPA authorization process will FWS undertake the forward-looking analysis of the full effects of the leasing program over its projected 130-year duration, which the ESA mandates prior to the commitment of resources.[89]

B) The BiOp fails to consider impacts of the whole action on critical habitat.

Even if the MMPA authorizations and the regulatory standard of negligible impact to the stock would ensure that BLM's actions will not result in jeopardy, it is *not* the case that the MMPA would necessarily limit impacts to polar bear critical habitat to ensure against destruction or adverse modification. The BiOp's conclusions regarding critical habitat fail to consider the impact of the *whole* agency action because: (1) FWS cannot lawfully or rationally conclude that MMPA compliance will prevent destruction or adverse modification of critical habitat; (2) FWS cannot lawfully conclude that "step-down" consultations and consultations on MMPA authorizations will prevent such loss because those consultations will each reflect only a piecemeal analysis; and (3) the "analysis" of polar bear critical habitat impacts from the entire program that is presented in the BiOp is deficient.

1) <u>FWS cannot lawfully or rationally conclude that MMPA compliance will prevent loss or degradation of critical habitat</u>

FWS informed BLM that it was concerned about the impact of permanent oil and gas facilities on denning polar bears specifically because MMPA authorizations would *not* address

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[87] *See* 54 Fed. Reg. 40,338–39, 40,342 (FWS' interpretation in the preamble to the framework regulations for Incidental Take Regulations).
[88] *See, e.g.*, BiOp at 22 (describing development activities occurring for approximately 80 years following the first lease sale, and production *at each field* lasting approximately 80 years).
[89] *See* 50 C.F.R. § 402.14(k); *see also id*. § 402.02 (defining effects of the action); BiOp at 13-24 (describing the proposed action).

the impacts resulting from the presence of the facilities. In comments to BLM on the draft EIS dated March 13, 2019, FWS stated:

> Given the high use of the Coastal Plain for denning by polar bears, especially when compared to the rest of northern Alaska, ensuring bears have access to preferred areas of denning habitat is important. This is highlighted by the fact that terrestrial denning is likely to continue increasing as sea ice conditions deteriorate further in future years. While Alternatives B and C provide some protection of high use polar bear denning habitat under Lease Stipulation I, there are large areas where numerous polar bears dens have been recorded (Map 3-24) that do not have restrictions on surface occupancy under these alternatives. Even if surveys were conducted under MMPA Incidental Take Regulations with the intention of reducing the potential to disturb denning bears in those areas, *Incidental Take Regulations (and hence Stipulation 5 for Alts B and C) would offer no protections against behavioral avoidance of those areas once developed. This could effectively lead to a loss of preferred denning habitat*.[90]

Thus, FWS made clear that a requirement to comply with MMPA authorizations would *not* itself prevent or preclude habitat loss from polar bears avoiding areas that had been developed. For this reason, it is arbitrary and capricious to rely on Lease Notice 2 to conclude that total habitat loss from the whole action (i.e., infrastructure associated with exploration, development, and production under the RFD scenario) will remain under the threshold that would constitute destruction or adverse modification of critical habitat.

Further, the BiOp does not meaningfully address that the ESA's protection for critical habitat imposes an independent standard that is not equivalent to the standard imposed by the MMPA, and provides a distinct protection. The BiOp's assumptions that MMPA compliance ensures impacts to habitat cannot amount to adverse modification or destruction of critical habitat strips the ESA protections of having their independent effect.

Specifically, the key features that FWS identified for terrestrial denning critical habitat require no obstructions and no disturbances to the access to denning locations, as well as no disturbance at the denning locations themselves. The MMPA allows authorization of such disturbances as long as the impact does not have a *population level* effect that is more than negligible during the maximum five-year period of the authorization. A network of roads and pipelines would make a large portion of the terrestrial denning unit and the bank habitat within the unit no longer meet the requirement of being free from obstructions and disturbances. It could appreciably diminish the value of a large section of critical habitat by imposing stress on individual bears for decades into the future, with worsening consequences as climate change impacts become more severe. Even if the disturbance does not cause a population-level negative

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[90] U.S. Fish and Wildlife Service. Memorandum Regarding Comments on the 2018 Draft Environmental Impact Statement (DEIS) for the Coastal Plain Oil and Gas Leasing Program for the Arctic National Wildlife Refuge, Alaska (2019) at 4 [Attachment K] (emphasis added).

effect on the Southern Beaufort Sea stock during the five-year period that would be at question in a given MMPA authorization during which part of the infrastructure is built, there could still be significant impacts on critical habitat that would not be considered or avoided under the MMPA.

2) FWS cannot lawfully conclude that "step-down" consultations and consultations on MMPA authorizations will prevent such loss because those consultations will each reflect only a piecemeal analysis

The BiOp cannot rely on the "step-down" ESA consultations because those later consultations will not consider the critical habitat loss from the *whole* action, but rather will be limited to considering the loss associated with the individual pipeline or pad BLM is permitting for a particular applicant or lessee, without consideration of the impacts from future projects by other applicants or lessees requiring federal authorizations.[91] Similarly, the ESA consultations associated with MMPA authorizations will not consider the impacts from future activities beyond the five-year window of the ITR that require future federal authorizations.[92] Thus, this is the only point at which the total effect on critical habitat will be considered prior to BLM leasing. By dodging any meaningful consideration of the total extent of critical habitat that would be destroyed or adversely modified due to reasonably foreseeable development resulting from this leasing decision, the BiOp has unlawfully segmented the analysis of whether the action will result in destruction or adverse modification of critical habitat.

3) The analysis of impacts to critical habitat in the BiOp is deficient.

Aside from its reliance on future MMPA authorizations and ESA consultations, the discussion of critical habitat impacts presented in the BiOp fails to examine the potential impacts adequately. In addition to failing to quantify the impacts, its assertions are misleading, and, without explanation, contradict comments FWS made to BLM during the NEPA process.

FWS plainly does not lack the necessary information to assess quantitatively how much critical habitat would be lost due to development of the RFD scenario. The image below, copied from BLM's Environmental Impact Statement for the Coastal Plain leasing program, shows how suitable maternal denning habitat for polar bears (purple lines) is distributed throughout the Coastal Plain, and how the designated critical habitat to ensure unfettered access, and lack of disturbance, to the denning locations (light purple shading) covers almost all of the high and medium hydrocarbon potential areas BLM has identified in Map 3-6 of the FEIS.[93]

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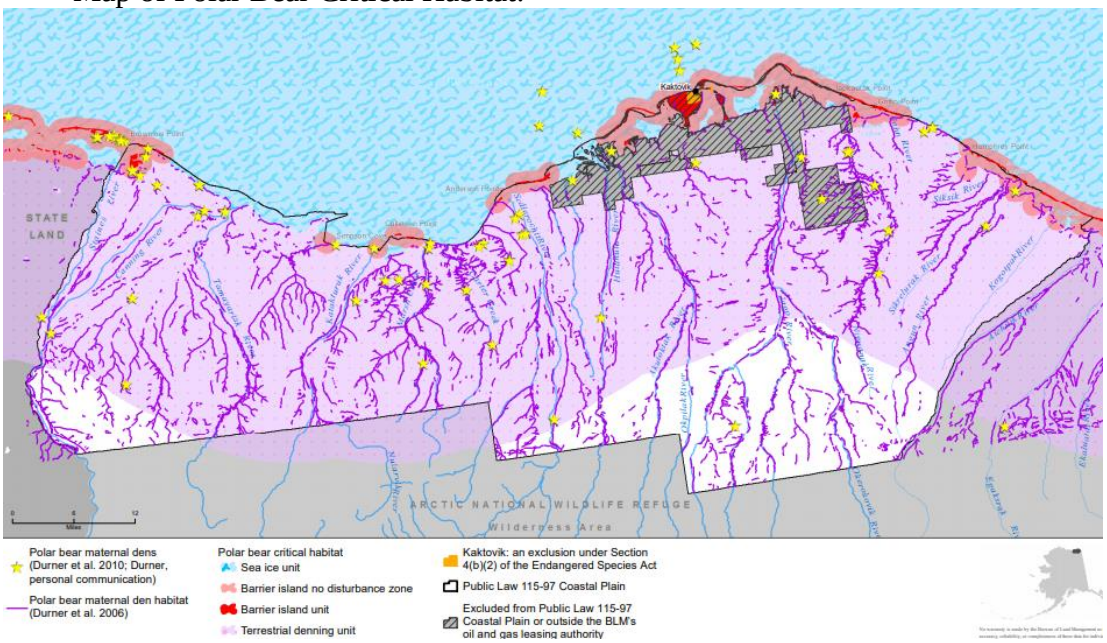
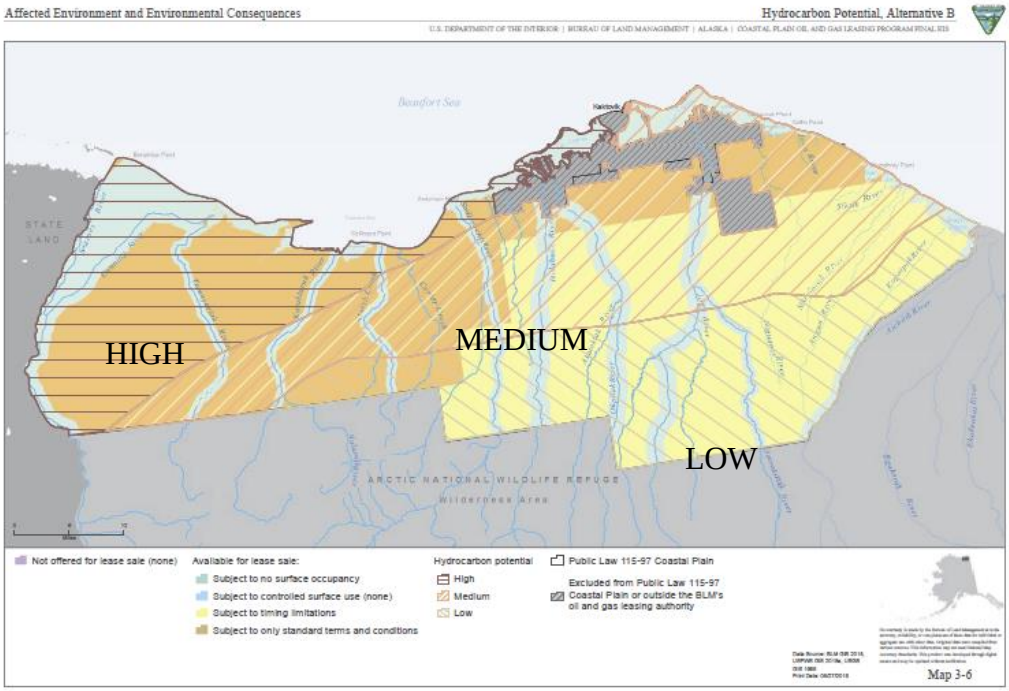
[91] *See* 50 C.F.R. § 402.02 (limiting consideration of cumulative effects to effects of other reasonably foreseeable activities "not involving Federal activities").
[92] Again, due to FWS' application of its definition of cumulative effects. *Id*.
[93] *See* FEIS, Map 3-6 [Attachment E].

Map of Polar Bear Critical Habitat:



Map 3-6:[94]



[94] Notation added to mark "high," "medium," and "low" hydrocarbon areas more clearly.

Absent the closure of areas to leasing, it is unlikely that the development footprint for the RFD scenario could be located in an area that is *no*t critical habitat since almost the entirety of the high and medium hydrocarbon potential areas are located in the terrestrial denning unit of designated critical habitat. The BiOp provides no meaningful analysis of how much critical habitat will be degraded, destroyed, or fragmented by the whole action. Instead, it makes a series of misleading assertions about the impacts to critical habitat, discussed in detail below.

Moreover, FWS advised BLM that *even without knowing the exact locations of the future development* footprint, it was possible to model the impacts to estimate a range of possible impacts based on the restrictions imposed under various alternatives.[95] FWS stated in its comments:

> There are approaches that have been published in the literature that could be used to quantify impacts among alternatives *without knowing the future locations of activities*. These approaches iteratively simulate possible development scenarios (that align with what's allowed under a given alternative) and can then summarize (with the inherent uncertainty) the relative impacts to the parameter of interest across all alternatives. *This would better inform readers than a qualitative assessment alone*." [96]

BLM responded by stating:

> Such Monte Carlo-style simulations assume numerous (hundreds or thousands) of activity events, in an attempt to gauge the probability of impacts. However, only a relatively small number of exploration and development events are anticipated under the Coastal Plain program. The results of such simulations in these circumstances can give readers a false sense of the precision and accuracy of the impact assessment, when in fact they are just one scientific guess as to the probability of potential impacts.[97]

This response shows a fundamental misunderstanding by BLM of how such simulations are used to establish and quantify a potential *range* for what the impacts are likely to be when the development happens under the one series of actual events that

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[95] *See* Cooperating Agency Comments, *supra* note 66 at at 91-92, Comment #370.
[96] *Id*. (emphasis added). FWS provided links to two such studies in support of its comment—Wilson, R.R., Liebezeit, J.R. and Loya, W.M. (2013), Accounting for uncertainty in oil and gas development impacts to wildlife in Alaska. Conservation Letters, 6: 350-358, https://doi.org/10.1111/conl.12016; and Copeland HE, Doherty KE, Naugle DE, Pocewicz A, Kiesecker JM (2009) Mapping Oil and Gas Development Potential in the US Intermountain West and Estimating Impacts to Species. PLOS ONE 4(10): e7400. https://doi.org/10.1371/journal.pone.0007400. *See id.*; *see also* Attachments C, D (pdfs of the two papers).
[97] Cooperating Agency Comments, *supra* note 66 at 91-92, Comment #370.

occurs. By modeling the outcomes for a given scenario thousands of times and then examining the mean and range of outcomes, these simulations seek to provide a quantitative estimate of what the most likely outcome will be and what the range of probable outcomes is. This provides at the very least a quantified range with upper, lower, and likely quantitative estimates for the amount of habitat that would be affected by the development footprint, which is more informative than mere qualitative assertions.

It is arbitrary and capricious for FWS to have acknowledged that such an analysis is feasible and informative to conduct, and then failed entirely to conduct that very analysis to inform the BiOp.

Instead of quantifying an estimated range for how much of the terrestrial denning unit of critical habitat would be compromised by the infrastructure associated with the RFD scenario, the BiOp offers a series of grossly misleading statements about the limited potential for infrastructure to overlap with critical habitat. The BiOp also irrationally fails to explain why the additional energetic costs to maternal polar bears and cubs from extra travel due to disturbance from or avoidance of infrastructure does not amount to impairment of the value of the vast portion of critical habitat that will have roads and pipelines running between that habitat and the coast.

For the terrestrial denning unit of polar bear critical habitat, there are four physical or biological features that FWS has determined to be essential, two of which are: "unobstructed, undisturbed access between den sites and the coast" and "the absence of disturbance from humans and human activities that might attract other polar bears."[98]

The BiOp concedes that 174 miles of gravel roads to connect the various processing facilities and well pads ranging from 12 acres to 50 acres in size each, and 212 miles of pipeline will be constructed under the RFD scenario.[99] Yet it fails to evaluate how probable layouts for this footprint would affect terrestrial denning habitat, in particular with respect to imposing additional stress on vulnerable mothers and cubs making their way from den locations due to disturbance and displacement. Depicting probable layouts for the RFD makes it immediately obvious that a large amount of the terrestrial denning unit of critical habitat will have roads and other infrastructure lying between the denning locations and the coastline, thereby degrading its value.

The map below provides an example of a realistic surface development scenario under Alternative B of the final EIS imposed upon the Coastal Plain and the polar bear terrestrial critical habitat unit.[100]

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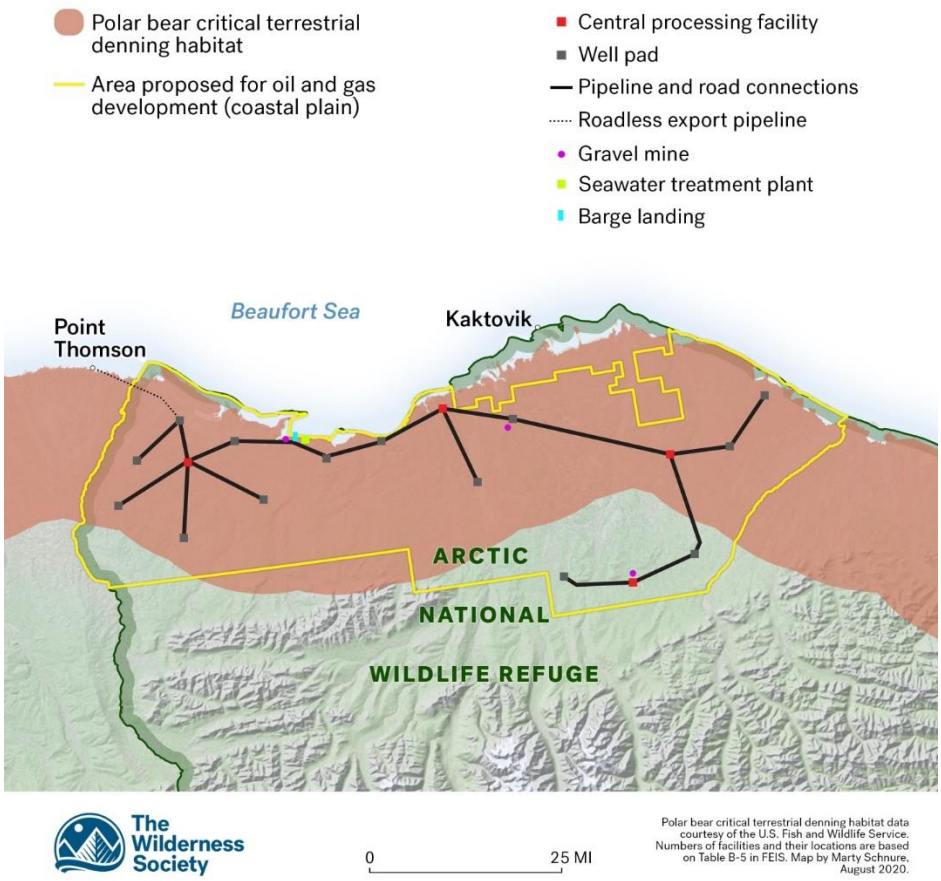
[98] *See* 75 Fed. Reg. 76086; BiOp at 71.
[99] BiOp at 105.
[100] The map was prepared by Marty Schnure of The Wilderness Society and reflects Alternative B in the Final EIS, consistent with the parameters listed in Table B-5. Notably, due to its scale,



With regard to how oil and gas structures will affect maternal polar bears traveling to or from denning locations and their cubs, the BiOp states:

> Industry facilities could also obstruct movements of bears, including movements of pregnant females moving from sea ice into terrestrial areas to prospect for den sites in autumn and early winter, or those of non-denning bears near or along the coast or barrier islands in late summer and autumn. However, polar bears regularly traverse oil and gas facilities along the Beaufort Sea coast to the west of the Proposed Program Area, crossing roads and causeways in some situations and moving around them in others. As a result, infrastructure appears to provide only small-scale, local obstructions that polar bears move through or circumvent,

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this map does not depict how the complex topography and terrain of the Coastal Plain would require linear structures to wind through ravines and/or cut through river embankments.

> depending on location and other circumstances. *Females and cubs returning to sea ice from terrestrial den sites may be more sensitive to disturbance than non-denning bears, due to the nutritional state of the female after months of fasting and the small size and other physiological limitations of cubs immediately after abandoning dens*.[101]

Thus although the obstructions posed by facilities such as roads and pipelines can be surmounted or circumvented by polar bears in general, the BiOp acknowledges that the displacement and disturbance entailed may have a greater impact on emerging cubs and mothers. Yet it does not explain why this impact does not degrade the value of the critical habitat.

A 2018 study not cited in the BiOp provides the best available scientific information about how female polar bears in the spring are in a state of energy deficit to a greater extent than previously thought, and therefore vulnerable to any additional stressors that would increase energy demands.[102] That study, Pagano et al. (2018), examined the field metabolic rates of female polar bears (n = 9) during April 2014–2016 in the Beaufort Sea region, explaining that:

> We found that polar bears in the spring exhibit greater energetic demands than those of previous predictions (13, 14) both for maintenance functions and locomotion…. More than half of the bears in this study lost body mass, meaning that over the period of observation, their energy demand exceeded that gained by consuming prey. Although we cannot assess the effects of post-capture recovery on our observed foraging rates, previous researchers reported that 42% of adult female polar bears in the Beaufort Sea during the spring from 2000 to 2016 had not eaten for ≥7 days before capture (38). This rate of fasting was 12% greater than measurements from 1983 to 1999 (38), suggesting that spring ice conditions are affecting prey availability for polar bears even before the summer open water period. Additionally, access to optimal habitats (annual ice over the continental shelf) is expected to and in some areas has already declined as a result of climate change (39, 40). Survival rates of cubs, body condition of adult females, body size of young, litter mass, and yearling numbers have also exhibited declines in some regions of the Arctic (41, 42). *Together with our data on the cost of activity and energy acquisition (Figs. 3 and 4), these studies suggest that an increasing proportion of bears are unable to meet their energy demands*. Our results indicate that *further increases in activity and movement resulting from declining and increasingly fragmented sea ice are likely to increase the demand side of the energy balance ratio* (43). Inherently high energy demands create a physiological constraint that makes it difficult for polar bears to compensate for both increases

[101] BiOp at 113 (emphasis).
[102] *See* A. Pagano, G. Durner, K. Rode, T. Atwood, S. N. Atkinson, E. Peacock, D. Costa, M. Owen, & T. Williams. High-Energy, high-Fat Lifestyle Challenges an Arctic apex Predator, the Polar Bear. (2018) [Attachment H].

> in activity and declines in the availability of energy-dense prey as habitats become more fragmented (44). Hence, increases in movement and activity rates mediated by the loss of sea ice habitat are likely to have negative cascading effects on polar bear reproductive success and, ultimately, their populations.[103]

In short, this indicates that the majority of adult female bears in the Beaufort are now in a state of energy deficit and mass loss in the spring, and that habitat conditions that result in increased activity and movement exacerbate that already dire condition. Thus, habitat disturbances that require bears to expend additional effort in an attempt to circumvent them, or induce stress by their presence, may have more serious impacts on adult female bears than previously thought, or analyzed in the BiOp.[104]

Notably, FWS comments on the preliminary final EIS rejected BLM's contention that encounters between denning bears and roads or pipelines would be infrequent under Alternative B.[105] FWS explained:

> The statement that denning bears would infrequently encounter roads or pipelines because dens are concentrated along the coast should be removed. First, nothing in the preferred alternative would restrict the development of a pipeline or road near the coastline. Second, while denning is concentrated along the coast, dens can occur 20+ miles inland and a considerable number of dens are documented 5+ miles from the coast.[106]

Thus, despite apparently recognizing that avoiding facilities may impose energetic costs on mothers and cubs that they cannot afford, and that such encounters would not be infrequent under Alternative B, FWS fails to evaluate how much of the terrestrial denning unit would be impaired by that effect. The BiOp does not explain how having to navigate or avoid infrastructure would affect the value of the terrestrial denning critical habitat to mothers and cubs in light of their acknowledged greater sensitivity to displacement or disturbance.

In discussing impacts to the terrestrial denning unit of critical habitat, the BiOp cursorily asserts that the Beaufort Sea ITR "included analysis of whether industry facilities act as physical barriers that obstruct polar bear movements and concluded these facilities represent 'only a small-scale, local obstruction' to movements."[107] This assertion misrepresents the quoted language from the ITR. The ITR is specifically referring to obstruction from *offshore* production facilities—5 to 11 acre artificial islands in the Beaufort Sea—not extensive networks of *on-shore*

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[103] *Id*. at 360 (emphasis added).
[104] The failure to consider this study (Pagano (2018)) also violates the requirement to consider the best available scientific information.
[105] *See* FWS comments, *supra* note 65, Comment #70.
[106] *Id*.
[107] BiOp at 123.

facilities such as the system of pipelines, pads, roads, and central processing facility in the RFD scenario.[108] Moreover, the "analysis" in the ITR is limited to conclusory assertions, and does not evaluate how an extensive network of onshore facilities cutting through the areas used for maternal denning, would affect emerging mothers and cubs by inducing disturbance and displacement responses that impose energetic costs.[109] The BiOp fails to rationally address how much critical habitat is impaired by virtue of adding obstructions and sources of disturbance between the denning locations and the coast.

The BiOp's assessment of direct loss of denning habitat from the footprint of the facilities themselves is also faulty. The BiOp cites anecdotes about polar bears denning "successfully" on or near abandoned and active industrial facilities to support the assertion that whether or not the industrial facilities "would affect the physical characteristics of denning habitat, preventing its future use for denning, would likely vary with the situation."[110] But FWS' prior comments to BLM make clear that successful emergence from dens is not evidence that there were no impacts on the longer term survival of the cubs.[111] FWS explained:

> While it is true that two females emerged from dens successfully, it should not be implied that there was no impact to the reproductive success of the female as a result of being in close proximity to industry. Studies demonstrate that being forced to emerge from a den early can have significant survival impacts on cubs post emergence. Successful emergence from dens does not mean that denning near development did not have an impact or cause early emergence resulting in reduced cub survival.[112]

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[108] *See* 81 Fed. Reg. 52,293.

[109] The cursory assertions in the ITR do not even address whether the purported observations included any mothers with newly emerged cubs.

[110] BiOp at 123. The BiOp repeats the faulty assertion regarding successful denning in its conclusions regarding critical habitat. *Id.* at 133 ("We find two factors that reduce the potential for the Proposed Program to affect the physical features of banks to the extent that denning is discouraged. First, it is not apparent, based on the history of the oil and gas industry in the Beaufort Sea region, that oil and gas infrastructure reduces the habitat's capacity to support denning. There are a number of cases of polar bears denning, usually successfully, in drifts created in the lee of infrastructure. Therefore, the degree to which the presence of structures would affect the value of denning habitat is unknown (although human presence and activities associated with structures is known to affect the use of habitat).").

[111] *See* FWS comments, *supra* note 65, at 26 Comment #66, *citing* Rode, K.D., J. Olson, D. Eggett, D.C. Douglas, G.M. Durner, T.C. Atwood, E.V. Regehr, R.R. Wilson, T. Smith, and M. St. Martin. 2018. Den phenology and reproductive success of polar bears in a changing climate. Journal of Mammalogy 99:16-26.

[112] *Id.*

Thus, without longer-term observation of the survival of the cubs referred to in those anecdotes, the evidence of denning at industry sites cannot be equated with evidence that the denning habitat is not impaired by the industrial facilities. FWS thus lacks information to show that the disturbances associated with these structures will not affect the duration of denning, and thereby diminish cub survival.[113] And the best available evidence shows that maternal polar bears have left dens in late March in response to, or very soon after, relatively mild industrial disturbances.[114] As every additional day in the protection of a den can benefit cub survival potential, even if cubs appear able to move away with their mother, a disturbance that hastens departure can reduce post-emergence survival.[115]

The BiOp then offers the conclusory statement that in any case, the amount of habit lost would be a "very small proportion" of polar bear critical habitat.[116] Again, this assertion fails to take into account how much of the denning habitat is not only directly lost to the physical footprint of facilities, but how much is impaired by virtue of physical obstructions and disturbance sources lying between the denning locations and the coast, which would impose energetic costs on mothers and cubs moving to or from the coast.

After making that assertion, the BiOp states that because uncertainties prevent quantifying the impacts, the BiOp's analysis relies on "factors built into" the Proposed Program, which include the requirements for MMPA compliance under Lease Notice 2 and the requirement for step-down ESA consultations.[117] The BiOp also asserts that the 2,000 acre limitation in the Tax Act "limits the area that would be covered by production and support facilities to 2,000 Federal acres" and "pre-emptively limits the amount of terrestrial denning habitat that could be directly affected."[118] However, again, it is devoid of analysis of how the hundreds of miles of roads and pipelines between the various pads and central processing facilities that will be allowed under BLM's interpretation of that 2,000 acre limitation will spread

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[113] *See* Rode *et al*., *Den phenology and reproductive success of polar bears in a changing climate*, 99 Journal of Mammalogy, 16–26 (2018) (reporting that the mean denning duration for females that produce cubs that survived until the post-emergence observation time was 113.8 + 3.8 days, whereas the mean denning duration for females that had no cubs with them at the observation time was 98.9 + 7.4 days).

[114] Steven C. Amstrup, *Human Disturbances of Denning Polar Bears in Alaska*, 46 ARCTIC 246-250, 248 (1993) (discussing "bear 6", who left her den shortly after March 9, 1984, possibly due to a snow machine passing about 200 meters away in late March); *id*. at 249 (discussing "bear 12" who opened her den on March 19 in response to the presence of tracked vehicles and two light snow machines passing about 65 meters away, and left the den with her cubs just two days later).

[115] *See* Steven C. Amstrup and Craig L. Gardner, *Polar bear maternity denning in the Beaufort Sea*, Journal of Wildlife Management (1994); *see also* Rode *et al*., *supra* note 113.

[116] BiOp at 123.

[117] *Id*.

[118] *Id*. at 123, 133.

disturbance and obstructions through a far larger area of terrestrial denning critical habitat than the footprint of those facilities. At no point does the BiOp examine how the layout of the foreseeable facilities will place much of the critical habitat on the inland side of sources of disturbance and obstruction.

The critical habitat assessment also fails to take into account how losses to the terrestrial denning habitat unit resulting from coastal erosion due to climate change will cumulate with the impacts from the RFD scenario infrastructure running between the more inland denning habitat and the coast. Though describing that such losses from climate change are foreseeable,[119] the BiOp fails to consider whether the loss of the unobstructed denning habitat due to climate change exacerbates the impacts of placing obstructions and sources of disturbance between the sea and the denning habitat that will be on the inland side of the RFD scenario's extensive road and pipeline system.

The BiOp also includes the following misleading assertions, on which the conclusions regarding critical habitat rely:

> Meanwhile, two lease stipulations would effectively steer the siting of infrastructure away from suitable denning habitat that exists in the Program Area (there is < 0.4 percent overlap between suitable terrestrial denning habitat and the Program Area). Lease stipulation 1 would reduce potential effects to suitable denning habitat by prohibiting surface occupancy by permanent oil and gas facilities including gravel pad, roads, airstrips, and pipelines within specified streambeds and within a prescribed setback distance of either 1 mile or 0.5 miles. This is important because much of the terrestrial denning habitat available within the Program Area exists within these NSO zones. Lease Stipulation 9 would further require that, prior to beginning exploration or development within 2 miles of the coast (another area containing a relatively higher degree of terrestrial denning habitat compared with the Program Area as a whole), the lessee/operator/contractor must develop a conflict avoidance and monitoring plan to assess, minimize and mitigate the effects of any infrastructure and its use on polar bear habitat (among other resources).[120]

First, the assertion that there is less than a 0.4% overlap between "suitable terrestrial denning habitat" and the Program Area is extremely misleading. The vast majority of the Program Area is designated terrestrial critical habitat, and the portion of the designated terrestrial denning critical habitat that falls within the Coastal Plain of the Refuge is approximately

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[119] *See id*. at 85 ("Climate change may also affect the availability and quality of denning habitat on land. Durner et al. (2006) found that 65% of terrestrial dens found in Alaska between 1981 and 2005 were on coastal or island bluffs. These areas are suffering rapid erosion and slope failure as permafrost melts and wave action increases in duration and magnitude.").
[120] *Id*. at 133-134.

1,193,600 acres, which is 33% of the total designated terrestrial denning critical habitat for the species.[121] The actual denning locations within the Program Area terrestrial critical habitat unit are the bank areas, which constitute about 4600 acres, and are spread throughout the designated terrestrial critical habitat on the Coastal Plain. Thus, the reality is that for an enormous 33% of the total designated terrestrial denning critical habitat for the polar bear, *all* of the suitable bank denning locations are within the Program Area.

In its March 13, 2019 comments on the draft EIS, FWS told BLM that it was concerned that "large areas where numerous polar bear dens have been recorded" were not included in the "NSO" areas of Lease Stipulation 1 as delineated for Alternatives B and C, and that regardless of MMPA Incidental Take Regulations, those areas would be vulnerable to loss of preferred denning habitat due to behavioral avoidance.[122] Further, while the BiOp asserts that stipulations will keep infrastructure out of "NSO" zones, BLM has made clear its interpretation that it lacks authority under the Tax Act to deny authorization for any facility or activity that is "necessary" for "access" to leased oil and gas—thus these areas remain vulnerable to roads and pipelines, and other infrastructure and activities.

Moreover, in comments on Stipulation 5 in the draft EIS,[123] FWS again asserted:

> Alternatives B and C do not provide protections for the possible behavioral avoidance of important polar bear denning habitat <u>even with a small development footprint</u>. Alternative D allows polar bears <u>unhindered access</u> to large areas of their preferred denning areas in the Coastal Plain. This will become increasingly important as the density of land-based dens increases in future years due to sea ice loss.[124]

For Alternative B and C, the only requirement/standard imposed on lessees by Lease Stipulation 5 is to "Comply with ESA and Marine Mammal Protection Act (MMPA) requirements." By contrast, under Alternative D, Lease Stipulation 5 would have barred permanent facilities from being within 1 mile of potential denning habitat mapped by Durner et al. (2006) for areas between the coast and 5 miles inland. It would also have barred activities from those areas between October 30 and April 15th. Thus it is clear that FWS considered that the NSO restrictions of Stipulation 1 under Alternative B, even with the requirement to comply with the ESA and MMPA of Stipulation 5 under Alternative B, were not sufficient to ensure the "unhindered access" that Alternative D would afford, and which is an important feature of designated terrestrial denning critical habitat.

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[121] *Id*. at 122.
[122] *See* FWS comments, *supra* note 90 at 4.
[123] Stipulation 5 is the same in the draft and final EIS.
[124] *See* FWS comments, *supra* note 90 at 8 (emphasis added); *see also* FEIS Appendix S at S-355, Comment #39.

Further, the BiOp does not offer any meaningful assessment of how much of the terrestrial denning critical habitat is outside of the NSO area, and therefore remains totally vulnerable to permanent facilities. And while requirements to avoid or minimize the impacts of infrastructure on polar bear habitat might avoid wasteful duplicative roads, pipelines, or pads, they clearly would not prevent infrastructure from going through polar bear critical habitat, as almost the entirety of the high and medium hydrocarbon potential areas identified by BLM are terrestrial denning critical habitat.

In sum, the BiOp is devoid of any meaningful assessment of how much terrestrial denning critical habitat will be degraded by industrial infrastructure associated with the RFD scenario being placed between the coastline and the denning locations, which imposes energetic burdens on mothers and cubs. Thus, the BiOp does not provide the required analysis of the impacts of the whole action on polar bear critical habitat.

Due to the failure to meaningfully consider the impacts of the whole action on critical habitat, and its reliance instead on piecemeal future MMPA permitting and ESA consultations for individual components of the RFD scenario, the BiOp impermissibly segments the analysis required by the ESA, and is unlawful.

As a result of the failure to adequately consider the impacts of the whole action, in particular with regard to critical habitat, the BiOp is also inconsistent with FWS regulations governing formal consultation, which state:

> When the action is authorized by a statute that allows the agency to take incremental steps toward the completion of the action, the Service shall, if requested by the Federal agency, issue a biological opinion on the incremental step being considered, including its views on the entire action. Upon the issuance of such a biological opinion, the Federal agency may proceed with or authorize the incremental steps of the action if…[inter alia]
>
> (4) The incremental step does not violate section 7(d) of the Act concerning irreversible or irretrievable commitment of resources; and
>
> (5) There is a reasonable likelihood that the entire action will not violate section 7(a)(2) of the Act.[125]

First, for the reasons described above, the analysis in the BiOp is not sufficient to establish a reasonable likelihood that the entire action would not result in adverse modification of critical habitat. Second, BLM's position that it lacks authority to deny authorizations for facilities or activities that are "necessary" for "access" to leased oil and gas, means that the action of issuing a lease represents an irretrievable commitment of some amount of the surface of

[125] 50 C.F.R. § 402.14(k).

the Coastal Plain of the Refuge to be occupied by such facilities. This is not a situation where there is some critical habitat in or near a leased parcel, such that it could reasonably be avoided when on-the-ground activities on the lease are authorized at a post-leasing stage. Yet the BiOp depends expressly on future post-leasing step-down consultations to reach its conclusion that there will be neither jeopardy nor adverse modification as a result of the indirect effects of the leasing decision. However, it is foreseeable that avoiding critical habitat will not be possible for leased areas located in and surrounded by critical habitat. As a result, BLM's actions will irretrievably commit resources prior to an ESA consultation concluding that the total infrastructure and activities would not result in adverse modification. Under BLM's apparent interpretation of its authority under the Tax Act, the evaluation of reasonable and prudent alternatives to avoid adverse modification would be foreclosed after the areas have been open to leasing. Thus, BLM cannot lawfully rely on the BiOp for the designation of areas to open to leasing, nor to proceed with a lease sale.

V. BLM Unreasonably Relies on a BiOp that Fails to Consider Available Scientific Information Relevant to Evaluating the Impacts of Seismic Surveys

The ESA requires an agency to use "the best scientific and commercial data available" when formulating a BiOp.[126] "An agency complies with the best available science standard so long as it does not ignore available studies, even if it disagrees with or discredits them."[127] When consulting under the ESA, "FWS cannot ignore available biological information."[128]

The BiOp fails to assess the impacts of an area-wide seismic survey despite having abundant information to do so due to the application for MMPA authorization to conduct that area-wide survey that was pending before FWS; acknowledging that such an area-wide survey is a first step for identifying where to drill exploration wells, and stating that such a seismic survey is anticipated to occur *within the next two years*.[129] Further, as discussed above, the BiOp failed to assess these impacts despite FWS statements to BLM that obtaining MMPA authorization for seismic surveys would be "problematic" for high density denning areas within the Coastal Plain, which occur within the high and medium oil potential areas of the Coastal Plain, leading FWS to recommend that extensive areas not be leased to protect polar bear denning. The failure to utilize available, relevant scientific studies to evaluate the potential impacts of seismic surveys violates the requirement to consider the best available scientific information to analyze the impacts of the agency's action.

Prior to the date that the BiOp was finalized, two scientific studies were published that are highly relevant to evaluating the impacts of seismic surveys on maternal polar bears denning

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[126] 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.14(g)(8).
[127] *San Luis & Delta–Mendota Water Authority v. Locke,* 776 F.3d 971, 995 (9th Cir.2014).
[128] *Kern Cnty. Farm Bureau v. Allen,* 450 F.3d 1072, 1080-81 (9th Cir.2006) (quoting *Conner v. Burford,* 848 F.2d 1441, 1454 (9th Cir.1988)).
[129] BiOp at 14-15, 104.

on the Coastal Plain and their cubs, yet the BiOp makes no mention of them. The first is a study by FWS scientist Ryan Wilson and USGS scientist George Durner that presents a model for quantitatively evaluating the impacts to denning mothers and cubs specifically on the Coastal Plain from an area-wide seismic survey, taking into account the impact of mitigation measures such as time and place restrictions, and den-locating technologies (aerial Forward Looking Infrared ("FLIR") detection surveys).[130] The omission of any mention of this model is astonishing given that FWS held a public comment period on the application of the model to its decision-making under the MMPA and ESA, and that the FWS comment period opened about a month prior to the time that FWS finalized the BiOp on March 13, 2020.[131] It is also astonishing in light of the fact that the model appears to have been developed in the course of FWS evaluating an application by SAExploration for MMPA authorization for an area-wide seismic survey of the Coastal Plain proposed in 2018.[132] Despite seeking comment on the model, FWS finalized the BiOp without addressing the model in any manner, and without even waiting for the comments it had elicited.

The second paper, by Tom Smith et al., is a study published on February 27, 2020 evaluating the success rate for FLIR polar bear den detection surveys, and concluding that 55% of maternal dens confirmed to be present were not detected by FLIR surveys.[133] The Smith paper illuminates that the impacts quantified by the Wilson and Durner model likely underestimate actual impacts by overestimating the success rate for FLIR surveys. Had FWS actually evaluated the Wilson and Durner model, and the Smith paper, FWS could have quantitatively assessed the impacts of an area-wide seismic survey proceeding in the high-density denning areas, and indeed could have utilized the best available scientific information from previously published studies to evaluate the range of risks taking into account factors omitted by Wilson and Durner.

This is plainly not a situation where FWS lacks location-specific information that will only become available at a later stage, or where the activity will occur at a distant time, when conditions may be different than at present. The seismic survey BLM anticipates will be *area-wide* and will take place within a mere two years. BLM was considering an application for precisely that area-wide seismic survey as early as July 2018—meaning it had information from

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[130] Wilson and Durner, *supra* note 14.
[131] *See* 85 Fed. Reg. 8887 (Feb. 18, 2020).
[132] The Wilson and Durner study used the proposed area-wide seismic survey plans submitted to BLM by SAExploration to set-forth the spacing for the survey in their model. *See* Wilson and Durner *supra* note 14 at 204, 208 (" Proposed seismic surveys in the 1002 Area state that receiver and source lines will be spaced at intervals of 200m (SAExploration 2018)… This pattern would continue across the entire study area, leading to a maximum footprint depicted by a 200 - m× 200 - m grid (Fig. 1).)"; ("We assumed that support "For our analysis, we assumed that seismic grids would be spaced at intervals of 200 m, which has been proposed for the 1002 Area (SAExploration 2018).)" SAExploration's comments to FWS on the Wilson and Durner study make it clear that they applied to FWS for a MMPA incidental take authorization.
[133] Smith TS, *supra* note 16.

the industry about the spacing, equipment, and precise timing proposed for the seismic survey. Thus, despite having detailed information regarding a Coastal Plain-wide seismic survey, and a published model by FWS and USGS scientists to assess the proposed survey, the BiOp just defers the relevant analysis to a later date. This failure violates the requirement to consider the best available scientific information.

The Wilson and Durner study shows that, even making many optimistic assumptions that may underestimate impacts, for a large section of the high hydrocarbon potential area identified by BLM, seismic surveys likely cannot comply with the MMPA unless they take place after April 12th for one high density denning area, and after April 19th for the second high density denning area. As seismic surveys must take place during winter to avoid damage to tundra, this makes it highly questionable whether the necessary snow conditions will persist long enough for the areas to be surveyed, especially since climate change has shortened open tundra periods and resulted in closures during recent years in areas near the Coastal Plain of the Refuge. As a recent scientific study summarized, based on information from the Northern Oil & Gas Team of the Alaska Department of Natural Resources: "The winter travel season in the foothills of the central North Slope has dropped below 100 d, and snow cover did not reach adequate depth (23 cm) for ADNR [Alaska Department of Natural Resources] to open for travel there in 3 of the last 16 yr. Neither the upper nor lower foothills had enough snow to be opened during the winter of 2018–2019, the winter when SAExploration intended to start seismic surveys in the 1002 Area."[134] Thus there is good reason to think that snow conditions sufficient to protect tundra will not persist in the early spring.

For an area that appears to encompass about 150,000 acres[135] of the high and medium hydrocarbon potential lands identified by BLM, the restrictions needed to avoid lethal or injurious take would require that the seismic surveys be delayed until a point in the season where snow conditions may preclude actually completing the surveys.[136]

Since individual lease tracts must be a compact area not exceeding 60,000 acres,[137] multiple leased tracts likely will fall entirely or substantially within the areas where seismic surveys will be "problematic." Thus, seismic exploration may be precluded as a practical matter on certain lease tracts.

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[134] Raynolds, M. K., J. C. Jorgenson, M. T. Jorgenson, M. Kanevskiy, A. K. Liljedahl, M. Nolan, M. Sturm, and D. A. Walker. 2020. Landscape impacts of 3D-seismic surveys in the Arctic National Wildlife Refuge, Alaska. Ecological Applications 00(00):e02143. 10.1002/eap.2143, at 8.

[135] Estimated by placing a 1-mile buffer around the bank habitat within the higher density core denning areas FWS identified.

[136] *See* Wilson and Durner, *supra* note 14 at 206 ("[I]f snow conditions deteriorated early in the season, those areas could miss being surveyed….[the restrictions] on the timing of when activity can occur across the study area… could be problematic if snow conditions deteriorated earlier in the season.").

[137] 43 C.F.R. § 3130.4-1 (regulations governing lease tract size in the NPR-A).

Thus, it is foreseeable that a situation will soon arise where the inconsistency between BLM's position that it lacks authority to deny any authorization "necessary" for "access" and its promise to FWS to deny authorizations unless MMPA take authorization is obtained in advance of the activity, could result in such activities occurring absent MMPA take authorization. It is also foreseeable that a situation will soon arise that will test whether a lease notice is a sufficient mechanism to impose the requirement to obtain advance MMPA authorization. Yet, rather than analyze what the potential impacts of an area-wide seismic survey are based on available information such as the directly on-point Wilson and Durner study, and the Smith study, and in light of uncertainty about the enforceability of BLM's promise, the BiOp simply ignores the question. FWS had ample information to know that reliance on the lease notices alone would be tested given that MMPA authorization would be "problematic" for large and important areas, but instead of rationally addressing and assessing the risks entailed in that situation, it has impermissibly ignored them.

In sum, instead of evaluating the studies by Smith and Wilson and Durner, FWS did not acknowledge this information, rendering the BiOp arbitrary and capricious.[138] The BiOp does not evaluate what the impact would be on the Southern Beaufort Sea population of losing any specified number of cubs or mothers due to the harms of an area-wide survey. Nor does it evaluate whether impairment of the SBS stock would impact the survival or recovery of the species. Instead it presumes that Lease Notices 1 and 2 will prevent the impact from happening at all because MMPA authorization will be obtained first, and therefore the impacts can be no more than negligible. In short, it presumes without any analysis that these mitigation measures will be enforceable and will be enforced perfectly, and lacks any analysis of what the impacts would be from foreseeable seismic activities *without* those measures. As discussed in detail above, both due to BLM's own statements regarding limitations on its authority, and the reliance on a lease notice to effectuate the mitigation measures, such a presumption is unsupportable. Thus, the failure to consider these studies is important because they should have informed an evaluation of whether the mitigation measures relied upon for the "no jeopardy" conclusion would be enforceable by BLM, and what the consequences would be should the lease notice not prove enforceable by BLM.

VI. BLM Unreasonably Relies on a BiOp that Fails to Analyze Whether the Contribution to Carbon Emissions from Combustion of Oil and Gas Produced Under the Coastal Plain Leasing Program Will Result in Jeopardy or Destruction or Adverse Modification of Critical Habitat for Polar Bears

The BiOp is devoid of analysis on how the additive greenhouse gas emissions that will be caused by the oil and gas leasing of the Coastal Plain, acting cumulatively with greenhouse gas

[138] *See, e.g.*, *Ctr. for Biological Diversity v. U.S. Fish & Wildlife Serv.*, 807 F.3d 1031, 1047–48 (9th Cir. 2015) ("An agency complies with the best available science standard *so long as it does not ignore available studies*[.]") (emphasis added).

emissions from other sources, will affect polar bears and polar bear critical habitat. In lieu of such analysis, the BiOp relies on a 2008 FWS memorandum to assert that FWS need not assess the impacts from downstream emissions from agency actions producing oil and gas. The BiOp states: "We identified no mechanisms by which the Proposed Program would affect the availability of sea ice proximal to terrestrial denning habitat."[139] After making that assertion, the BiOp states: "Note that greenhouse gas emissions resulting from consumption of petroleum produced at particular drilling sites are not considered effects of production; Service Policy Memorandum dated May 14, 2008)."[140]

The relevant part of that Memorandum states:

> A question has also been raised regarding the possible application of section 7 to effects that may arise from oil and gas development activities conducted within the habitat of listed species…. the future effects of any emissions that may result from the consumption of petroleum products refined from crude oil pumped from a particular drilling site would not constitute indirect effects and therefore would not be considered during section 7 consultations. The best scientific data available to the Service today do not provide the degree of precision needed to draw a causal connection between the oil produced at a particular drilling site, the GHG emissions that may eventually result from the consumption of the refined petroleum product, and a particular impact to listed species or their habitats. At present there is a lack of scientific or technical knowledge to determine a relationship between oil and gas leasing, development, or production activity and the effects of the ultimate consumption of petroleum products (GHG emissions). …. As new information and knowledge about emissions and specific impacts to species and their habitats is developed, we will adapt our framework for consultations accordingly. This is particularly important as more regionally-based models are developed and refined to the level of specificity and reliability needed for the Service to execute its implementation of the Act's provisions ensuring consistency with the statute's best available information standard.[141]

In a nutshell, the 2008 Memorandum found that *at that time*, there was not sufficient scientific information to evaluate the climate change inducing impacts of oil and gas development from a given federal action on the habitat of a listed species affected by climate change, but recognized that such information could become available in the future. FWS relied upon the 2008 Memorandum but did not consider whether now, *over 12 years later*, there is scientific information available that could inform an assessment of the climate change related impacts of BLM's action. However, it is possible to gauge how much sea-ice from the Arctic Ocean will be lost due to the additive emissions resulting from the Coastal Plain leasing

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[139] BiOp at 122; 133 (same).
[140] *Id*. at 122; *see also*
[141] U.S. Fish and Wildlife Service. Memorandum Regarding Expectations for Consultation on Actions that Would Emit Greenhouse Gases at 2-3 (May 14, 2008) [Attachment F].

program, and thereby assess the extent of impacts on polar bear survival and recovery, and polar bear critical habitat. FWS had available to it information regarding the magnitude of emissions associated with the Coastal Plain oil and gas program, as BLM quantified the *additive* emissions that will result from the program by year in the final EIS. And a 2016 scientific study quantifies the areal extent of sea-ice loss per ton of anthropogenic CO_2 emissions. FWS' failure to evaluate this information violates the requirement to use the best available scientific information, and is a failure to consider reasonably foreseeable effects of the agency action.

In the 2016 study, published in *Science*, Notz and Stroeve found:

> [W]e can directly estimate that the remainder of Arctic summer sea ice will be lost for roughly an additional 1000 Gt of CO_2 emissions on the basis of the observed sensitivity of 3.0 ± 0.3 m^2 September sea-ice loss per ton of anthropogenic CO_2 emissions. Because this amount is based on the 30-year running mean of monthly averages, it is a very conservative estimate of the cumulative emissions at which the annual minimum sea-ice area drops below 1 million km2 for the first time. In addition, internal variability causes an uncertainty of around 20 years as to the first year of a near complete loss of Arctic sea ice (18, 30). For current emissions of 35 Gt CO_2 per year, the limit of 1000 Gt will be reached before mid-century. However, our results also imply that any measure taken to mitigate CO_2 emissions will directly slow the ongoing loss of Arctic summer sea ice. In particular, for cumulative future total emissions compatible with reaching a 1.5°C global warming target—i.e., for cumulative future emissions appreciably below 1000 Gt— Arctic summer sea ice has a chance of long-term survival, at least in some parts of the Arctic Ocean.[142]

This important study provides an estimate of September sea ice loss area of 3.0 ± 0.3 m^2 per each ton of anthropogenic CO_2 emissions. Given the finding that September sea ice will be completely lost by the middle of this century at current emissions rates, it also provides a means of gauging how much sooner those effects will happen due to any action that has the effect of inducing additional emissions, and thereby reaching the 1000 Gt threshold sooner than otherwise. Thus, given information about the tons of additional CO_2 that will be emitted over time due to the agency action, it is possible to quantify the acreage of September sea-ice loss that can be attributed to that action. Similarly, this information makes it possible to examine and quantify the extent to which the action will undermine attainment of the mitigation that is necessary for polar bears to survive and recover.

Consistent with the Notz and Strove study, the best available science indicates that due to the relationship between polar bears and sea ice, actions that undermine emissions reductions by

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[142] *See* Notz, Dirk and Julienne Stroeve, Observed Arctic sea-ice loss directly follows anthropogenic CO2 emission. *Science* 11 Nov 2016: Vol. 354, Issue 6313, pp. 747-750 DOI: 10.1126/science.aag2345 [Attachment G].

generating additive emissions affect the survival and recovery of polar bears. A 2010 modeling study found that greenhouse gas mitigation could enable polar bears to persist throughout the century in greater numbers and more areas than under the business-as-usual emissions case, where two-thirds of the world's polar bears could disappear by mid-century.[143] It found that due to the linear nature of the relationship between sea-ice loss and temperature increases induced by emissions, reducing emissions would make a difference to the persistence of the species because the relationship was not one where a "tipping point" would make emissions reductions irrelevant:

> On the basis of projected losses of their essential sea-ice habitats, a United States Geological Survey research team concluded in 2007 that two-thirds of the world's polar bears (*Ursus maritimus*) could disappear by mid-century if business-as-usual greenhouse gas emissions continue. That projection, however, did not consider the possible benefits of greenhouse gas mitigation. A key question is whether temperature increases lead to proportional losses of sea-ice habitat, or whether sea-ice cover crosses a tipping point and irreversibly collapses when temperature reaches a critical threshold. Such a tipping point would mean future greenhouse gas mitigation would confer no conservation benefits to polar bears. Here we show, using a general circulation model, that substantially more sea-ice habitat would be retained if greenhouse gas rise is mitigated. *We also show, with Bayesian network model outcomes, that increased habitat retention under greenhouse gas mitigation means that polar bears could persist throughout the century in greater numbers and more areas than in the business-as-usual cas*e. Our general circulation model outcomes did not reveal thresholds leading to irreversible loss of ice; instead, a linear relationship between global mean surface air temperature and sea-ice habitat substantiated the hypothesis that sea-ice thermodynamics can overcome albedo feedbacks proposed to cause sea-ice tipping points. Our outcomes indicate that rapid summer ice losses in models and observations represent increased volatility of a thinning sea-ice cover, rather than tipping-point behaviour. *Mitigation-driven Bayesian network outcomes show that previously predicted declines in polar bear distribution and numbers are not unavoidable.*[144]

A recent study examining the persistence of polar bear subpopulations based on projected relationships between sea ice decline and fasting period duration under both a "high" and "moderate" emissions scenario found, "with high greenhouse gas emissions, steeply declining reproduction and survival will jeopardize the persistence of all but a few high-Arctic subpopulations by 2100. Moderate emissions mitigation prolongs persistence but is unlikely to

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[143] Amstrup, S., DeWeaver, E., Douglas, D. *et al.* Greenhouse gas mitigation can reduce sea-ice loss and increase polar bear persistence. *Nature* 468**,** 955–958 (2010).
[144] *Id*. at 955 (internal citations omitted) (emphasis added).

prevent some subpopulation extirpations within this century."[145] The authors concluded, "Avoiding continued sea-ice decline requires aggressively mitigating greenhouse gas rise, and our results explicitly describe the costs to polar bears of avoiding that mitigation."[146] Thus, again, the best available science shows that emissions mitigation will preserve more polar bear subpopulations for longer over a larger geographic again. Agency actions that work against mitigation efforts by producing oil or gas in large enough quantities to create market conditions that stimulate additional emissions above even the "business as usual" case must be gauged using the best available scientific information.

In response to public comments, BLM provided an appendix in the final EIS for the Coastal Plain Oil and Gas Leasing program that presents its calculations for the additive CO_2 emissions estimated to result from its actions per year from 2019 through the year 2126, taking into account only emissions from refining and downstream combustion.[147] BLM calculated that due to market effects, overall 4% of the total downstream emissions from the Coastal Plain leasing program would be additional—that is, they would not occur at all in the absence of the agency action—whereas 96% would represent "perfect substitution" of hydrocarbons that would have been combusted anyway in the absence of the agency action.[148] Table R-5 in the final EIS, presents, for a given year, the total tons of CO_2 equivalents under the agency action and no action alternatives; the additive emissions per year can be obtained by subtracting the "no action alternative" emissions from the "proposed action" emissions.

The model that BLM used to draw its conclusions is likely under-estimating the portion of the emissions that is additive rather than substituted by up to an order of magnitude or more. BLM appears to have used the MarketSim model, in a manner that considers the impacts of the additional oil production from the agency action on *domestic* demand only. BLM did not account for the impact on foreign markets. In the draft EIS, BLM stated that the MarketSim model—on which it relied in determining that only 3.9% of the Coastal Plain's emissions would be additive—only models changes in U.S. demand. BLM stated that "[t]he MarketSim model considers only the US supply and demand for petroleum; thus, the accuracy of the change (increase) in petroleum demand estimated from MarketSim projections is limited, given its scope is just the US market."[149] Yet "MarketSim models oil as a global market with supply and

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[145] Molnár, P.K., Bitz, C.M., Holland, M.M. *et al.* Fasting season length sets temporal limits for global polar bear persistence. *Nat. Clim. Chang.* 10**,** 732–738 (2020) https://doi.org/10.1038/s41558-020-0818-9.
[146] *Id*.
[147] *See* Coastal Plain Oil and Gas Leasing Program Final Environmental Impact Statement. Appendix R. Market Substitutions and Greenhouse Gas Downstream Emissions, at Table R-5 [Attachment M].
[148] *See id*. at R-3 to R-4.
[149] *See* U.S. Dep't of the Interior, Bureau of Land Mgmt., Coastal Plain Oil and Gas Leasing Program Final Environmental Impact Statement at 3-7 (2018) [hereinafter DEIS], citing for its calculations BOEM 2018a, "Market Substitutions and Greenhouse Gas Downstream Emissions

demand specified separately for the U.S. and the rest of the world."[150] Thus, BLM seemingly used this model in a manner that did not account for effects on foreign markets.

Notably, properly accounting for the impacts on foreign markets could show that approximately 50% of the oil from the Coastal Plain will result in additive emissions, rather than the 3.9% BLM estimated. That is, the actual additive emissions may be more than 10 times what BLM estimated in the final EIS. For example, when the Bureau of Ocean Energy Management (BOEM) utilized MarketSim to model the global market effect it found that for each barrel of U.S. oil left undeveloped, global oil consumption would go down by about half a barrel. In the context of the 2017-2022 Five Year Plan, BOEM estimated that this reduction in foreign oil consumption is highly significant, amounting to roughly 50 percent of BOEM's estimated oil OCS production in those scenarios. According to BLM, the proposed Arctic Refuge drilling is expected to result in the production of between 1.5 and 10 BBO.[151] Removing this oil from the global market could therefore result on a reduction of between .75 and 5 BBO, with corresponding reductions on GHG pollution.

The mechanism for this reduction in foreign oil consumption is as follows: An increase of X BBO of imports to the United States under the No Action Alternative is by definition a decrease of X BBO of supply for the rest of the world, which will in its turn decrease oil consumption, and hence GHG pollution, outside the United States. Oil market analysis conducted by the Stockholm Environment Institute (SEI), and consistent with BOEM's internal MarketSim parameters, previously confirmed that this reduction in global oil consumption could be around 50 percent of the decrease in rest-of-world supply—a highly significant portion of the carbon accounting for the project.[152]

As summarized by experts at SEI:

Estimates for BLM's Coastal Plain Project. Bureau of Ocean Energy Management, white paper. Sterling, VA."

[150] Industrial Economics, Inc. 2015. Consumer Surplus and Energy Substitutes for OCS Oil and Gas Production: The 2015 Revised Market Simulation Model (MarketSim). U.S. Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2015-054, https://www.boem.gov/Market-Simulation-Model/.

[151] 1 DEIS at 3-7.

[152] P. Erickson, *U.S. Again Overlooks Top CO2 Impact of Expanding Oil Supply . . . But That Might Change*, Stockholm Environment Institute (Apr. 30, 2016); P. Erickson & M. Lazarus, *Would constraining US fossil fuel production affect global CO2 emissions? A case study of US leasing policy*, CLIMATIC CHANGE (2018); P. Erickson & M. Lazarus, *How limiting oil production could help California meet its climate goals*, Stockholm Environment Institute (2018).

> The oil market is also highly global, with oil readily traded among countries, and substantial infrastructure in place to do so. The U.S. both imports and exports oil, and world and domestic oil prices very closely track each other (U.S. EIA 2016).
>
> For this reason, we expect that changes in U.S. oil production would affect an integrated global oil market, an assumption also made by many other analysts that have looked at changes in U.S. oil supply (Bordoff and Houser 2015; Rajagopal and Plevin 2013; Allaire and Brown 2012; Metcalf 2007; IEc 2012). Though in the past the oil market could be strongly influenced by cartel behavior among a small number of producers, many analysts now see the market as more likely to behave competitively (The Economist 2016; U.S. EIA 2016), meaning that increases or decreases in supply do translate into shifts in prices and, in turn, consumption.[153]

Thus, in addition to the annual breakdown of additive emissions that BLM calculated in Appendix R of the final EIS, FWS should consider the available information indicating increased foreign consumption induced by leasing on the Coastal Plain could increase additive emissions by tenfold. A reasonable approach to approximating this would be to multiply the difference between the annual CO_2 equivalent tons under the proposed action and the no action alternative by a factor of at least ten.

The question of how much *extra* sea ice will be lost or *how much sooner* a given level of sea ice loss will occur due to the agency action is of obvious important to assessing the impacts of the action on polar bears and critical habitat. The scientific information to gauge this impact exists. But, FWS failed to even assess whether the information exists.

In sum, in light of the 2016 Notz and Stroeve paper and the calculations BLM provided in Appendix R of the final EIS, FWS' conclusory reliance on the 2008 Memorandum to avoid assessing the effects of the action is arbitrary and capricious, violates the requirement to use the best available scientific and commercial information, and violates the requirement to consider the effects of the agency action. By BLM's own calculations, because the magnitude of the oil and gas development is large enough to affect demand, the Coastal Plain leasing program will result in millions of *additive* tons of CO_2 equivalents being emitted between now and mid-century that otherwise would not be emitted. Since these additional emissions can be translated into additional sea-ice losses, and polar bear survival and recovery depends on delaying those sea-ice losses, FWS cannot simply ignore the effect of these emissions on the species and its habitat without any analysis at all.

Conclusion

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[153] P. Erickson & M. Lazarus, *How would phasing out US federal leases for fossil fuel extraction affect CO_2 emissions and 2°C goals?*, *supra* note 152 at 23.

Unless Interior takes immediate steps to initiate and complete section 7 consultation that considers the full range of direct, indirect and cumulative impacts to polar bears and critical habitat, using the best scientific and commercial data available, we will be forced to file suit 60 days from the date of this letter. Please do not hesitate to contact me at (907) 433-2011 or bpsarianos@trustees.org with any questions or to notify the Petitioners of the agency's intent to comply with the ESA by reinitiating and completing consultation.

Sincerely,

s/ Bridget Psarianos
Bridget Psarianos
Staff Attorney
Trustees for Alaska
1026 W. 4th Ave, Suite 201
Anchorage, AK 99501
(907) 433-2011
bpsarianos@trustees.org

Karimah Schoenhut
Staff Attorney
Sierra Club
50 F St. NW, 8th Floor
Washington DC 20001
(202) 548-4584
karimah.schoenhut@sierraclub.org

CC:
Margaret Everson, Director
U.S. Fish and Wildlife Service
1849 C Street N.W.
Washington, D.C. 20240

Greg Siekaniec, Regional Director,
U.S. Fish and Wildlife Service, Alaska Region
1011 East Tudor Rd
Anchorage, Alaska 99503

List of Attachments:

Attachment	Document
A	Ryan Wilson, & George Durner. Seismic Survey Design and Effects on Maternal Polar Bear Dens. (2020).
B	Tom Smith, Steven Amstrup, B. J. Kirschhoffer, & Geoffrey York. Efficacy of Aerial Forward-looking Infrared Surveys for Detecting Polar Bear Maternal Dens. (2020).
C	Ryan Wilson, Joespeph Liebezeit, & Wendy Loya. Accounting for Uncertainty in Oil and Gas Development Impacts to Wildlife in Alaska. (2013).
D	Holly Copeland, Kevin Doherty, David Naugle, Amy Pocewicz, & Joseph Kiesecker. Mapping Oil and Gas Development Potential in the US Intermountain West and Estimating Impacts to Species. (2009).
E	Bureau of Land Management. FEIS Map 3-6.
F	U.S. Fish and Wildlife Service. Memorandum Regarding Expectations for Consultation on Actions that Would Emit Greenhouse Gases. (May 14, 2008).
G	Dirk Notz, & Julienne Stroeve. Observed Arctic Sea-Ice Loss Directly Follows Anthropogenic CO_2 Emission. (2016)
H	A. Pagano, G. Durner, K. Rode, T. Atwood, S. N. Atkinson, E. Peacock, D. Costa, M. Owen, & T. Williams. High-Energy, high-Fat Lifestyle Challenges an Arctic apex Predator, the Polar Bear. (2018).
I	U.S. Fish and Wildlife Service. Memorandum Regarding Comments on the Preliminary Final Environmental Impact Statement (EIS) for the Coastal Plain Oil and Gas Leasing Program for the Arctic National Wildlife Refuge, Alaska. (Aug. 9, 2019).
J	Bureau of Land Management and Cooperating Agency Comments on the Administrative Draft Final EIS.
K	U.S. Fish and Wildlife Service. Memorandum Regarding Comments on the 2018 Draft Environmental Impact Statement (DEIS) for the Coastal Plain Oil and Gas Leasing Program for the Arctic National Wildlife Refuge, Alaska. (Mar. 13, 2019).
L	U.S. Fish and Wildlife Service. Memorandum Regarding Recommendations for No Leasing Areas to Create an 800,000 Acre Alternative in the 2018 Draft Environmental Impact Statement (DEIS) for the Coastal Plain Oil and Gas Leasing Program for the Arctic National Wildlife Refuge, Alaska. (2019)
M	Coastal Plain Oil and Gas Leasing Program Final Environmental Impact Statement. Appendix R. Market Substitutions and Greenhouse Gas Downstream Emissions.

ALASKA WILDERNESS LEAGUE, ALASKANS FOR WILDLIFE, ASSOCIATION OF RETIRED U.S. FISH AND WILDLIFE SERVICE EMPLOYEES, AUDUBON ALASKA, CANADIAN PARKS AND WILDERNESS SOCIETY-NATIONAL, CANADIAN PARKS AND WILDERNESS SOCIETY-YUKON CHAPTER, CENTER FOR BIOLOGICAL DIVERSITY, DEFENDERS OF WILDLIFE, EARTHJUSTICE, ENVIRONMENT AMERICA, EYAK PRESERVATION COUNCIL, FAIRBANKS CLIMATE ACTION COALITION, FRIENDS OF ALASKA NATIONAL WILDLIFE REFUGES, GWICH'IN STEERING COMMITTEE, LEAGUE OF CONSERVATION VOTERS, NATIONAL AUDUBON SOCIETY, NATIONAL WILDLIFE FEDERATION, NATIONAL WILDLIFE REFUGE ASSOCIATION, NATIVE MOVEMENT, NATURAL RESOURCES DEFENSE COUNCIL, NATURE CANADA, NORTHERN ALASKA ENVIRONMENTAL CENTER, STAND.EARTH, SIERRA CLUB, THE WILDERNESS SOCIETY, TRUSTEES FOR ALASKA, AND WILDERNESS WATCH

March 13, 2019

Submitted via email and online eplanning comment portal

Nicole Hayes
Attn: Coastal Plain Oil and Gas Leasing Program EIS
222 West 7th Ave., Stop #13
Anchorage, Alaska 99513
blm_ak_coastalplain_EIS@blm.gov
mnhayes@blm.gov

Comments re: Notice of Availability of the Draft Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program and Announcement of Public Subsistence-Related Hearings, 83 Fed. Reg. 67,337 (Dec. 28, 2018).

Dear Ms. Hayes,

On behalf of the above-listed organizations and our many millions of members and supporters nationwide and internationally, we submit the following comments in response to the public notice from December 28, 2018 Notice of Availability of the Draft Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program and Announcement of Public Subsistence-Related Hearings, 83 Fed. Reg. 67,337 (Dec. 28, 2018).

We oppose all oil and gas activities on the Coastal Plain of the Arctic National Wildlife Refuge. We stand with the Gwich'in Nation and support their efforts to protect their human rights and food security by protecting the Coastal Plain. Our organizations have dedicated decades to defending the Coastal Plain from oil and gas exploration and development, and we will continue to do so. These unparalleled public lands, and the wildlife that depend on them, are an international treasure that must be conserved for future generations.

While we oppose any attempts to allow oil and gas activities on the Coastal Plain, we provide detailed comments outlining many legal, policy, and resource issues that the Bureau of

Land Management (BLM) failed to adequately address in its draft environmental impact statement (draft EIS or DEIS). Our review of the draft EIS has identified numerous relevant issues that were either not addressed at all or were inadequately addressed. As the agency responsible for managing the oil and gas program, the BLM must ensure the planning process complies with the National Environmental Policy Act, the Alaska National Interest Lands Conservation Act, the Wilderness Act, Title II of the Tax and Jobs Act, the Naval Petroleum Reserves Production Act, the National Wildlife Refuge System Administration Act, the Endangered Species Act, the Marine Mammal Protection Act, and the Federal Land Policy and Management Act, in addition to other substantive laws, treaties, and regulations, as well as the management and permitting requirements of its federal and state cooperating agencies. BLM must also ensure that its analysis of the impacts of an oil and gas program on the Coastal Plain is scientifically accurate and fully considers all of the adverse impacts of an oil and gas program on the Coastal Plain, including seismic exploration. BLM's efforts to date fall far short of what is required. BLM's analysis is so lacking that BLM must revise the draft EIS and reissue it for public review and comment before it can proceed. We believe that any valid scientific review will show that oil and gas activities on the Coastal Plain will have unavoidable and un-mitigatable destructive impacts on Arctic Refuge wildlife and habitat and on the climate.

The U.S. Department of the Interior (DOI) and BLM have continued to move this process forward at a very fast pace, reiterating their goal to hold a lease sale this year. A rushed process is not consistent with DOI's legal obligations when considering an issue as important and controversial as destructive oil and gas exploration and development on the Coastal Plain. Instead of rushing to lease the Coastal Plain, DOI should listen to the millions of Americans and the Gwich'in Nation who support protection for the Coastal Plain and refrain from holding a hasty, ill-considered lease sale. The Coastal Plain is no place for any oil and gas activities, and reckless decision making is not what the Arctic Refuge — the crown jewel of our National Wildlife Refuge System — deserves.

Sincerely,

Kristen Miller, Conservation Director
Alaska Wilderness League

Jim Kowalsky, Chair
Alaskans for Wildlife

Robin L. West, Chair
Association of Retired U.S. Fish and Wildlife Service Employees

Natalie Dawson, Executive Director
Audubon Alaska

Alison Ronson, Interim Executive Director
Canadian Parks and Wilderness Society-National

Chris Rider, Executive Director
Canadian Parks and Wilderness Society-Yukon Chapter

Kristen Monsell, Oceans Legal Director & Senior Attorney
Center for Biological Diversity

Bob Dreher, Senior Vice President of Conservation Programs
Defenders of Wildlife

Erik Grafe, Attorney
Earthjustice

Erik DuMont, Stop Drilling Campaign Director
Environment America

Carol Hoover, Executive Director
Eyak Preservation Council

Jessica Girard, Director
Fairbanks Climate Action Coalition

David C. Raskin, President
Friends of Alaska National Wildlife Refuges

Bernadette Demientieff, Executive Director
Gwich'in Steering Committee

Alex Taurel, Conservation Program Director
League of Conservation Voters

Sarah Greenberger, Senior Vice President
National Audubon Society

Mary Greene, Public Lands Attorney
National Wildlife Federation

Geoffrey Haskett, President
National Wildlife Refuge Association

Adrienne Blatchford
Native Movement

Garett Rose, Staff Attorney
Natural Resources Defense Council

Graham Saul, Executive Director
Nature Canada

Ryan A. Marsh, Arctic Program Coordinator
Northern Alaska Environmental Center

Karimah Schoenhut, Staff Attorney
Sierra Club

Matt Krogh, Extreme Oil Campaign Director
Stand.earth

Jamie Williams, President
The Wilderness Society

Victoria Clark, Executive Director
Trustees for Alaska

George Nickas, Executive Director
Wilderness Watch

I. OVERVIEW OF COMMENTS

Our organizations have dedicated decades to defending the Coastal Plain of the Arctic National Wildlife Refuge (Arctic Refuge or Refuge) from oil and gas development, and we will continue to do so. These unparalleled public lands, and the wildlife that depend on them, are an international treasure that must be conserved for future generations. While we oppose any attempts to allow oil and gas activities on the Coastal Plain, we provide detailed comments addressing many legal, policy, and resources issues that the Bureau of Land Management (BLM) failed to address or inadequately addressed in the draft environmental impact statement (draft EIS or DEIS) for the leasing program. These comments set out in detail the history of conservation of the Coastal Plain; its current management; the tax legislation that allows for an oil and gas program on the Coastal Plain; legal deficiencies with the draft EIS regarding directives in the Tax Act, the National Environmental Policy Act (NEPA), National Wildlife Refuge mandates, and other relevant laws such as the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA); and provide a critique of BLM's analysis of the impacts of an oil and gas program on the exceptional resources of the Coastal Plain.

At the outset, we note that BLM's draft EIS is so lacking and its analysis so flawed that bringing it into compliance with legal mandates will require significant revisions. Additionally, BLM did not address numerous issues that Groups flagged for BLM in their Scoping Comment Letter.[1] As such, BLM must revise and reissue the draft EIS for public review and comment before it can move to a final EIS.

II. BLM FAILS TO ACKNOWLEDGE THE LONG HISTORY OF ARCTIC REFUGE PROTECTION.

BLM's draft EIS fails to acknowledge the conservation history of the Arctic Refuge and strong public support for its protection, biasing its presentation of the issues and skewing its analysis of an oil and gas program on Refuge resources.

A. THE ARCTIC REFUGE AND ITS COASTAL PLAIN HAVE BEEN PROTECTED FOR DECADES BECAUSE OF THEIR EXCEPTIONAL ECOLOGICAL VALUES.

Groups provided significant background on the Coastal Plain of the Arctic Refuge, including the long history of its conservation, in our scoping comments.[2] As we explained, the Arctic Refuge is the crown jewel of the National Wildlife Refuge System. Because of the remoteness of its intact ecosystems, the Arctic Refuge is unique in the entire National Wildlife Refuge System. It functions as a model for wild nature and for what it contributes to the entire National Wildlife Refuge System, especially in protecting and fostering the health and productivity of migratory species.

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[1] Letter from Adam Kolton, Executive Director, Alaska Wilderness League *et al.*, to Nicole Hayes, Bureau of Land Management (June 19, 2018) [hereinafter Scoping Comment Letter].

[2] Scoping Comment Letter at 1–3.

Long before it was ever designated as a protected public land unit by the Federal government, Alaska Native peoples used and relied on the Coastal Plain and the resources it supports. They continue to do so today. Alaska Natives living both north and south of the Brooks Range, as well as Canadian First Nations, depend on the fish and wildlife species that the Coastal Plain supports. This land was never ceded by Alaska Native peoples who rely on it. Leading up to Alaska's statehood, the celebrated conservationists Olaus and Margaret Murie and U.S. Supreme Court Justice William O. Douglas visited the area that is now the Arctic Refuge, recognized its outstanding biological values and wilderness qualities, and upon their return, embarked on an effort to protect the area under federal law.[3] As a result of their and others' efforts, President Eisenhower's Secretary of the Interior designated the Coastal Plain and a large area to its south as the Arctic National Wildlife Range (Range) in 1960.[4] The Range was protected specifically "for the purpose of preserving unique wildlife, wilderness and recreational values" of the area.[5] Designation of the Range "was unique among Alaska conservation units because it was the first for which ecological thinking and concern for maintaining natural processes were significant factors in its establishment."[6] These protections stood for two decades before additional protections were added.

Considering it "one of the most important pieces of conservation legislation ever passed," President Carter signed the Alaska National Interest Lands Conservation Act (ANILCA) into law in 1980.[7] In passing ANILCA, Congress "preserve[d] for the benefit, use, education and inspiration of present and future generations certain lands and waters in the State of Alaska that contain nationally significant natural, scenic, historic, archeological, geological, scientific, wilderness, cultural, recreational, and wildlife values."[8] Through ANILCA, Congress re-designated the Range as the Arctic National Wildlife Refuge.[9] Congress added acreage south and west of the Range to the newly designated Arctic Refuge.[10] In addition to the purposes previously recognized for the Range, Congress identified additional purposes for this unique and spectacular area of America's Arctic. The ANILCA purposes for the Arctic Refuge are:

(i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western

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[3] WILLIAM O. DOUGLAS, MY WILDERNESS: THE PACIFIC WEST 10–31 (Doubleday & Co., Inc. 1960).

[4] Public Land Order 2214, Establishing the Arctic National Wildlife Range at 1 (Dec. 6, 1960) [hereinafter PLO 2214].

[5] PLO 2214 at 1.

[6] Arctic National Wildlife Refuge, Fairbanks, AK, 75 Fed. Reg. 17,763, 17,764 (Apr. 7, 2010).

[7] Alaska National Interest Lands Conservation Act: Remarks on Signing H.R. 39 into Law, Dec. 2, 1980, 16 WEEKLY COMP. PRES. DOCS. 2755 (Dec. 8, 1980).

[8] ANILCA § 101(a), 16 U.S.C. § 3101(a).

[9] ANILCA § 303(2).

[10] *Id.* § 303.

Arctic caribou herd), polar bears, grizzly bears, muskox, Dall sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;

(ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;

(iii) to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents, and

(iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and quantity within the refuge.[11]

These four purposes, along with the original three purposes set out in PLO 2214, apply to the Coastal Plain.[12]

Under ANILCA, the U.S. Department of the Interior (DOI) was required to conduct studies and provide a recommendation to Congress regarding whether the Coastal Plain should be opened to oil and gas development.[13] To be clear, ANILCA did not open the Coastal Plain to oil and gas and BLM's statement in the draft EIS that Congress designated the Coastal Plain as an area for potential oil development is patently incorrect.[14] In 1980, with the passage of ANILCA, Congress designated the Coastal Plain as a National Wildlife Refuge and expressly prohibited oil and gas development.[15] This error must be corrected.

In the 1987 Report to Congress, DOI stated that the Coastal Plain "area is the most biologically productive part of the Arctic Refuge for wildlife and is the center of wildlife activity."[16] Despite the many flaws with the analysis in the Report, it nevertheless concluded that oil and gas production would likely have major effects on the Porcupine Caribou Herd and muskoxen. Specifically with regards to caribou, those effects include "widespread, long-term change in habitat availability or quality which would likely modify natural abundance or distribution of species."[17] The Report also found that full or even limited leasing would have major impacts on water resources, subsistence for residents of Kaktovik, and recreation, wilderness, and aesthetics.[18] Where DOI's findings in the LEIS differ from BLM's findings in

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[11] *Id.* § 303(2)(B).

[12] ANILCA § 305; FWS Refuge Management Part 601 National Wildlife Refuge System, 601 FW 1 at 1.16 (July 26, 2006); U.S Fish and Wildlife Service, Arctic National Wildlife Refuge, Revised Comprehensive Conservation Plan Final Environmental Impact Statement, Chapter 1 at 1-21 [hereinafter CCP EIS]; *see also infra* (describing the purposes of the Coastal Plain and BLM's failure to accurately identify and account for them).

[13] 16 U.S.C. § 3142.

[14] DEIS vol. 1 at 3-37.

[15] ANILCA §§ 303, 1003.

[16] U.S. Dep't of the Interior, Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment, Report and Recommendation to the Congress of the United States and Final Legislative Environmental Impact Statement at 46 (Apr. 1987) [hereinafter LEIS].

[17] LEIS at vii, 123, 187.

[18] LEIS at 166.

this EIS, BLM must explain the basis for this difference. Despite these findings, the Secretary of the Interior (Secretary) recommended leasing the entire Coastal Plain area.[19] For decades, Congress and the President declined to do so.

BLM must recognize and describe this history in the draft EIS to ensure that it is fully considering the purposes and resources of the Coastal Plain, as well as accurately acknowledging the public support for its protection.

B. CURRENT MANAGEMENT OF THE COASTAL PLAIN AND THE WILDERNESS RECOMMENDATION TO PROTECT ITS RESOURCES.

The U.S. Fish and Wildlife Service (FWS) currently administers and manages the entire Arctic Refuge — including the Coastal Plain — under the Comprehensive Conservation Plan (CCP) adopted on April 3, 2015.[20] The CCP establishes "management goals and objectives," "define[s] compatible use," "[u]pdate[s] management direction related to national and regional policies and guidelines used to implement Federal laws governing Refuge management," and "[e]stablish[es] broad management direction for Refuge programs and activities," among other things.[21] Currently, the Coastal Plain is managed under the Minimal Management category as set out in the CCP.[22]

In the CCP, FWS articulated the vision for the Arctic Refuge as follows:

> This untamed arctic landscape continues to sustain the ecological diversity and special values that inspired the Refuge's establishment. Natural processes continue and traditional cultures thrive with the seasons and changing times; physical and mental challenges test our bodies, minds, and spirit; and we honor the land, the wildlife, and the native people with respect and restraint. Through responsible stewardship, this vast wilderness is passed on, undiminished, to future generations.[23]

Throughout the CCP process, whether to recommend Wilderness for the Coastal Plain was one of the main issues considered by the agency and commented on by the public. In 2015, following a multi-year process where nearly one million people submitted comments in support of protecting the Coastal Plain as Wilderness, the FWS recommended Wilderness for the Coastal Plain.[24] In adopting Alternative E (which included a Wilderness recommendation for the

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[19] LEIS at vii, 188–89, 192.

[20] U.S Department of the Interior, Fish and Wildlife Service, Region 7, Record of Decision, Revised Comprehensive Conservation Plan, Arctic National Wildlife Refuge (Apr. 3, 2015) [hereinafter CCP ROD].

[21] CCP EIS Executive Summary at S-9.

[22] CCP EIS vol. 1 at 3-34; CCP ROD at 5.

[23] CCP ROD at 4.

[24] CCP ROD at 3.

majority of the Coastal Plain and the lands to the south added by ANILCA), FWS stated that Wilderness for the Coastal Plain:

> [B]est meets the Service's purpose and need to manage the Arctic Refuge to achieve the mission of the National Wildlife Refuge System and to meet the purposes for which the Refuge was established. This alternative conserves the fish, wildlife and habitats of the Arctic Refuge and facilitates subsistence and recreation in settings that emphasize natural, unaltered landscapes and natural processes.[25]

The agency also stated that:

> [The] Arctic Refuge is nationally recognized for its unique and wide range of arctic and subarctic ecosystems that retain a high degree of biological integrity and natural diversity. The Refuge exemplifies the idea of wilderness embodying tangible and intangible values including natural conditions, natural quiet, wild character, and exceptional opportunities for solitude, adventure, and immersion in the natural world. The Refuge represents deep-rooted American cultural values about frontiers, open spaces, and wilderness. It is one of the finest representations of the wilderness that helped shape our national character and identity.[26]

In advancing the Wilderness recommendation to Congress, the President stated that the Arctic Refuge "is one of the most beautiful, undisturbed places in the world. It is a national treasure and should be permanently protected through legislation for future generations."[27]

Throughout the CCP process, FWS properly declined to consider oil and gas development on the Coastal Plain.[28] Specifically regarding the management of the Arctic Refuge and the lack of consideration of oil and gas development in the CCP process, the CCP states:

> Until Congress takes action to change the provision of ANILCA 1003 or to implement the 1987 report, the Service will not and cannot permit oil and gas leasing in the Refuge under any of the alternatives in the Plan. When Congress makes a management decision, that action will be incorporated into the Plan and implemented.[29]

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[25] CCP ROD at 3–4, *see also id.* at 12.

[26] CCP ROD at 11–12.

[27] Ltr. From the President to the Speaker of the House of Representatives and the President of the Senate (Apr. 3, 2015).

[28] *See, e.g.*, CCP EIS vol. 1 at at 3-6.

[29] CCP EIS vol. 1 at 1-1; *see also* Arctic National Wildlife Refuge, Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, Wild River Plans Final, Dear Reader Letter at 2 (Sept. 1988) (stating, "[w]hen Congress makes a management decision [re: oil and gas], that action will be incorporated into the Plan implemented").

Oil and gas leasing and any related activities on the Coastal Plain are, therefore, inconsistent with the CCP and present management of the Coastal Plain. BLM fails to acknowledge or account for these inconsistencies, or to explain how the oil and gas program it is proposing impacts current Refuge management.[30]

C. TITLE II OF THE TAX CUTS AND JOBS ACT (PUB. L. 115-97, H.R. 1) AND AN OIL AND GAS PROGRAM FOR THE COASTAL PLAIN.

Despite decades of support for protecting the Arctic Refuge's Coastal Plain from oil and gas, Congress included a provision in the Tax Cuts and Jobs Act (Tax Act) to open the Coastal Plain to oil and gas development. This law was adopted through the budget reconciliation process under restrictive Senate procedures that only required a simple majority vote. Senator Murkowski was clear that she only used this legislative vehicle because there was not the support necessary to open the Refuge through the normal legislative process.[31] Throughout the legislative process, Senator Murkowski clearly stated that no laws would be waived or bypassed, no process would be short-cut, that the agencies would take their time and go through the process step-by-step to ensure the protection of the wildlife, fish, habitat, and other values of the Coastal Plain. BLM must uphold these commitments.[32] To date, its efforts fall short.

D. BLM MUST RECOGNIZE THE STRONG PUBLIC SUPPORT FOR PROTECTING THE COASTAL PLAIN.

BLM must acknowledge the strong public support expressed for protecting the Coastal Plain. During the scoping period, BLM received over 700,000 comments, the vast majority of which expressed support for protecting the Coastal Plain. BLM attempts to dismiss these comments as outside of the scope of the EIS.[33] These comments are directly relevant to BLM's analysis and an oil and gas program on the Coastal Plain. They demonstrate that there is significant controversy and interest in the proposal. And by continuing to identify the need to protect the area from oil and gas activities, they make clear that BLM must propose and adequately consider a truncated program with significant protections for the Refuge. BLM's proposal of three virtually indistinguishable and immensely impactful alternatives, which go far beyond the levels BLM is required to consider as part of the oil and gas program in the Tax Act, are inconsistent with the strong public support for protection of the Coastal Plain.

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[30] *See infra*, Part III.C.4 (explaining the conflicts and inconsistencies between the CCP and BLM's proposal, and BLM's failure to clearly address this issue).

[31] Margaret Kriz Hobson, *Road map for ANWR drilling gets clearer*, E&E NEWS, Mar. 12, 2018 [hereinafter Hobson I].

[32] *See, e.g.*, Senator Lisa Murkowski, Floor Speech on Reconciliation Legislation (November 30, 2017), www.murkowski.senate.gov/press/speech/floor-speech-reconciliation-legislation-tax-reform.

[33] DEIS vol. 1 at 1-3.

III. BLM'S DRAFT ENVIRONMENTAL IMPACT STATEMENT IS LEGALLY DEFICIENT.

BLM's fails to meet its legal obligations under numerous legal mandates, including the directives of the Tax Act, the National Environmental Policy Act (NEPA), National Wildlife Refuge laws and policies, other relevant statutes including the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA), as well as with international obligations. Each is addressed in more detail below.

A. BLM FAILS TO ESTABLISH AN OIL AND GAS PROGRAM THAT IS CONSISTENT WITH THE DIRECTIVES IN THE TAX ACT.

BLM fails to explain how it is interpreting and applying multiple directives in the Tax Act, including the directive to manage the oil and gas program "in a manner similar to how BLM manages lease sales under the Naval Petroleum Reserve Production Act of 1976 [] (including regulations),"[34] the "2,000-acre limitation" on surface development, and the right-of-way provision. These issues are addressed below.

1. *BLM Must Clarify the Lease Sale Process, and Must Ensure Opportunities for Public Input at Each Stage.*

It is unclear what process BLM is pursuing to hold a lease sale, and therefore, unclear if BLM is acting consistent with the Tax Act. During scoping, BLM indicated that it may publish a call for lease sale nominations and public comment on the lease sale at the same time that it publishes the draft EIS for the leasing program. BLM would then issue the lease sale notice for the first lease sale at the same time that it issues a record of decision for the leasing EIS. It does not appear that BLM has done this, as no specific call for nominations was issued when BLM issued the notice of availability for the draft EIS. Following such a process also would have been contrary to how BLM conducts leasing in the National Petroleum Reserve–Alaska (NPRA). The process that BLM will use to hold a lease sale is still unclear. BLM must clarify its approach to leasing with specificity. This is critically important so that the public understands the steps in this highly controversial project and is able to provide appropriate input at the right stage in order to inform the specific decision before BLM and ensure compliance with legal mandates.

As Groups explained in their scoping comments, under the Naval Petroleum Reserve Production Act (NPRPA) and its regulations, BLM approaches the development of the programmatic plan and individual lease sales as two distinct steps.[35] First, BLM develops a programmatic EIS called an Integrated Activity Plan (IAP), finalizing that document and completing the programmatic NEPA process prior to holding a lease sale.[36] Consistent with the

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[34] Pub. L. 115-97, Title II, sec. 20001(b)(3).

[35] Scoping Comment Letter at 21–22.

[36] U.S. Department of the Interior, Bureau of Land Management, National Petroleum Reserve-Alaska, Integrated Activity Plan, Record of Decision (Feb. 21, 2013); Department of the Interior, Bureau of Land Management, Call for Nominations and Comments for the 2013 National Petroleum Reserve in Alaska Oil and Gas Lease Sale, 78 Fed. Reg. 33103 (June 3,

Tax Act and how BLM conducts lease sales in the NPRA, BLM should be following a similar process here, fully completing the lease program EIS before beginning the distinct administrative process to hold an initial lease sale. These two processes ask different questions and make different decisions. Both require NEPA review and full public participation. We note that the BLM's leasing regulations for the NPRA apply only to the NPRA; by their terms, they do not apply to the Arctic Refuge.[37]

BLM's leasing approach for the Coastal Plain, and in particular the process for holding a lease sale, is very unclear. In the Reasonably Foreseeable Development Scenario in the draft EIS, BLM states that it is assuming that the first lease sale would take place within a year of adoption of the ROD.[38] BLM also states that the ROD will authorize multiple lease sales, and that lease sales will take place after the ROD is issued.[39] BLM goes on to say that not all lands identified in the ROD may be offered for lease.[40] But, in outlining the decisions to be made, BLM states that the decision in the ROD "will include which tracts of land will be offered for lease."[41] Thus, it is unclear if the ROD will identify specific tracts for companies to bid on, or if BLM will follow the process that it employs in the NPRA of having distinct processes, where it completes the entire programmatic-level EIS process, and then engages in a separate public process of identifying specific tracts to offer for bidding.[42] BLM must lay out and explain this process before moving to a final EIS.

Compounding this confusion are conflicting statements between BLM's public website and DOI leadership. BLM's website outlines a process for the Coastal Plain Leasing EIS that includes a call for nominations coming with notice of the draft EIS or prior to publication of the final EIS and indicates that the ROD will be issued concurrently with a lease sale notice.[43] But

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2013); *see* also National Petroleum Reserve-Alaska, Final Integrated Activity Plan/Environmental Impact Statement at iv, 9–10 (explaining the multi-step process for adopting a leasing-program IAP and holding a lease sale); *see also* U.S. Department of Interior, Bureau of Land Management, Anchorage, Alaska, Northeast National Petroleum Reserve-Alaska, Final Supplemental Integrated Activity Plan/Environmental Impact Statement at ES-7 (May 2008) (noting that after completing the leasing EIS, the BLM "may conduct one or more lease sales in the planning area"); U.S. Department of the Interior, Bureau of Land Management, Northwest National Petroleum Reserve-Alaska, Final Integrated Activity Plan/Environmental Impact Statement at I-9–I-10 (Nov. 2003) (noting that the lease sale will be held after the ROD is issued).

[37] 43 C.F.R. § 3130.-1.

[38] DEIS vol. 2 Appendix B at B-11.

[39] DEIS vol. 1 at 1-5.

[40] DEIS vol. 1 at 1-5.

[41] DEIS vol. 1 at ES-1.

[42] DEIS vol. 2 at B-10 (estimated hypothetical development time frames that do not include a separate call for nominations process).

[43] U.S. Department of the Interior, Bureau of Land Management, Frequently Asked Questions, *available at*: https://eplanning.blm.gov/epl-front-

recent comments from Assistant Secretary for Land and Minerals Management Joseph Balash indicate that the call for nominations will be concurrent with the issuance of the final EIS.[44] Again, BLM must clarify its approach to leasing with specificity, ensuring that all steps involve public notice and participation, and appropriate analysis.

As Groups also explained, BLM will need to survey the boundaries for the tracts contemplated for lease before it can issue a Call for Nominations. It does not appear that BLM has accounted for this step in its timeline.[45] The agency also failed to analyze the impacts of the survey efforts on Coastal Plain resources. It must do so.

2. *BLM Failed to Address Other Aspects of How It Will Administer the Oil and Gas Program and Lease Sales in a Manner Similar to the NPRPA and Its Regulations.*

The Tax Act directs the Department of Interior to "manage the oil and gas program on the Coastal Plain in a manner similar to the administration of lease sales under the Naval Petroleum Reserves Production Act of 1976 (42 U.S.C. 6501, et seq.) (Including regulations)."[46] In addition to the conservation purposes of the Refuge that will require additional protective measures, the Tax Act's direction is relevant to both the manner in which BLM can proceed to leasing as well as the approach the agency must take in structuring the protective provisions related to the oil and gas program. The leasing provisions in the NPRPA expressly state that any activities undertaken pursuant to that statute are required to "include or provide for such conditions, restrictions, and prohibitions as the Secretary deems necessary or appropriate to mitigate reasonably foreseeable and significantly adverse effects on the surface resources."[47] Congress also indicated that oil and gas activities in areas the Secretary designates as containing significant subsistence, recreational, fish and wildlife, or historical or scenic values are to be conducted in a manner that will, consistent with the NPRPA's exploration requirements, "assure maximum protection of such surface values."[48]

BLM's regulations similarly indicate that BLM should take any actions deemed "necessary to mitigate or avoid unnecessary surface damage and to minimize ecological disturbance" and that BLM is obligated to provide maximum protection measures for all areas identified as having significant subsistence, recreational, fish and wildlife, or historical or scenic values.[49] These actions may include limiting, restricting, or prohibiting the use of and access to

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office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=152117 (last visited January 10, 2019).

[44] Shady Grove Oliver, The Arctic Sounder, BLM seeks comments on leasing alternatives (Dec. 30, 2018), *available at*: http://www.thearcticsounder.com/article/1852blm_seeks_comments_on_leasing_alternatives (last visited January 10, 2019),

[45] DEIS vol. 2 at B-10.

[46] Pub. L. 115-97, Title II, sec. 20001(b)(3).

[47] 42 U.S.C. § 6506a(b)

[48] 42 U.S.C. §§ 6504(a), 6506a(n)(2).

[49] 43 C.F.R. § 2361.1(a), (c).

lands, or actions to "protect fish and wildlife breeding, nesting, spawning, lambing or calving activity, major migrations of fish and wildlife, and other environmental, scenic, or historic values."[50] The regulations also set out a process for BLM to identify special areas with significant surface values.[51]

Under these provisions, BLM has a broad obligation to protect the surface values. BLM must ensure that it is providing similar protections as part of the oil and gas program in the Arctic Refuge in order to comply with the Tax Act's mandate that the oil and gas program be conducted in a manner similar to the leasing program in the Reserve.

BLM has failed to comply with its statutory obligations to identify special areas and provide maximum protection for those values in the Arctic Refuge. At no point in BLM's analysis has BLM made any attempt to identify and designate special areas with significant subsistence, recreational, fish and wildlife, or historical or scenic values, despite the fact that those provisions are very closely related to BLM's leasing provisions, including stipulations. BLM should identify those areas with specificity and ensure that it provides maximum protection for those significant values of the Coastal Plain, consistent with its statutory obligations. Any measures to protect those areas must account for the exceptional surface biological values and resources of the Coastal Plain, ensure maximum protection of those values, and be based on updated information and scientific data.

3. BLM's Approach to the 2,000-Acre Limitation Is Inconsistent with the Tax Act.

The Tax Act sets a limit on surface development of 2,000 acres.[52] This limit was repeatedly discussed during proceedings leading to the passage of the legislation as a way to prevent harm to Coastal Plain resources.[53] While Groups believe that this limitation will not achieve this stated goal, BLM must nevertheless interpret and apply the limitation consistent with this overarching protective goal.

In interpreting this language, BLM states that it will limit to 2,000 acres "the total number of surface acres of all Federal land across the Coastal Plain, regardless of whether such land is leased, which may be covered by production and support facilities *at any given time*."[54]

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[50] *Id.* § 2361.1(e)(1).

[51] *Id.* § 2361.1(c).

[52] Pub. L. 115-97, Title II, section 20001(c)(3).

[53] Chairman Lisa Murkowski, Opening Statement, Full Committee Reconciliation Markup, U.S. Senate Committee on Energy and Natural Resources (Nov. 15, 2017) ("Alaskans know that we must balance the potential impacts of development. And I will be the first to agree that the environment and local wildlife will always be a concern, and that's why we have not avoided environmental review. . . . And that's why we have limited surface development to a total of just 2,000 federal acres."), *available at*: https://www.energy.senate.gov/public/index.cfm/files/serve?File_id=5B08FB7E-B82C-488F-9627-D78DEAF2EBC1.

[54] DEIS vol. 1 at 1-6 (emphasis in original).

The interpretation set forth in the draft EIS and BLM's application of the limitation in the development scenario and alternatives is at odds with protecting the Coastal Plain and Congress' intent behind the provision. Additionally, merely stating there is such a limit is failing to analyze numerous aspects of how such a limit can be applied that will have important effects on the Coastal Plain.

First, BLM is interpreting the limitation to be a rolling limit, as opposed to a cumulative cap on impacted acreage.[55] In the proceedings leading up to bill passage, this provision was described as providing a cap on all surface development on the Coastal Plain.[56] At no point in the legislative history is there any indication Congress intended for this number to be a rolling total or that Congress wanted BLM to rely on wholly unproven reclamation techniques to further expand the footprint of development beyond 2,000 acres. Interpreting the limitation to allow for additional lands to be developed if other lands are reclaimed means that much more than 2,000 acres of the Coastal Plain would be impacted by oil and gas activities. This is contrary to the Tax Act and cannot be permitted. Two-thousand acres is the maximum cumulative acreage that can be impacted by surface development under the Tax Act.

Even if this mistaken interpretation were correct, the final EIS would still have to include clear guides for tracking disturbance, enforcement mechanisms, and standards for how reclamation will be evaluated that are scientifically sound and use an appropriate timeline for judging "complete" reclamation. Additionally, BLM would have to develop clear rules for when impacted acreage needs to be reclaimed so operators do not continue operating at low production levels to avoid reclamation costs.

Second, BLM's interpretation also excludes highly impactful components of oil and gas production and development from the limitation, allowing much greater impact to the Coastal Plain than intended by Congress. Specific to pipelines, BLM is only interpreting the limitation to apply to those lands that are "directly occupied by facilities."[57] This means that BLM is only counting the area where the vertical supports of pipelines physically contact the ground, not the total acreage of elevated pipelines.[58] In the draft EIS, BLM concludes that only 8.4 to 10 acres would be impacted by the vertical supports for elevated pipelines, even though 210 to 250 *miles* of pipelines would be constructed on the Coastal Plain.[59] BLM's basis for this interpretation is that the language of the Tax Act identifies "piers for support of pipelines."[60] BLM's

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[55] DEIS vol. 1 at 1-6.

[56] Chairman Lisa Murkowski, Opening Statement, Full Committee Reconciliation Markup, U.S. Senate Committee on Energy and Natural Resources (Nov. 15, 2017) ("We have also limited surface development to just 2,000 federal acres."), *available at*: https://www.energy.senate.gov/public/index.cfm/files/serve?File_id=5B08FB7E-B82C-488F-9627-D78DEAF2EBC1.

[57] DEIS vol. 1 at 1-6.

[58] DEIS vol. 2. Appendix B at B-21. While BLM does not directly address buried pipelines, any portions of buried pipelines must count toward the limitation.

[59] DEIS vol. 2 Appendix B at B-21.

[60] DEIS vol. 1 at 1-6.

interpretation fails to account for the fact that the list included in the Tax Act is an inclusive list, not an exclusive list. Pipelines are unquestionably production and support facilities developed on the surface of the Coastal Plain. As such, all areas impacted by elevated pipelines should count toward this limitation, including the full length of the pipelines themselves as well as the vertical supports. Interpreting the limitation to apply to pipelines in this way is consistent with the overarching goal that this provision be a protective measure for the Coastal Plain. By interpreting the limitation to ignore the miles of actual pipelines, BLM is able to ignore considerable acreage directly impacted by pipelines. BLM's attempt to exclude elevated pipelines themselves from the 2,000-acre limitation cannot carry forward in the final EIS.[61]

Another surface development component that BLM is not including in the 2,000-acre limitation is gravel mines. While it is unclear whether BLM has the authority to even authorize gravel mining on the Coastal Plain, excluding gravel mines from the 2,000-acre limitation is another way in which BLM's narrow interpretation of the limitation allows greater impacts to the Coastal Plain than permitted. BLM concludes that as many as 320 acres could be directly impacted by gravel mining, with 165–176 acres being a low estimate.[62] This is considerable acreage. The high estimate would result in gravel mines being the second highest surface disturbing component of the oil and gas program.[63] BLM asserts that it is not including gravel mines under the category of things subject to the 2,000-acre limitation because gravel mines supply raw materials to build oil and gas facilities, but are not, according to BLM, facilities themselves.[64] This is inconsistent with BLM's own interpretation of the term "facility." According to BLM, a "facility" is something that is "built, installed, or established to serve a particular purpose."[65] It is also inconsistent with the National Research Council's accounting of gravel infrastructure on the North Slope, which included gravel mines in the total impacted area.[66] Gravel mines are built and established to serve the particular purpose of supplying gravel for oil and gas roads and pads. Their only purpose under the oil and gas program is to support oil and gas development.[67] If not for the oil and gas program, these gravel mines would not be built. BLM recognizes as much in the draft EIS.[68] BLM also acknowledges that gravel mines are part of the program by subjecting them to project requirements under ROP 24. If they are part of the program, they must be subject to the 2,000-acre limitation. Including gravel mines under the limitation is entirely consistent with Congress' goal, which was not just to establish an oil and

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[61] It is also unclear how BLM is accounting for the assumed connections to the Trans-Alaska Pipeline System in its overall surface disturbance calculations. *See* DEIS vol. 2 at B-8, B-17.

[62] DEIS vol. 2 Appendix B at B-22.

[63] DEIS vol. 2 Appendix B at B-23, Table B-5.

[64] DEIS vol. 1 at 1-6.

[65] DEIS vol. 1 at 1-6.

[66] National Research Council of the National Academies, Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope, Committee on Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope at 44 (2003).

[67] *See* 40.C.F.R. § 1508.25(a) (describing a "connected action" as one that "depend[s] on the larger action for their justification").

[68] DEIS vol. 1 at 3-26, 3-49, vol. 2 Appendix B at B-19, B-22.

gas program on the Coastal Plain as BLM states,[69] but to establish an oil and gas program that is protective of the Coastal Plain's resources. Including gravel mines under the 2,000-acre limitation is also consistent with BLM's inclusion of those things which "substantially disturbs the tundra surface."[70] Gravel mines unquestionably disturb the tundra surface.[71] BLM's attempt to exclude them from the category of things that is subject to the 2,000-acre limitation cannot carry forward in the final EIS.

BLM also does not specify in its 2,000-acre limitation how it will address several other types of infrastructure including buildings without gravel pads that are elevated over the tundra, gravel roads that expand in width following use (a common occurrence on the North Slope), power lines, and snow fences.

In addition to improperly interpreting the limitation, BLM fails to address important components of the 2,000-acre limitation. First, how the surface disturbance is permitted to occur will have vastly different impacts on habitat and, as a result, subsistence uses. As the U.S. Court of Appeals for the Tenth Circuit recognized, having a simple limitation on the amount of surface disturbance but no direction on how that disturbance will occur can result in a significant variation in the effects of that disturbance on plants and wildlife. In *New Mexico ex rel. Richardson v. BLM*, the BLM changed from an alternative that limited surface disturbance associated with oil and gas development to a specific location (along existing roads) to a cap of one percent of lease acreage. The Court found that this required a supplemental NEPA analysis "[b]ecause location, not merely total surface disturbance, affects habitat fragmentation."[72] As the Court elaborated, "the location of development greatly influences the likelihood and extent of habitat preservation. Disturbances on the same total surface acreage may produce wildly different impacts on plants and wildlife depending on the amount of contiguous habitat between them."[73] These effects were significant in the fragile Chihuahuan desert grasslands at issue in the *Richardson* case and even more so in the Coastal Plain, where 2,000 acres of disturbance can be spread in a spider web that could affect areas at magnitudes of difference than if that disturbance was carefully limited. BLM's draft EIS fails to consider what 2,000 acres of development could look like geographically and spatially, and the impacts that could occur depending on the location of activities and development.

The agency also failed to explain what mechanism it is adopting to ensure that the agency has the ability to regulate surface development to actually keep any development below this acreage cap, as well as the enforcement authority available to the agency to ensure compliance if development begins. Importantly, BLM has not elaborated how it intends to track surface disturbance to ensure that limits are not being neared, then reached and exceeded by multiple projects at the same time. BLM needs to demonstrate reliable technology, reporting, verification and monitoring techniques that it intends to use. At a minimum, pilot projects would need to be used to demonstrate that this can be carried out successfully, including use of ground-truthing

[69] DEIS vol. 1 at 1-6.
[70] DEIS vol. 1 at 1-6.
[71] DES vol. 1 at 3-49–3-50.
[72] 565 F.3d 683, 707 (10th Cir. 2009).
[73] 565 F.3d at 706.

before turning to a system that relies on solely technological solutions such as aerial or satellite imagery, global positioning system mapping, and geographic information systems (GIS) analysis.

Moreover, it is unclear when BLM will grant acreage to companies. These types of decisions are important for project developers and will have implications for their development timelines since ensuring adequate acreage available for development will be essential. For example, will BLM grant the acreage:

- Following lease sales to successful bidders?
- When BLM approves development plans?
- When permits are secured?
- When construction begins?

BLM has not elaborated upon how it intends to enforce the surface disturbance limitation once it grants leases to operators. It is not clear if the agency intends to place any limits on individual leases or to simply track the acreage and then send notices to companies to halt activities if acreage limits are reached. Nor is it clear how individual companies will be required to track surface-disturbing activities and report them. The BLM identified various lease stipulations or required operating procedures in the EIS, but all of these can be waived, exempted, or modified. Accordingly, they are insufficient to serve as an enforcement mechanism for the development limitation. For instance, Lease Stipulation 1, which BLM is referring to as a no surface occupancy stipulation, only precludes some permanent disturbance near rivers and streams. However, the EIS lacks a no surface occupancy stipulation applicable to all acreage of the Coastal Plain. In fact, there are no specific stipulations in Chapter 2 that indicate there will be a limitation on surface disturbance or that provide a general notice to the lessors that BLM may require a cessation of surface disturbing activities should the acreage limits by achieved. These types of stipulations must be included in every lease and permit issued to make it clear that BLM and the leaseholders are beholden to these limitations when issuing a lease.

At a minimum, BLM must be very clear in its lease terms that it is not granting any rights to lessees to conduct any oil and gas activities and that BLM retains full authority to outright prohibit oil and gas activities on any lease issued at any time during the lease term. This is contrary to how BLM currently describes leases.[74] BLM also acknowledges that its authority to deny activities on leases is conditioned on what is in the actual lease terms.[75] But without a clear restriction and reservation of rights, BLM could be in the position it now finds itself in the NPRA, where it has granted leases that, according to the agency, do not allow it to reject proposals and prohibit activities.[76] If BLM does not identify an enforcement mechanism and

[74] DEIS vol. 1 at 1-1.

[75] DEIS vol. 1 at 3-1.

[76] Greater Mooses Tooth 2 Oil and Gas Development Project, Joint Record of Decision and Permit Evaluation Bureau of Land Management U.S. Army Corps of Engineers at 8 (Oct. 2018) ("Alternative D is not a practicable alternative in the JROD, due to the fact that BLM cannot select this alternative as its decision for GMT2. Once issued, oil and gas leases provide a right of development, subject to reasonable regulation.").

clearly retain the authority to prohibit activities on any leases it may grant, BLM cannot ensure that it will comply with the 2,000-acre limitation.

BLM has indicated that it intends to rely on use of temporary facilities (on snow and ice) and reclamation so that once some acreage has been disturbed, it can be deemed only temporarily disturbed or reclaimed and then new acreage can be disturbed. As explained above, this interpretation cannot carry forward. And as explained below, reclamation of Arctic tundra and ecosystems is notoriously challenging and long-term. BLM must establish systems to ensure there has not been damage below snow and ice. Further, there must be inspection standards in place to verify reclamation before those acres can be accepted. Using operator "reclamation plans" is not sufficient. A separate review of the ground multiple years later (given the slow speed at which Arctic ecosystems regenerate) must be required before these acres can be deemed reclaimed for purposes of permitting additional surface disturbance.

Finally, BLM failed to explain how it interprets this limitation to apply to the private lands on the Coastal Plain (i.e., the KIC/ASRC lands and Native Allotments). BLM explains how it will apply the limitation on Federal land. But the limitation is also a legal requirement to conserve the Arctic Refuge Coastal Plain. As such, BLM must explain how it could apply to all private lands in the Refuge under section 22(g) of the Alaska Native Claims Settlement Act as well as how it could apply to ASRC/KIC lands under the terms of that Land Exchange Agreement.

4. *BLM Fails to Acknowledge Mandatory Existing Legal Mandates for Rights-of-Way and Explain How it Will Implement the Right-of-Way Directives in the Tax Act Consistent with these Existing Legal Mandates.*

The Tax Act also states that the "Secretary shall issue any rights-of-way or easements across the Coastal Plain for the exploration, development, production, or transportation necessary to carry out this section."[77] BLM fails to explain how it will address and apply the rights-of-way provision in the Tax Act, particularly in light of other mandatory statutory obligations for rights-of-way under ANILCA Title XI. The Tax Act did not waive any substantive requirements of these laws; any right-of-way or easement applications must first comply with these statutory mandates, including ANILCA Title XI. BLM must clarify and recognize this in the final EIS.

Additionally, the DEIS asserts that it lists all "requirements of federal, state, and local laws and regulations associated with future development in the Coastal Plain."[78] That list mentions some sections of ANILCA but fails to mention Title XI, which provides the "single comprehensive statutory authority for the approval or disapproval" of transportation and utility systems (TUSs) on conservation system units (CSUs) in Alaska.[79] TUSs include roads, pipelines, and energy transmission systems, and all related structures and facilities needed to construct,

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[77] Pub. L. 115-97, Title II, section 20001(c)(2).
[78] DEIS vol. 2 App. D at D-1.
[79] ANILCA sec 1101(c), 16 U.S.C. § 3161(c).

maintain and operate them.[80] Sections 1104–1106 of ANILCA set forth the detailed procedural and substantive requirements governing any approval or disapproval of a proposed TUS in a CSU.[81] A decision that purports to authorize a TUS in a CSU without complying with the requirements of Title XI can have no effect.[82] This means that the leasing process cannot convey a right to develop virtually any of the typical components of an oil and gas development unless it complies with Title XI.[83]

The DEIS ignores Title XI, instead simply noting that the Tax Act "authorizes the BLM to issue rights-of-way or easements across the Coastal Plain for the exploration, development, production, or transportation necessary to carry out the oil and gas leasing program."[84] That provision, however, simply reinforces the existing language in ANILCA, providing minimum

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[80] ANILCA sec 1102(4), 16 U.S.C. § 3162(4).

[81] Among other notable features, these provisions require detailed findings supported by substantial evidence, with respect to:

(A) the need for, and economic feasibility of, the transportation or utility system;

(B) alternative routes and modes of access, including a determination with respect to whether there is any economically feasible and prudent alternative to the routing of the system through or within a conservation system unit, national recreation area, or national conservation area and, if not, whether there are alternative routes or modes which would result in fewer or less severe adverse impacts upon the conservation system unit;

(C) the feasibility and impacts of including different transportation or utility systems in the same area;

(D) short- and long-term social, economic, and environmental impacts of national, State, or local significance, including impacts on fish and wildlife and their habitat, and on rural, traditional lifestyles;

(E) the impacts, if any, on the national security interests of the United States, that may result from approval or denial of the application for a transportation or utility system;

(F) any impacts that would affect the purposes for which the Federal unit or area concerned was established;

(G) measures which should be instituted to avoid or minimize negative impacts; and

(H) the short- and long-term public values which may be adversely affected by approval of the transportation or utility system versus the short- and long-term public benefits which may accrue from such approval.

ANILCA sec. 1104(g)(2), 16 U.S.C. § 3164(g)(2).

[82] ANILCA sec. 1104(a), 16 U.S.C. § 3164(a) ("Notwithstanding any provision of applicable law, no action by any Federal agency under applicable law with respect to the approval or disapproval of the authorization, in whole or in part, of any transportation or utility system shall have any force or effect unless the provisions of this section are complied with.").

[83] The DEIS repeatedly states that "certain rights" are conveyed to lessees at the lease sale stage. E.g., DEIS vol. 1 at 3-133. BLM should clarify what it believes these rights to be and explain that any proposed TUS is conditional on compliance with the Title XI process, which inherently includes agency discretion to approve or disapprove. BLM cannot circumvent or rewrite Title XI with a lease.

[84] DEIS vol. 2 App. D at D-2; P.L. 115-97 sec 20002(c)(2).

terms and conditions that the Secretary must include when issuing rights-of-way for TUSs.[85] But the approval of any TUSs must first be made pursuant to Title XI.

The DEIS's characterization of the Secretary's authority to issue rights-of-way, and especially its complete omission of Title XI from the list of applicable federal laws, leave the distinct impression that BLM believes that the substantive and procedural requirements of Title XI have somehow been waived for oil and gas development in the coastal plain. They have not been waived. As stated during bill passage, and as is discussed further in these comments, no laws were being waived by the Tax Act.[86] BLM must make clear the applicability of Title XI to the approval or disapproval of any TUS that a future lessee may seek to establish.

5. *BLM Has Failed to Establish or Identify Standards for Its Decisions Through a Rulemaking Process Involving the Public, Subverting Meaningful Public Participation in the Current EIS Process, and Has Failed to Address the Possible Applicability of FLPMA Requirements.*

In the current process, BLM is pressing forward with making determinations about where to lease, and under what terms, before it has engaged in any rulemaking to establish the regulatory scheme that will govern lease sales and subsequent development related activities. In particular, it has failed to engage in rulemaking to establish what substantive standards apply to its decisions about leases and the authorization of development related activities. The agency has also failed to point to any existing BLM regulations that actually apply to the Coastal Plain to explain what standards apply to its decisions.

Although the Tax Act directs BLM to "manage the oil and gas program on the Coastal Plain *in a manner similar to* the administration of lease sales under the Naval Petroleum Reserves Production Act of 1976 (42 U.S.C. 6501, et seq.) (including regulations),"[87] it does not state that either the NPRPA or the regulations thereunder are directly applicable to the Coastal Plain, and, on their face, the NPRPA and the regulations apply only to the geographic area of the NPRA.[88] The DEIS fails to acknowledge that BLM is engaged in what is really a rulemaking endeavor to establish the standards and procedures for leasing in the Coastal Plain. Instead, BLM appears to be tacitly making those decisions without following the procedures required by the Administrative Procedure Act (APA) or followed for the NPRA.

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[85] ANILCA sec 1107(a), 16 U.S.C. § 3167(a).

[86] *See, e.g.*, Senator Lisa Murkowski, Floor Speech on Reconciliation Legislation (November 30, 2017), www.murkowski.senate.gov/press/speech/floor-speech-reconciliation-legislation-tax-reform.

[87] Pub. L. 115-97, Title II, sec. 20001(b)(3) (emphasis added).

[88] *See, e.g.*, 43 U.S.C. § 6506a(a) ("The Secretary shall conduct an expeditious program of competitive leasing of oil and gas *in the Reserve* in accordance with this Act." (emphasis added)); 43 C.F.R. § 3130-1 (These regulations establish the procedures under which the Secretary of the Interior will exercise the authority granted to administer a competitive leasing program for oil and gas *within the National Petroleum Reserve - Alaska*." (emphasis added)).

This failure undermines the public participation in the current process required by NEPA because the public is unable to evaluate, for example, whether the proposed lease stipulations satisfy the applicable protective standards. It is impossible to do so because BLM has failed to articulate to the public what those standards are and what regulatory scheme or schemes are the proper ones. As discussed above, the direction in the Tax Act constrains BLM to provide, among other protections, the resource protections identified in the NPRPA and the regulations thereunder, but BLM has failed to articulate how it will provide even those protective standards; nor has it articulated how it will adjust those standards to provide the greater level of protection necessary for any oil and gas program to be consistent with the requirements of ANILCA and the National Wildlife Refuge System Administration Act to continue to fulfill the primary purposes of the Refuge.

In addition to violating NEPA's requirements, this failure potentially also violates the requirements of the APA and FLPMA to the extent they may apply. The DEIS makes no attempt at explaining whether or not FLPMA applies to its management of the interests in land addressed by the Tax Act. It does not list FLPMA as one of the laws that applies to its decision. An explanation is necessary because FLPMA is generally applicable to the NPR-A, but is not applicable to National Wildlife Refuges. The question of whether FLPMA applies is relevant to the current DEIS process. For example, as described above, it is relevant to determining whether BLM is complying with the proper procedures for establishing standards for its decisions prior to engaging in processes that apply those standards. Moreover, it is also important to understanding what substantive standards apply to the decisions at hand. However, any application of FLPMA must also take into account the more protective substantive laws that apply to the Arctic Refuge and FWS's administration and management of the lands to achieve Refuge and Refuge System purposes.

Rather than frustrating public participation by obscuring much of the decision making underlying and informing the current process, BLM should clarify what regulations and laws apply to the decisions at hand, explain its interpretations transparently, and provide for public participation.

B. BLM'S DRAFT EIS FAILS TO COMPLY WITH NEPA.

NEPA is "our basic national charter for protection of the environment."[89] NEPA's analysis and disclosure goals are two-fold: (1) to ensure informed agency decision making, and (2) to ensure public involvement.[90] NEPA requires that federal agencies prepare a detailed EIS for any major Federal action that may significantly affect the quality of the human environment.[91] By focusing the agency's attention on the environmental consequences of its proposed action, NEPA "ensures that important effects will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast."[92] NEPA

[89] 40 C.F.R. § 1500.1(a).
[90] *Robertson v. Methow Valley Citizen Council*, 490 U.S. 332, 349 (1989).
[91] 42 U.S.C. § 4332; 40 C.F.R. § 1508.18(b)(4).
[92] *See also Marsh v. Or. Nat. Res. Council*, 490 U.S. 360, 371 (1989))).

"is not designed to postpone analysis of an environmental consequence to the last possible moment;" it is "designed to require such analysis as soon as it can reasonably be done."[93]

BLM's draft EIS fails to comply with NEPA in multiple respects. Indeed, the draft EIS is so deficient that BLM must revise it and re-release it for public comment. BLM fails to consider a reasonable range of alternatives, fails to acknowledge and address the considerable missing information, and fails to properly evaluate mitigation measures. Further, BLM's approach to the impacts analysis is deeply flawed, the agency cannot defer its analysis of an oil and gas program; it must do that analysis now, and the agency wholly fails to consider any 3-dimensional (3D) seismic surveying. Finally, BLM's draft EIS fails to ensure public participation, engage important cooperating agencies, or properly rely on other documents and analysis. Each of these issues is described below.

1. *BLM's Draft EIS is Inadequate and Must Be Revised and Re-Released for Public Comment.*

As an initial NEPA issue, BLM's draft EIS is so inadequate that it prevents a meaningful analysis and review by the public. It must be revised and re-released for public comment. To achieve NEPA's goals, the statute requires federal agencies to "[e]ncourage and facilitate public involvement in decisions which affect the quality of the human environment."[94] To help guarantee public participation and informed decisions, the language of an EIS must be "clear," "be written in plain language," and presented in a way that "the public can readily understand."[95] It must also be "supported by evidence that the agency has made the necessary environmental analyses."[96] "The information must be of high quality" because "[a]ccurate scientific analysis . . . and public scrutiny are essential to implementing NEPA."[97]

In responding to public comments on a draft EIS, an agency may: (1) "[m]odify alternatives including the proposed action;" (2) "[d]evelop and evaluate alternatives not previously given serious consideration by the agency;" (3) "[s]upplement, improve, or modify its analyses;" (4) "[m]ake factual corrections;" or (5) "[e]xplain why the comments do not warrant further agency response, citing the sources, authorities, or reasons which support the agency's position."[98] "If changes [in an EIS] in response to comments are minor and are confined to the

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[93] *Kern v. U.S. Bureau of Land Mgmt.*, 284 F.3d 1062, 1072 (9th Cir. 2002).

[94] 40 C.F.R. § 1500.2(d).

[95] *Earth Island Inst. v. U.S. Forest Service*, 442 F.3d 1147, 1160 (9th Cir. 2006); 40 C.F.R. § 1502.8; *see also Or. Envtl. Council v. Kunzman*, 817 F.2d 484, 493 (9th Cir. 1987) ("An EIS must be organized and written so as to be readily understandable by governmental decisionmakers and by interested non-professional laypersons likely to be affected by actions taken under the EIS.").

[96] 40 C.F.R. § 1502.1; *see also* 40 C.F.R. § 1502.8.

[97] 40 C.F.R. § 1500.1(b).

[98] 40 C.F.R. § 1503.4(a).

responses described in paragraphs (a)(4) and (5) of this section, agencies may write them on errata sheets and attach them to the statement instead of rewriting the draft statement."[99]

Conversely, non-minor changes that require modified or new alternatives or analyses generally require revision or supplementation of the draft EIS.[100] "If a draft statement is so inadequate as to preclude meaningful analysis, the agency shall prepare and circulate a revised draft of the appropriate portion."[101] The agency must then seek public comment on the revised draft EIS.[102] An EIS that fails to enable meaningful public review and understanding of the agency's proposal, methodology, and analysis of environmental consequences violates NEPA.[103] BLM's draft EIS will need to be revised for at least three reasons: it fails to include key information and analysis, fails to analyze a reasonable range of alternatives, and fails to take a hard look at the impacts of the oil and gas program on the Coastal Plain.

BLM's draft EIS for the Coastal Plain oil and gas leasing program contains numerous gaps in information and analysis that seriously frustrate public review and understanding. Certain highly significant issues that affect important resources and uses of the Coastal Plain, such as pre-leasing seismic operations, impacts to public health, a quantitative analysis of air quality impacts, the social costs of carbon and other greenhouse gas emissions, contributions of climate-forcing black carbon, a viewshed and visibility analysis, a cost-benefit analysis that quantifies losses to the significant ecological and socio-economic benefits of the Coastal Plain, and consideration of reasonable alternatives and measures designed to maximize protection of Coastal Plain resources and uses to the greatest extent consistent with the Tax Act are largely missing from the draft EIS. Many other issues, such as impacts to polar bears, caribou, and other wildlife, impacts to wilderness and recreation, water resources, and vegetation and permafrost, are only partially addressed, with key elements of the draft EIS analysis missing, incomplete, inaccurate, inconsistent with the best available science, or otherwise inadequate. Our comments address these and numerous other serious deficiencies in detail below. The significant and numerous information and analytical gaps render BLM's draft EIS "so inadequate as to preclude meaningful analysis" and review by the public, and therefore necessitate a revised draft EIS.[104] To remedy the extensive gaps in information and analysis, a revised draft EIS is necessary.

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[99] 40 C.F.R. § 1503.4(c).

[100] *See* 40 C.F.R. §§ 1503.4, 1502.9(a) & (c).

[101] 40 C.F.R. § 1502.9(a).

[102] *See* 40 C.F.R. §§ 1502.9(a), 1503.1(a)(4); *see also California v. Block*, 690 F.2d 753, 771 (9th Cir. 1982) ("Only at the stage when the draft EIS is circulated can the public and outside agencies have the opportunity to analyze a proposal and submit comment. No such right exists upon issuance of a final EIS.").

[103] *See, e.g.*, *California ex rel. Lockyer v. U.S. Forest Serv.*, 465 F. Supp. 2d 942, 948-50 (N.D. Cal. 2006) ("incomprehensible" national monument management plan and corresponding EIS violated NEPA where it contained conflicting and confusing statements regarding applicable standards for management).

[104] *See* 40 C.F.R. § 1502.9(a).

BLM's failure to analyze a reasonable range of alternatives also necessitates a revised draft EIS. NEPA requires that an EIS analyze a range of reasonable alternatives. The analysis of alternatives is the "heart" of an EIS.[105] An agency must "[r]igorously explore and objectively evaluate all reasonable alternatives" to a proposed action.[106] Consistent with NEPA's basic policy objective to protect the environment, this includes more environmentally protective alternatives.[107] It also includes reasonable alternatives submitted by the public at scoping.[108] "The existence of a viable but unexamined alternative renders an [EIS] inadequate."[109] The "touchstone" of the inquiry is "whether an EIS's selection and discussion of alternatives fosters informed decision-making and informed public participation."[110]

The draft EIS's range of alternatives is inadequate for multiple reasons. The draft EIS fails to analyze many reasonable alternatives and proposals submitted by the public at scoping.[111] This includes minimized lease acreage; deferred leasing; alternatives with non-waivable stipulations, best management practices, and required operating procedures; alternatives that do not allow development until specific FWS findings are made; alternatives that preclude future development or only permit contiguous development; and economics-based alternatives.[112] These recommendations are not reflected in BLM's three action alternatives. The range of alternatives included in the analysis is also inadequate to facilitate informed decision making and public involvement. For instance, the range of alternatives does not include an alternative that makes fewer than 1 million acres available for leasing despite the fact that only 400,000 acres is required by law to be offered in each lease sale. Arctic lease sale experience counsels that much of the area offered is not ultimately bid on or leased, providing for consideration of a phased approach that re-offers unbid lands. Additionally, there is no alternative that caps surface infrastructure at fewer than 2,000 acres. For all alternatives, the lease stipulations and required operating procedures are very similar and waivable, can be granted exceptions, or modified with BLM approval. Each of these examples and others are addressed in detail in the comments below.[113] Importantly, the new and revised alternatives that will be necessary to remedy these

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[105] 40 C.F.R. § 1502.14.

[106] 40 C.F.R. § 1502.14(a); *see also* 42 U.S.C. § 4332(2)(E) (agencies must "study, develop and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources").

[107] 40 C.F.R. § 1500.2(e) (agencies must "[u]se the NEPA process to identify and assess reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment"); *see also, e.g.*, *Kootenai Tribe of Idaho v. Veneman*, 313 F.3d 1094, 1121-22 (9th Cir. 2002) (citing cases), *abrogated on other grounds by The Wilderness Soc'y v. U.S. Forest Serv.*, 630 F.3d 1173, 1178-80 (9th Cir. 2011) (en banc).

[108] *See* 40 C.F.R. §§ 1501.7, 1502.1.

[109] *Mont. Wilderness Ass'n v. Connell*, 725 F.3d 988, 1004 (9th Cir. 2013) (quotations and citation omitted).

[110] *Mont. Wilderness Ass'n*, 725 F.3d at 1005 (quotations and citation omitted).

[111] Scoping Comment Letter at 26–27.

[112] Scoping Comment Letter at 26–27.

[113] *See infra* Part III.B.2 (explaining why the action alternatives are an inadequate range of alternatives).

significant gaps will not be "minor variation[s]" of the existing alternatives that are "qualitatively within the spectrum of alternatives that were discussed in the draft."[114] To remedy the inadequate range of alternatives, a revised draft EIS is necessary.

Finally, NEPA dictates that BLM take a "hard look" at the environmental consequences of a proposed action, including its direct, indirect, and cumulative effects.[115] The required hard look encompasses effects that are "ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative."[116] The numerous and significant gaps in information, analysis, and alternatives renders the draft EIS impacts analysis invalid. For instance, absent information about baseline air quality, data about how caribou utilize the entirety of the Coastal Plain during various seasons, water quantity and use, and other important baseline conditions integrated into the environmental baseline and each of the alternatives, the draft EIS fails to take the required hard look at impacts. As the Ninth Circuit has explained, "without establishing the baseline conditions . . . , there is simply no way to determine what effect the proposed [action] will have on the environment and, consequently, no way to comply with NEPA."[117] Many other elements of the impacts analysis are incomplete, unsupported by the best available science, or otherwise inadequate, as explained in detail below. The deficient impacts analysis renders the draft EIS so inadequate as to preclude meaningful review. A revised draft EIS is required.[118]

2. BLM's Range of Alternatives is Inadequate; BLM Must Consider a Protective Alternative or Alternatives.

The draft EIS glaringly fails BLM's legal obligation — and NEPA's core mandate — to study in depth and disclose the environmental consequences of reasonable alternatives to the agency's preferred course of action. The entire Refuge is subject to an extremely protective statutory scheme. Management must conserve fish and wildlife populations and habitats in their full natural diversity, protect subsistence uses and water quality and quantity to the maximum extent consistent with the fish and wildlife mandate, and fulfill international fish and wildlife related treaties.[119] In addition, because Congress has not acted on the Secretary of Interior's 2015 formal recommendation that virtually all federal lands in the Coastal Plain be designated

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[114] *Forty Most Asked Questions Concerning CEQ's NEPA Regulations*, 46 Fed. Reg. 18,026, 1,035 (Mar. 17, 1981).

[115] *Robertson*, 490 U.S. at 348; 42 U.S.C. § 4332(2)(C); 40 C.F.R. §§ 1502.16, 1508.7, 1508.8.

[116] 40 C.F.R. § 1508.8.

[117] *Half Moon Bay Fisherman's Marketing Ass'n v Carlucci*, 857 F.2d 505, 510 (9th Cir. 1988).

[118] Given the numerous significant deficiencies in the draft EIS, the standard for preparing a supplemental draft EIS, *see* 40 C.F.R. § 1502.9(c), is far exceeded in this instance, and a revised draft EIS is necessary.

[119] ANILCA § 303(2)(B); *see also* 16 U.S.C. § 3101(b) (Congress intended ANILCA to preserve "unaltered arctic tundra").

Wilderness, BLM must exercise its management responsibilities under the Tax Act consistent with the Refuge CCP's highly restrictive management regime.[120]

BLM's formulation and study of alternatives for the Coastal Plain must reflect these dictates. While the Tax Act sets out one development-oriented statutory purpose for the Coastal Plain, it preserves the other protective purposes and mandates. BLM is obligated "to reconcile the two, if possible, and to give effect to each."[121] The agency can do this only if it develops one or more alternative approaches to a leasing program to maximize protection of the biophysical environment and other wilderness characteristics of the Coastal Plain. Alternatives can accomplish this by minimizing and phasing the acreage leased, by reducing the area of surface disturbance, by proposing more restrictive and non-waivable lease provisions, by deferring leasing or implementation, or through a combination of these approaches. Because the draft EIS includes no such alternatives, and fails to provide rational, legally-sufficient reasons for that failure, as elaborated below, it is deficient under NEPA and must be revised and reissued.

NEPA requires that an EIS include "alternatives to the proposed action."[122] The analysis of alternatives is the "heart" of an EIS.[123] An agency must "[r]igorously explore and objectively evaluate all reasonable alternatives" to a proposed action.[124] The purpose of the alternatives requirement is to analyze a variety of impacts and present a range of choices to the decision maker.[125] The "touchstone" of the inquiry is "whether an EIS's selection and discussion of alternatives fosters informed decision-making and informed public participation."[126] Accordingly, the EIS must include an evaluation of "all reasonable alternatives," and provide the decision maker with a "range of alternatives" from which to elect.[127] Consistent with NEPA's basic policy objective to protect the environment, this includes more environmentally protective alternatives.[128] It also includes reasonable alternatives submitted by the public at scoping.[129] "The existence of a viable but unexamined alternative renders an [EIS] inadequate."[130] The range

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[120] *See* 16 U.S.C. § 668dd(e)(1)(E); *see also* 16 U.S.C. § 3101(b) (congressional intent "to preserve wilderness resource values and related recreational opportunities . . . within large arctic and subarctic wildlands.").

[121] *Fed. Trade Comm'n v. A.P.W. Paper Co.*, 328 U.S. 193, 202 (1946).

[122] 42 U.S.C. § 4332(2)(C)(iii).

[123] 40 C.F.R. § 1502.14.

[124] 40 C.F.R. § 1502.14(a).

[125] 40 C.F.R §§ 1502.14, 1505.1(e).

[126] *State of Cal. v. Block*, 690 F.2d 753 (9th Cir. 1982) (citation omitted).

[127] 40 C.F.R. §§ 1502.14(a), 1505.1(e).

[128] 40 C.F.R. § 1500.2(e) (agencies must "[u]se the NEPA process to identify and assess reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment"); *see also, e.g., Kootenai Tribe of Idaho v. Veneman*, 313 F.3d 1094, 1121-22 (9th Cir. 2002) (citing cases), *abrogated on other grounds by The Wilderness Soc'y v. U.S. Forest Serv.*, 630 F.3d 1173, 1178-80 (9th Cir. 2011) (en banc).

[129] *See* 40 C.F.R. §§ 1501.7, 1502.1.

[130] *Mont. Wilderness Ass'n v. Connell*, 725 F.3d 988, 1004 (9th Cir. 2013) (quotations and citation omitted).

of alternatives in the draft EIS is woefully inadequate. Groups do not support any of the proposed action alternatives. BLM must comply with its legal obligations under NEPA to consider a reasonable range of alternatives.

A recent decision by a federal court in Colorado reinforces the importance of evaluating specific alternative approaches, including alternatives with differing approaches to fossil fuel development. In *Wilderness Workshop v. Bureau of Land Management*, the plaintiffs proposed an alternative where low and medium potential lands were closed for leasing. BLM declined to consider the alternative, claiming it had already considered and discarded a "no leasing" alternative. The court found: "This alternative would be 'significantly distinguishable' because it would allow BLM to consider other uses for that land."[131] Further, in defining what is a "reasonable" range of alternatives, NEPA requires consideration of alternatives "that are practical or feasible" and not just "whether the proponent or applicant likes or is itself capable of carrying out a particular alternative"; in fact, "[a]n alternative that is outside the legal jurisdiction of the lead agency must still be analyzed in the EIS if it is reasonable."[132]

This draft EIS considers three action alternatives. Two provide for leasing the entire Coastal Plain, while the third provides for leasing over 2/3 of it.[133] Further, alternatives B and C differ only modestly, while proposing precisely the same acreage for leasing. The only difference is that alternative B includes fewer acres subject to non-surface occupancy stipulations and more on which timing limitations apply. No alternative would offer fewer than 1,037,200 acres for lease, considers phased leasing, or examines the benefits of deferring either leasing or operations.

The stipulations and required operating procedures vary little by alternative and many of the exact same lease stipulations are proposed for alternatives B and C.[134] The majority of the required operating procedures are the same for all three action alternatives — and none vary between alternatives B and C.[135] For all of the alternatives, the stipulations and required

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[131] *Wilderness Workshop v. Bureau of Land Management*, No. 1:16-cv-01822-LTB, Memorandum Opinion and Order at 38 (D. Colo. October 17, 2018); *see also Colorado Environmental Coalition v. Salazar*, 875 F. Supp. 2d 1233, 1249–50 (D. Colo. 2008) (Community Alternative for protecting the top of the Roan Plateau while keeping majority open to leasing through use of no surface occupancy stipulations was feasible and distinct from other alternatives under consideration. BLM's failure to separately analyze the Community Alternative violated NEPA).

[132] Council on Environmental Quality, *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, Questions 2A and 2B, available at* https://www.energy.gov/sites/prod/files/2018/06/f53/G-CEQ-40Questions.pdf; *see also*, 40 C.F.R. §§ 1502.14, 1506.2(d).

[133] DEIS vol. 1 at 2-2.

[134] DEIS vol. 1 at 2-6–2-12, 2-15–2-16 (same lease stipulations for alternatives B and C for springs and aufeis, nearshore marine habitat, polar bear denning habitat, and caribou summer habitat, and wilderness).

[135] DEIS vol. 1 at 2-16–2-19, 2-24–2-30, 2-32–2-39.

operating procedures can all be waived, exempted, or modified,[136] meaning that the level of protection provided by the different alternatives is potentially largely similar and any differences illusory. In no alternative is the acreage for the physical footprint of surface infrastructure smaller than the 2,000 acre maximum provided by law.[137] Additionally, all of the action alternatives assume the entire Coastal Plain will be open to seismic and fail to evaluate the difference in impacts if a smaller area were available for seismic. Indeed, BLM's own impacts analysis illustrates just how inadequate the range of alternatives is by repeatedly acknowledging that there would be little or no difference in impacts under the action alternatives.[138] If BLM does not analyze an actual range of alternatives in its revised EIS, this would in effect pre-determine the scale of leasing and its impacts, the very thing that NEPA was enacted to prevent.[139]

BLM must develop and fully analyze alternatives that provide stronger protections for Coastal Plain resources. These include but are not necessarily limited to the components set out below. These proposed alternatives are consistent with the purpose and need statement in the draft EIS, and some impact-minimizing alternative must be not just considered, but also adopted, to harmonize the leasing program with Refuge-protective statutes as much as possible, they should be considered.[140] Importantly, while the following alternatives will help reduce impacts, all still entail serious damage to Coastal Plain resources and values. Thus, the undersigned groups do not advocate for any particular one of these alternatives, but believe they are necessary to comply with NEPA's goal of informed decision-making and other legal mandates.

a. BLM fails to consider alternatives that lease less than 1 million acres or consider phased leasing.

Because oil and gas exploration and development of the Coastal Plain necessarily entails damage to natural values, as BLM concedes, the agency must consider alternatives — and ultimately adopt one — that reconcile as much as possible those activities with PLO 2214 and ANILCA's original purposes and direction for the Refuge, retained by Congress, and other protective statutory mandates. The Tax Act requires that BLM offer a minimum of 400,000

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[136] DEIS vol. 1 at 2-2–2-3.

[137] DEIS vol. 2, Appendix B at B-19–B-21, B-23 Table B-5.

[138] *See, e.g.*, DEIS vol. 1 at 3-16 (air quality impacts identical under all alternatives).

[139] It is in part to avoid this kind of restriction that agencies are prohibited from taking actions during the NEPA process that would limit the range of reasonable alternatives. *See* 40 C.F.R. § 1506.1; *see also, e.g. W. Watersheds Project v. Zinke*, 336 F. Supp. 3d 1204, 1239 (D. Idaho 2018) ("decision by BLM to commit to a particular outcome before completing a full NEPA analysis may foreclose or diminish the prospect for an open-minded examination of alternatives down the road.").

[140] DEIS vol. 1 at 1-1–1-2 (setting out the purpose and need as to implement a leasing program consistent with the Tax Act); *City of Carmel-by-the-Sea v. U.S. Dep't of Transportation*, 123 F.3d 1142, 1155 (9th Cir. 1997) (explaining that because the purpose and need statement drives the alternatives development, alternatives that meet the purpose and need should be considered in the analysis).

acres in the first lease sale, and at least 400,000 in the second lease sale. No alternative considers making 800,000 acres available and none considers leasing in a phased approach that reduces total acreage ultimately leased below that level because areas offered initially and not leased may be included in the second 400,000-acre sale. Both of those alternatives need development and study in a revised DEIS.

BLM states that it initially considered an 800,000-acre alternative but eliminated it from detailed analysis on three grounds, none of which is minimally rational. First, the agency argues that it has to lease medium and low potential areas, because only 427,900 acres show the highest potential for hydrocarbon discovery.[141] Second, BLM asserts that the "actual potential development area" will be restricted by the Tax Act's 2,000 acre limit on certain kinds of surface disturbance. And finally, BLM claims that the rejected approach would be similar to Alternative D.[142] None of these three of these rationales is supportable.

In the first place, it is patently wrong that BLM needed to include areas with medium and low hydrocarbon potential to meet the 800,000-acre minimum required by the Tax Act.[143] Even were it the case that the Tax Act required leasing of 800,000 acres, that would not require inclusion of all medium potential areas, let alone any low potential ones. BLM is required to offer "those areas that have the highest potential for the discovery of hydrocarbons."[144] BLM states that 427,900 acres have high potential, 658,400 acres have medium potential, and 477,200 acres have low potential.[145] BLM then states that to reach the 800,000 minimum acreage, it must make acreages within low and medium potential areas available.[146] If there are 427,900 acres of high potential areas, BLM would only need to identify 372,100 acres of medium potential areas, about 57% of them, to reach 800,000 acres, and no acreage in the low-potential areas. The acres identified of medium potential areas must also be the acreage identified as having the highest potential within this category. Moreover, the draft EIS does not even discuss what an alternative leasing only 800,000 acres would entail in terms of the potential location of leased lands or the conditions imposed upon the leases.[147]

Equally fatal to BLM's justification, the agency is not required to affirmatively lease 800,000 acres, only to offer that acreage in two lease sales.[148] Notably, though, in recent bidding for federal on-shore oil and gas leases on the North Slope, BLM sold only 6% of the acreage offered, and none estimated as having high potential for hydrocarbon development.[149] Thus it is

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[141] DEIS vol. 1 at 2-39.
[142] DEIS vol. 1 at 2-39.
[143] DEIS vol. 1 at 2-39.
[144] Pub. L. 115-97, Title II, sec. 20001(c)(1)(B)(i)(II).
[145] DEIS vol. 1 at 2-39.
[146] DEIS vol. 1 at 2-39.
[147] DEIS vol. 1 at 2-39.
[148] Pub. L. 115-97, Title II, sec. 20001(b)(2)(i). In fact, BLM has no control over how much acreage is actually bid on by companies.
[149] *See, e.g.*, U.S. Department of the Interior, Bureau of Land Management, Alaska NPR-A Oil & Gas Lease, December 12, 2018, Sale Summary (noting that of the 2,852,803 acres

highly unlikely that the agency will sell all, or even most, of its initial offering. Under the terms of the Tax Act, it is very likely that BLM would then be required to re-offer in the second lease sale any unsold high-potential acres up to 400,000, as being among "those areas that have the highest potential for the discovery of hydrocarbons."[150] The second lease sale could readily offer for lease few, or conceivably no, additional acres to the initial 400,000 acres offered. In short, not only does the Tax Act not require BLM to lease more than 800,000 acres, it makes it possible to lease far less. This phased approach is one that the agency must develop into a full alternative, consider, and disclose the impacts from in a revised draft EIS,[151] consistent with the Tax Act and the numerous other legal obligations that apply to an oil and gas program.

It is no answer, as BLM states,[152] that the Tax Act limits certain kinds of surface-disturbing activities within the Coastal Plain to 2,000 acres. In the first place, BLM has discretion to limit such activities to far fewer than 2,000 acres — and for obvious environmental reasons needs to consider alternatives that do so. In the second, all of BLM's action alternatives allow the same level of development — the full 2,000 acres. Even if the full 2,000 acres were needed for any leasing program (based on BLM's erroneous interpretation), increasing leased acreage beyond the minimum statutorily required would occasion impacts from numerous other activities. Developing greater lease acreage necessarily entails more equipment, man hours, vehicle trips, ice road traffic, barging, coastal landings, pipeline miles and similar undertakings that affect the environment. It also likely occasions more exploratory activity, such as seismic surveying. If the leasing serves its commercial purpose, it increases harms from extracting, producing, transporting, and combusting a greater total volume of oil and gas, harms that include more spills and more contribution to global warming. Aggravating these differential impacts from leasing unnecessary acreage, under the interpretation BLM adopts in the draft EIS, the 2,000-acre limitation allows additional areas to be destroyed as areas covered by facilities are "reclaimed," expanding impacts to still more acreage. Furthermore, higher and different total harms from impact dispersal and habitat fragmentation would result from various configurations and locations of that 2,000-acre footprint over time. Making additional acres available for oil and gas leasing would affect how that footprint was configured, and how extensive the resulting impacts, including habitat fragmentation, might be.

The third reason the draft EIS asserts for failing to consider alternatives that lease 800,000 (or fewer) acres is that it would be "similar in concept to Alternatives D1 and D2, which make only 1,037,200 acres available for lease sales."[153] But either version of alternative D would offer 237,200 acres, almost 30%, more in the Coastal Plain for leasing than an alternative

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offered, only 174,044 acres — and none of the high potential acres — were bid on and leased), available online at https://www.blm.gov/sites/blm.gov/files/uploads/OilandGas_Alaska_2018_NPR-A_Lease-Sale-Bid-Recap.pdf.

[150] Pub. L. 115-97, Title II, sec. 20001(b)(1)(ii).

[151] Indeed, BLM acknowledges that a phased approach is possible, making its failure to include such an alternative particularly suspect. DEIS vol. I at 1-5.

[152] DEIS vol. 1 at 2-39.

[153] DEIS vol. 1 at 2-39

offering only 800,000 acres.[154] Put another way, the eliminated alternative would offer only 51% of the acreage of the Coastal Plain, versus Alternative D, which offers 66% of the program area. Encumbering an additional 15%[155] of the Coastal Plain with rights to extract the underlying oil and gas resources affects the management of those lands, and adjacent lands, interfering with the other purposes of, and statutory protections for, the Refuge by increasing the total amount of disturbance that will occur from all phases of oil and gas activities. This cannot be squared with BLM's obligation to reconcile statutory mandates to the maximum extent it can. BLM's proffered reasons for not analyzing acreage minimizing alternatives are arbitrary and capricious, and its failure to assess them violates NEPA's requirement to evaluate a reasonable range of alternatives. Similarly, BLM's statement that an 800,000-acre alternative would be similar in concept to Alternative D is faulty because it is based on the premise that only acreage numbers would be different, and that BLM need not offer any additional and different protections. Alternatives could be meaningfully different if BLM offers meaningfully different protections. Additionally, this fails to account for the fact that under BLM's three action alternatives (including the two variations under Alternative D), there are only two acreage amounts offered.

Relatedly, BLM assumes that the focus of development will occur in the Topset Play, which is expected to be the first anchor field discovered,[156] and which BLM states contains "over half of the recoverable undiscovered oil in the program area."[157] BLM should consider an alternative that looks specifically at leasing and development focused in this area, including considering leasing approaches and protective measures in this geographic focus. (BLM should include a map of the location of this play, given its significance.)

b. Locating Infrastructure Outside the Coastal Plain and Limiting Exploration to Leased Areas

BLM should also consider an alternative in which there is no central processing facility, production pads, gravel mines or other infrastructure constructed on the Coastal Plain. Oil and gas resources could be produced and/or transported via pipeline for processing at another location and gravel mining could occur outside of the Coastal Plain. Such an alternative could decrease impacts to surface resources on the Coastal Plain by limiting construction and human activity associated with oil and gas development processing.

Relatedly, BLM should also modify its alternatives analysis to consider whether additional areas should be closed to exploration activities, particularly in areas where seismic damage is likely to be exacerbated because of the topography or other concerns, or where those areas will be closed to leasing. For example, in the draft EIS, BLM asserts for purposes of Alternative D that it would close 476,600 acres of caribou calving habitat to lease sales, but would still allow seismic activity over the entire program area.[158] BLM needs to modify Alternative D so it does not allow seismic exploration in areas that are closed to leasing.

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[154] 237,200 acres/800,000 acres = 29.65%
[155] 237,200 acres/1,563,500 acres = 15.17%.
[156] DEIS vol. 2 at B-16.
[157] DEIS vol. 2 at B-5.
[158] DEIS vol. 1 at 3-120.

c. More Heavily Stipulated Alternative, Including Non-Waivable Stipulations

BLM should also consider an alternative where all lease stipulations and required operating procedures (ROPs) are not subject to waivers, exceptions, and modifications. This alternative would ensure that the protections ascribed to the stipulations could actually be relied upon to safeguard resources. Since the current alternatives do not include any limits on waivers, exceptions and modifications, BLM should evaluate the impacts of fully enforcing all stipulations to inform any decision to vary from this approach. Conversely, since all stipulations and ROPs can be waived, excepted, or modified, BLM should analyze the impacts of the program based on granting these exemptions.

Given the general inefficacy of many of the proposed stipulations and ROPs in avoiding or mitigating adverse impacts to sensitive Coastal Plain resources, BLM should also include more protective stipulations and ROPs. For instance, BLM should develop an alternative that encompasses the recommendations of the International Porcupine Caribou Board, as required under the International Agreement on the Conservation of the Porcupine Caribou Herd, and another designed to avoid or minimize aesthetic impacts based on the results of comprehensive visibility analysis. BLM should also consider a stipulation requiring compact siting of all oil and gas facilities and infrastructure, and mandating that any development be contiguous, even under the 2,000-acre limitation.

d. Deferred Leasing and Development Alternatives

Although the Tax Act directs BLM as to when lease sales should occur and the acreage to be offered in those sales, it does not mandate that leases be issued, nor does it limit what protective stipulations may be applied to the leases, or the timing of production. Consequently, BLM could and should have considered alternatives that would delay leasing or constrain the timing of extraction to reduce or eliminate the impact of the oil and gas program on climate change and account for principles of option or informational value. This is particularly true because the oil and gas program necessarily must comport with the other purposes of the Refuge, and the Arctic is highly vulnerable to climate change and is already experiencing its effects more severely than other areas. Further exacerbating the impacts of climate change on the Refuge does not comport with the primary purposes of the Refuge.

The draft EIS concedes that oil and gas extraction from the Coastal Plain has a magnitude that would result in increased net demand, resulting in a net increase in greenhouse gas (GHG) emissions relative to the no leasing alternative.[159] However, as described in Part V.A. of these comments, the draft EIS fails to provide any analysis of how that increase in emissions, and the timing of those emissions, considered either individually or cumulatively, would affect the severity or timing of climate change impacts on any scale. The draft EIS ignores the need to protect the resources of the Refuge from climate change by tailoring lease terms that would delay or stagger the extraction and combustion of the leased oil and gas to mitigate the effect on stimulating demand. The draft EIS does not even provide any discussion of why it did not

[159] DEIS vol. 1 at 3-7–3-9.

consider such an alternative, despite comments raising the need to evaluate such alternatives.[160] Further, the draft EIS fails to consider mitigation measures to offset the climate change exacerbating impacts of the proposed action.

BLM also should consider an alternative to delay leasing and/or lease implementation, based on applying the principles of option value or informational value, which provides for BLM to look at the benefits of delaying irreversible decisions. It is well-established that issuance of an oil and gas lease can be an irreversible commitment of resources.[161] In the context of the Coastal Plain, there are significant considerations that would support delaying. As the U.S. Court of Appeals for the D.C. Circuit held in the context of considering the informational value of delaying leasing on the Outer Continental Shelf, "[t]here is therefore a tangible present economic benefit to delaying the decision to drill for fossil fuels to preserve the opportunity to see what new technologies develop and what new information comes to light.[162] This is also consistent with national policy, such as that set out in the Mineral Leasing Act, which prescribes "the orderly and *economic development of domestic mineral resources*, reserves, and reclamation of metals and minerals to help *assure satisfaction of industrial, security and environmental needs*."[163] Consequently, the BLM should not commit to moving forward with oil and gas leasing on the Coastal Plain of the Arctic Refuge when economic and other considerations indicate it is not the right time to do so.

Similar reasoning also applies to delaying approvals to conduct activities connected with exploration and development of leases. Once a lease is issued, the BLM still has to evaluate and issue approvals for on-the-ground activities associated with exploration and development and can condition exploration and development based on specific circumstances being met. After an approval is issued, activities may proceed that may harm the resources of the Coastal Plain. Delaying exploration and development will avoid immediate harm and provide an opportunity to consider new data and technology. BLM should consider an alternative to suspend leases, which permits the agency to toll the terms of leases, as well as the obligations of leaseholders to make rental payments. BLM has used this authority to suspend leases in the interest of conservation of natural resources, which the agency defines as both preventing harm to the environment and preventing loss of mineral resources.

Alternatives that delayed leasing and/or development, including suspending leasing, would provide economic benefits in terms of improvements in technology, additional information on risks to other resources in the Coastal Plain and ways to avoid those risks, and additional information on the impacts of climate change and ways to avoid or mitigate resulting changes to the affected environment. BLM has the ability and obligation to undertake an analysis of the benefits of delaying leasing, which can be both qualitative and quantitative. Given the importance and vulnerability of the Coastal Plain of the Arctic Refuge, these

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[160] Scoping Comment Letter at 26–27.

[161] *See Pennaco Energy, Inc. v. U.S. Dep't of the Interior*, 377 F.3d 1147 (10th Cir. 2004).

[162] *Ctr. for Sustainable Economy v. Jewell*, 779 F.2d 588, 610 (D.C. Cir. 2017).

[163] 30 U.S.C. § 21a (emphasis added).

alternatives, which were proposed at scoping, were reasonable, distinguishable from the alternatives considered in the Draft EIS and should have been analyzed.

e. The DEIS Pursues Only Pre-Determined Outcomes.

NEPA's twin aims are to facilitate informed government decision making and ensure public transparency.[164] Courts have held that those aims are undermined and a violation of NEPA has occurred where an agency "pre-determines" the outcome of the analysis by "irreversibly and irretrievably commit[ting] itself to a plan of action" before completing the necessary analysis.[165] As described above, the draft EIS contemplates only those alternatives that would achieve a pre-determined outcome of making substantial portions of the Coastal Plain available for oil and gas leasing and development. Each of the alternatives would result in similar levels of production and infrastructure and the same faulty interpretation of the 2,000-acre cap on surface disturbance. Moreover, BLM's anticipated permitting of pre-leasing 3D seismic operations across the entire Coastal Plain further illustrates the agency's commitment to pursuing only intensive development scenarios that go far beyond the requirements of the Tax Act. To avoid improper pre-determination, BLM must develop and meaningfully analyze the alternatives described above.

3. BLM Fails to Identify and Obtain Missing Information.

For the purpose of evaluating significant impacts in the EIS, if there is incomplete information relevant to reasonably foreseeable significant adverse impacts and the information is "essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant," the information must be gathered and included in the EIS.[166] This requirement helps "insure the professional integrity, including scientific integrity, of the discussions and analyses" in an EIS.[167] It also ensures that the agency has necessary information before it makes a decision, preventing the agency from acting on "incomplete information, only to regret its decision after it is too late to correct."[168] "[T]he very purpose of NEPA's requirement that an EIS be prepared for all actions that may significantly affect the environment is to obviate the need for [ ] speculation by insuring that available data is gathered and analyzed prior to the implementation of the proposed action."[169] Accordingly, NEPA's missing information regulation "clearly contemplates original research if necessary."[170]

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[164] *See* 40 C.F.R. § 1500.1; *Robertson*, 490 U.S. at 349.

[165] *Forest Guardians v. U.S. Fish & Wildlife Serv*., 611 F.3d 692, 714 (10th Cir. 2010).

[166] 40 C.F.R. § 1502.22(a); *see also* 43 C.F.R. § 46.125.

[167] 40 C.F.R. § 1502.24.

[168] *Churchill County v. Norton*, 276 F.3d 1060, 1072–73 (9th Cir. 2001) (quoting *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1216 (9th Cir. 1998)).

[169] *Found. for N. Am. Wild Sheep v. U.S. Dep't of Agric.*, 681 F.2d 1172, 1179 (9th Cir. 1982).

[170] *Save Our Ecosystems v. Clark*, 747 F.2d 1240, 1244 n.5 (9th Cir. 1984).

In their scoping letter, Groups identified a substantial amount of baseline data missing or out of date that BLM had to address before the agency could meaningfully evaluate and comply with DOI's numerous statutory mandates for managing and protecting the Arctic Refuge and the public can fully understand the potential impacts from oil and gas activities on the Coastal Plain.[171] BLM's failure to address or obtain this lacking information renders its draft EIS deficient and necessitates a revised document.

As Groups identified, additional information is required in many critical areas to fully evaluate the impacts of oil and gas activities on the Coastal Plain and to develop necessary stipulations or BMPs for leasing or subsequent oil and gas activities. These areas include, but are not limited to:

- Polar bears, including use, feeding, denning, and population distribution;
- Air quality, including modeling and monitoring;
- Bird usage, including breeding, staging, feeding, habitat use, population and abundance, and distribution, for raptors, resident species, migratory birds, and waterfowl;
- Fish inventories and distribution;
- Water resources, including water chemistry/quality information, and water quantity availability;
- Snow cover and variation across terrain;
- Predator distribution within the Coastal Plain and adjacent areas, including for wolves, wolverines, brown bears, and golden eagles;
- Caribou use, including calving and post-calving habitat, seasonal ranges, and migration routes, and impacts of oil and gas activities on herd behavior and population dynamics;
- Cultural resources and a completed inventory;
- Wetlands distribution and coverage, including updated mapping;
- Vegetation distribution and coverage, permafrost, and soils, including updated mapping;
- Human health and food security;
- Acoustic and soundscape data;
- Subsistence use patterns; and
- The impacts on Coastal Plain resources from climate change.

BLM failed to obtain missing and/or updated information about these issues and other issues before proceeding with the EIS. This renders BLM's baseline information regarding the

[171] Scoping Comment Letter at 27–29. *See also* John M. Pearce, et al., U.S. Department of the Interior, U.S. Geological Survey, Summary of Wildlife-Related Research on the Coastal Plain of the Arctic National Wildlife Refuge, Alaska, 2002-17, Open-File Report 2018-1003 [2018 USGS Report] (2018) (providing a simply survey of current information and identifying some necessary updates or additional studies); *see also* Janet C. Jorgenson, et al., U.S. Department of the Interior, U.S. Geological Survey, Arctic Refuge Coastal Plain Terrestrial Wildlife Research Summaries, USGS/BRD/BSR-2002-0001 (2002).

affected environment incomplete and calls into question the analysis of impacts and development of mitigation measures. While BLM purports to comply with NEPA's mandate, the agency does not in fact do so. BLM states that "where information is missing, this EIS complies with 40 CFR 1502.22."[172] In order for BLM to be able to move forward in the face of missing or incomplete information, the agency is required to take specific steps.[173] But nowhere in the draft EIS does BLM actually identify information or data gaps or make the required findings to allow it to move forward in the face of that missing or incomplete information. As described in our scoping comments and throughout these comments, much of the information necessary to assess the potentially significant impacts of the leasing program is missing, and BLM must comply with the applicable regulation when assessing the leasing program in the face of this missing information.

As Groups also pointed out, much of the existing information for the Arctic Refuge is likely out of date to due climate change; the environment and resources of the Arctic Refuge are not the same as they were 30, 20, or even 10 years ago because of climate change, and will not be the same in 5 or 10 years, or the timespan of a lease and oil and gas project. BLM does not appear to have factored this into its impacts analysis or consideration of missing or incomplete information.

4. BLM's Approach to its Impacts Analysis is Flawed.

BLM has failed to adequately analyze and quantify the potential impacts to resources on the Coastal Plain. The draft EIS does not include impact criteria and overall rankings that show the level of impact by alternative for impacts to all resources. BLM provides no explanation for the arbitrary absence of impact criteria or analysis of the level of impacts by alternative. Through its NPR-A planning and leasing efforts, BLM has developed specific impact criteria for nearly every resource present on the Coastal Plain. These criteria were well-vetted and subject to public comment in the GMT1 Final SEIS and GMT2 Draft SEIS.[174] There is seemingly no reason that BLM should refuse to use impact criteria in the Draft EIS for the Coastal Plain.

BLM's failure to characterize impacts makes it difficult to compare impacts between alternatives or synthesize information in a manner that is easy for the public to understand. It is particularly troubling that the analysis of impacts lacks conclusions on levels of impacts given the short timeframe allowed for public review of the draft EIS. It is critical that BLM provide a meaningful analysis, conclusions for the levels of impacts, and a comparison between alternatives for all resources. BLM must fully inform the public of the level and nature of

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[172] DEIS vol. 1 at 3-2.

[173] 40 C.F.R. § 1502.22(b); *Native Village of Point Hope v. Salazar*, 730, F. Supp. 2d 1002, 1017–18 (D. Alaska 2010).

[174] *See* Alpine Satellite Development Plan for the Proposed Greater Mooses Tooth 1 Development Project: Final Supplemental Environmental Impact Statement, Vol. 1 219-220 (2014); *See also* Alpine Satellite Development Plan for the Proposed Greater Mooses Tooth 2 Development Project: Draft Supplemental Environmental Impact Statement 235 (2018) "A resource specific description of the impact criteria is included in each section of this chapter."

impacts anticipated for all resources; indeed, the agency has fully quantified these impacts in the past. BLM should not eliminate these determinations to avoid making findings of significance.

Additionally, as explained below, BLM's reasonably foreseeable development scenario (RFD) is deeply flawed. This in turns renders the impacts analysis, which is based on the RFD, fatally flawed as well. A revised RFD will require a revised approach to the impacts analysis.

5. BLM's Approach to the Cumulative Impacts Analysis is Flawed.

BLM's approach to cumulative actions and impacts is flawed. NEPA requires that BLM "consider the cumulative impacts of [this] project together with 'past, present and reasonably foreseeable future actions.'"[175] "Cumulative actions" are those "which when viewed with other proposed actions have cumulatively significant impacts."[176] "Cumulative impact" is defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions."[177] Such impacts can result from individually minor but collectively significant actions taking place over a period of time.[178] To comply with NEPA's mandate to consider the cumulative impacts of a project, a cumulative impacts analysis requires "some quantified or detailed information; ... [g]eneral statements about 'possible' effects and 'some risk' do not constitute a 'hard look' absent a justification regarding why more definitive information could not be provided."[179] Additionally, agencies cannot defer analysis of the cumulative impacts if meaningful analysis can be conducted when considering a project.[180] Agencies "must do more than just catalogue 'relevant past projects in the area.'"[181] This means a discussion and an analysis in sufficient detail to assist "the decisionmaker in deciding whether, or how, to alter the program to lessen cumulative impacts."[182]

Overall, and as explained in greater detail below for specific resources, the BLM's cumulative impacts analysis fails to contain the "quantified or detailed information" required. Instead, it largely consists of general statements regarding potential effects and contains very little substantive information. In large part, BLM's presentation of past, present, and reasonably foreseeable future actions consists of a table generally describing categories of activities and

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[175] *Native Ecosystems Council v. Dombeck*, 304 F.3d 886, 895 (9th Cir. 2002) (quoting 40 C.F.R. § 1508.7).

[176] 40 C.F.R. § 1508.25(a)(2).

[177] *Id*. § 1508.7.

[178] *Id.*

[179] *Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1379–80 (9th Cir. 1998); *see also Muckleshoot Indian Tribe v. U.S. Forest Serv.*, 177 F.3d 800, 810 (9th Cir. 1999).

[180] *See Neighbors of Cuddy Mountain*, 137 F.3d at 1380; *City of Tenakee Springs v. Clough*, 915 F.2d 1308, 1312–13 (9th Cir. 1990).

[181] *Churchill Cty. v. Norton*, 276 F.3d 1060, 1080 (9th Cir. 2001) (*quoting City of Carmel–by–the–Sea v. United States Dep't of Transp.*, 123 F.3d 1142, 1160 (9th Cir.1997)).

[182] *Id.*

actions and a bulleted list of reasonably foreseeable future projects.[183] It also includes a list of identified projects, but again with an inadequate analysis of the actual cumulative impacts from the identified project and an oil and gas program on the Coastal Plain.[184] While BLM states that the projects are discussed below, there is actually very little discussion with any level of specificity of the past, present and reasonably foreseeable future actions.[185]

Instead, in some resource sections, BLM avoids discussing the cumulative impacts associated with reasonably foreseeable post-lease oil and gas activity by suggesting those would be discussed in later NEPA analysis.[186] In others, it avoids the discussion by making mere conclusory statements about the cumulative impacts. These statements acknowledge the potential for cumulative impacts, but fail to provide any explanation or analysis of what they would be.[187] At most, in many of the resource sections, BLM's cumulative impacts analysis consists of pointing out that alternatives allowing the most land development would have the most cumulative impacts, which fails to meaningfully explain any cumulative impacts.

The agency also avoids discussing the cumulative impacts for this project by referring readers to cumulative impacts analysis done for other projects. For example, under Air Quality, BLM points to existing analyses but admits those analyses did not account for proposed oil and gas development in the Coastal Plain, and "therefore the potential cumulative effects of future oil and gas activities are not fully known at this time."[188] Confusingly, BLM acknowledges that it has undertaken its own study of cumulative effects of BLM-authorized oil and gas development on the North Slope, including the Coastal Plain, reflecting that such development is a reasonably foreseeable activity, but has proceeded to issue this draft EIS prior to completing even that study.[189]

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[183] DEIC vol. 2 Appendix F at F-6–F-9.

[184] DEIS vol. 2 Appendix F at F-5–F-9.

[185] DEIS vol. 2 Appendix F at F-7–F-11.

[186] *See, e.g.* DEIS vol. 1 at 3-15,

[187] *See, e.g.* DEIS vol. 1 at 3-23 (stating potential cumulative impacts on the acoustic environment would affect the community of Kaktovik and individuals throughout the program area, as well as noise-sensitive resources along aircraft flight paths outside of the program area," but providing no explanation of how); 3-48 (acknowledging that previous seismic exploration has affected surface vegetation and permafrost and that future additional seismic exploration would have similar impacts, but fails to analyze how the future actions would have a synergistic effect on vegetation and permafrost); 3-65 (recognizing past spills and potential future spills would have cumulative impacts, but instead of explaining what those would be, merely stating that spills are cleaned up according to regulations).

[188] DEIS vol. 1 at 3-17; *see also id.* at 3-16 (admitting "[n]o quantitative cumulative analysis has been prepared specifically for this EIS" and that instead the air analyses developed for other projects where used, even though those "did not include oil and gas development on the Coastal Plain in the modeling of potential effects on air quality and AQRVs").

[189] DEIS vol. 1 at 3-17.

Similarly, BLM asserts there is existing information on cumulative impacts to some resources, but fails to explain whether or how that information has been considered in this planning process. For example, in its "Cumulative Impacts" section for Climate and Meteorology, the agency provides a statement that GHG emissions disperse quickly relative to how long it takes for climate change to occur, and simply states "[t]he potential cumulative climate impacts of global development and associated GHG emissions have been discussed extensively in the published literature, including several reports by the Intergovernmental Panel on Climate Change and numerous scientific journals, and therefore, are not repeated here."[190] As discussed in other sections of these comments, BLM also fails throughout the Draft Leasing EIS to analyze how climate change will have cumulative impacts on various resources in their cumulative impacts sections. Overall, this approach is insufficient to satisfy NEPA and fails to acknowledge and account for the considerable cumulative impacts of oil and gas activities.[191] BLM must identify and describe, with specificity, the projects and impacts.

a. Geographic Scope

BLM defines the geographic scope of the cumulative impacts analysis as the program areas and the North Slope of Alaska, but notes that for some resources the impacts areas is broader.[192] But in setting out the agency's approach to impacts analysis, it is clear that the agency is limiting its impacts analysis improperly to the program area, i.e., the Coastal Plain.[193] BLM

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[190] DEIS vol. 1 at 3-9.

[191] *See* National Research Council of the National Academies, Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope, Committee on Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope at 10, 156 (2003).

[192] DEIS vol. 2 Appendix F at F-5.

[193] *See, e.g.*, DEIS vol. 2 Appendix F at F-13 (acoustic environment limited to the program area even though sound travels bound boundaries), F-16 (limiting consideration of impacts to soils even though there could be changes to soils, permafrost, and drainage to adjacent areas), F-16-F-17 (limiting consideration of impacts to sand and gravel to the program area even though gravel could come from outside the program area for oil and gas activities), F-18 (limiting consideration of the impacts to water resources to the program area even though there could be impacts to nearshore marine waters and adjacent hydrology), F-21 (limiting consideration of impacts to wetlands and vegetation even though there could be impacts to adjacent wetlands and the vegetation systems they support), F-26 (limiting consideration of the impacts to birds to the North Slope west to the NPRA's eastern boundary and east to Canada even though many of the birds that use the Coastal Plain are migratory and use other areas of the Arctic Refuge and Alaska), F-28 (limiting consideration of the impacts of many terrestrial mammals despite the fact that many migrate beyond the program area), F-31 (limiting consideration of cultural resources to the program area and the North Slope despite the clear connection of the Coastal Plain to the Gwich'in), F-35 (limiting the sociocultural systems and environmental justice impacts to only four identified communities), F-36 & F-38 (limiting the recreation and visual impacts to the program area despite the impacts that could occur to people recreating on adjacent areas, including the Wilderness), F-39 (limiting transportation impacts to the program area despite the impacts the developing roads could have on lands outside of the

must properly define the geographic scope of its impacts analysis by resource issues, taking into consideration geographic formations, habitat and resources uses, migrations, and landscapes.

b. Temporal Scope

BLM defined the temporal scope of the cumulative impacts analysis as from the 1970s through realization of the hypothetical development scenario, which it estimated at 50 years.[194] This is an insufficient temporal scope as it does not necessarily account for full reclamation, including ongoing monitoring, of oil and gas development on the Coastal Plain. It is also inconsistent with the development scenario that BLM puts forth. The timeline considered there indicates that additional oil fields could be developed as many as 85 years after the ROD is signed, and that abandonment and reclamation could occur up to 130 years after the ROD.[195] BLM's temporal scope of the cumulative impacts should be at least as long as the timeline the agency identifies could follow its implementation of an oil and gas program.

c. Non-Federal Lands

BLM also improperly excludes oil and gas activities on non-federal lands, including State of Alaska lands adjacent to the Coastal Plain and private lands within the boundaries of the Coastal Plain, asserting that it is not reasonably foreseeable.[196] These both should be analyzed to the extent practicable in the leasing program EIS. With regards to the oil and gas activities on non-federal lands, it does not appear that BLM considered 3D seismic exploration proposed by SAExploration and permitted by the Alaska Department of Natural Resources to take place this winter on State of Alaska lands immediately adjacent to the Coastal Plain as a present action.[197] Additionally, there is information available regarding leases in marine waters, including State of Alaska leases and federal Outer Continental Shelf leases.[198] BLM must analyze what the

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Coastal Plain, particular to the west), & F-41 (limiting the public health impacts to the program area despite the impacts that could occur to other North Slope and Gwich'in communities).

[194] DEIS vol. 2 Appendix F at F-5.

[195] DEIS vol. 2 Appendix B at B-2.

[196] DEIS vol. 2 Appendix F at F-11.

[197] DEIS vol. 2 Appendix F at F-8–F-9; Letter from Graham Smith, Permitting Manager, Division of Oil and Gas, Alaska Department of Natural Resources, to Sue Simonds, Permits Manager, SAExploration, Inc. (Dec. 31, 2018).

[198] *See* https://www.boem.gov/National-OCS-Program/ (proposal for a new leasing plan that would include six lease sales by 2024 in federal waters of the Arctic Ocean); http://dog.dnr.alaska.gov/Documents/Leasing/Legislature5YearLeasingReport_20180130.pdf (showing planned Alaska lease sales in state waters); http://dog.dnr.alaska.gov/Documents/Maps/ActivityMaps/NorthSlope/NS_ActivityMap_Oct2018.pdf (showing activities in state waters); Audubon Alaska, Ecological Atlas of the Bering, Chukchi, and Beaufort Seas at 280-281 (2017), https://ak.audubon.org/sites/g/files/amh551/f/arctic_atlas_composite_144ppi-final.pdf (describing impacts of offshore oil and gas activity); Nuka Research & Planning Group, LLC, Oil Spill Prevention and Response in the U.S. Arctic Ocean: Unexamined Risks, Unacceptable

cumulative impacts of oil and gas activities on these leases could be to resources in the Coastal Plain.

It is unclear from BLM's description whether it is excluding consideration of projects on State lands or only inholdings owned by Alaska Native Corporations. As explained above, there are plans to undertake oil and gas activities on adjacent State lands and BLM must analyze them. Additionally, excluding oil and gas activities and development on inholdings held by Kaktovik Inupiat Corp. and Arctic Slope Regional Corp. is unreasonable. BLM and DOI are well aware that ASRC has advocated for years to be able to develop these lands, and were a leading voice in advocating for passage of the Tax Act.[199] It is therefore reasonably foreseeable that the corporations will act quickly to do so. We also note that provisions of the Chandler Lake Agreement grant ASRC extensive rights to develop and sell sand and gravel from their lands. BLM must analyze the likely impacts from the exercise of those rights as currently written.[200] Additionally, SAExploration's pending 3D seismic proposal includes operations on these lands.[201] Because facilities to support a Coastal Plain oil and gas program could be located on these lands (such as gravel mines, pipelines, road, central processing facilities), BLM must analyze that.[202] Related to this point, BLM seems to acknowledge that uses of these lands related to and oil and gas program will increase.[203] BLM's conclusions and assumptions are, therefore, inconsistent.

BLM also excludes the Alaska Strategic Transportation and Resources (ASTAR) project from its cumulative impacts analysis.[204] BLM should analyze the impacts of this project on the Coastal Plain. First, BLM states that the cumulative impacts analysis is often based on plans,

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Consequences (2010), https://www.pewtrusts.org/~/media/legacy/oceans_north_legacy/page_attachments/oil-spill-prevention.pdf (similar); NRDC, Environmental Risks with Proposed Offshore Oil and Gas Development off Alaska's North Slope (Aug. 2012), https://www.nrdc.org/sites/default/files/drilling-off-north-slope-IP.pdf (similar); NRDC, The Fate of the Arctic in Offshore Oil Blowouts (Dec. 2016), https://www.nrdc.org/sites/default/files/fate-oil-arctic-ocean-blowouts-report.pdf (similar); National Research Council, Responding to Oil Spills in the U.S. Arctic Marine Environment (2014), https://www.nap.edu/catalog/18625/responding-to-oil-spills-in-the-us-arctic-marine-environment (similar).

[199] Written Testimony of Richard K. Glenn, Executive Vice President for Lands and Natural Resources, Arctic Slope Regional Corporation (Nov. 2, 2017).

[200] *See* Chandler Lake Land Exchange Agreement, Appendix 2. C., pp. 29-32 (1983); *see also supra*.

[201] Marsh Creed 3D Plan of Operations Winter Seismic Surveys at 3.

[202] Groups question whether location or development of these lands is permitted. *See supra*. If BLM's positon is that it is, BLM cannot skirt its obligations to consider the impacts of development of the lands to support BLM's proposal.

[203] DEIS vol. 2 at F-30 (assuming that "[d]emand for ancillary uses and permits . . . will increase in conjunction with oil and gas development").

[204] DEIS vol. 2 Appendix F at F-11.

permits, or fiscal appropriations, and that projects should be considered even if there is a degree of uncertainty.[205] The State of Alaska currently has $7.3 million in funding allocated for the project and the FY2020 Governor's Amended Budget includes an additional $2.5 million.[206] As currently proposed, in addition to other roads across the North Slope, there would be an access road running up and adjacent to the western boundary of the Coastal Plain.[207] A pilot program for the project was conducted last winter. A purpose of the project is also to invest in new infrastructure that supports the value of the Trans-Alaska Pipeline System,[208] which the BLM assumes would transport oil developed from the Coastal Plain. The Alaska Department of Natural Resources indicated in an update to the Alaska Legislature in early 2018 that state and federal permitting process are underway.[209] Additionally, in a recently-initiated NEPA process for the NPR-A, the BLM indicates that it will be considering the ASTAR project.[210] Including it in one planning process but excluding it here is unreasonable. In sum, there is sufficient information and certainty for BLM to use to analyze the impacts of the ASTAR project in the draft EIS.

Finally, BLM states that the permitting requirements of other agencies would reduce cumulative impacts.[211] BLM makes the assertion without any analysis, citation, or support. Unless BLM actually analyzes the impacts resulting from various agencies permitting requirements, BLM cannot make this conclusion. BLM must explain the basis for this conclusion, including conducting the necessary analysis to support it.

6. BLM Fails to Analyze the Effectiveness and Enforceability of Its Mitigation Measures

"Implicit in NEPA's demand that an agency prepare a detailed statement on 'any adverse environmental effects which cannot be avoided should the proposal be implemented,' is an understanding that the EIS will discuss the extent to which such adverse effects can be avoided."[212] Accordingly, an EIS must discuss appropriate mitigation measures.[213] Those

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[205] DEIS vol. 2 Appendix F at F-6.

[206] https://www.omb.alaska.gov/ombfiles/20_budget/DNR/Amend/2020proj62649.pdf.

[207] http://soa-dnr.maps.arcgis.com/apps/Cascade/index.html?appid=ab8be9349a08477ebfb66d017e0aec8d

[208] http://soa-dnr.maps.arcgis.com/apps/Cascade/index.html?appid=ab8be9349a08477ebfb66d017e0aec8d

[209] http://www.akleg.gov/basis/get_documents.asp?session=30&docid=39624.

[210] Department of the Interior, Bureau of Land Management, Notice of Intent to Prepare an Integrated Activity Plan and Environmental Impact Statement for the National Petroleum Reserve in Alaska, 83 Fed. Reg. 58,786 (Nov. 21, 2918)

[211] DEIS vol. 2 Appendix F at F-3.

[212] *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 351-52 (1989) (quoting 42 U.S.C. § 4332(2)(C)(ii)).

[213] *See* 40 C.F.R. §§ 1502.14(f), 1502.16(h), 1508.25(b). 40 C.F.R. § 1508.20 defines mitigation to include:

Avoiding the impact altogether by not taking a certain action or parts of an action.

measures "must be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated."[214] Simply identifying mitigation measures, without analyzing their effectiveness, violates NEPA. Rather, an "essential component of a reasonably complete mitigation discussion" must include "an assessment of whether the proposed mitigation measures can be effective."[215] In addition, CEQ has instructed that the "possibility of mitigation" should not be relied upon to avoid further environmental analysis.[216] In sum, the effectiveness of mitigation measures must always be disclosed in a NEPA analysis and their prominence in the range of alternatives and role in the effects analysis requires substantial treatment in the EIS.

The draft EIS fails to provide sufficient detail about the stipulations and ROPs being contemplated, or to analyze their effectiveness. This is because the approach to analyzing the mitigation measures is fundamentally flawed: it considers the amount and purported benefit of the measures, instead of analyzing the adverse effects that are still likely to occur. This means that the EIS fails to disclose the effects that will occur despite mitigation. For example, Table 2-2 in Section 2.2.5 of the draft EIS lists the lease stipulations and ROPs that constitute the "[p]rotective measures in Alternatives B, C, and D" that BLM is considering.[217] While the impacts analysis in Chapter 3 occasionally references a stipulation or ROP where they happen to differ by alternative, it does so only in cursory fashion that in no way constitutes the required analysis of their effectiveness. For example, Appendix E contains this statement: "The mitigation measures proposed under Alternative B (Lease Stipulations 3, 4, 7, and 9, and ROPs 23 and 42) would be adequate to maintain caribou passage to coastal areas."[218] But there is no meaningful analysis of how these stipulations and ROPs would be effective. To that end, BLM merely provides a caveat that "The potential impacts of this alternative on caribou would depend on how well the area off limits to surface occupancy captures the preferred calving areas for the PCH, how well these TLs and ROPs avoid displacing calving caribou in areas with surface occupancy, and how well it minimizes impediments to caribou movements during other times of the year."[219] In some instances, the impacts analysis mentions a potential mitigation measure without even referring back to a specific stipulation or ROP, leaving the reader guessing if and how such a

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Minimizing impacts by limiting the degree or magnitude of the action and its implementation.

Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.

Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.

Compensating for the impact by replacing or providing substitute resources or environments.

[214] *Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1380 (9th Cir. 1998) (quotations and citation omitted).

[215] *S. Fork Band Council of W. Shoshone of Nevada v. U.S. Dep't of Interior*, 588 F.3d 718, 727 (9th Cir. 2009).

[216] *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*; *see also Davis v. Mineta*, 302 F.3d 1104, 1125 (10th Cir. 2002).

[217] DEIS vol. 1 at 2-2.

[218] DEIS vol. 2 at E-7.

[219] DEIS vol. 1 at 3-120.

measure might be implemented.[220] The draft EIS utterly fails to analyze the effectiveness of its proposed mitigation measures.

Additionally, BLM does not describe or analyze the difference between the stipulations and ROPs, and if they are treated by the agency differently or will have different impacts. For example, Lease stipulation 6 refers to ROP 23 for its requirements. What does this mean for how BLM will apply them? Also, the term "BMPs" is sometimes used but it is unclear what they are or how BLM will incorporate them into the program. For example, the draft EIS states, "the frequency of spills would be limited by BMPs."[221] BMPs must be explained and required, and their effectiveness demonstrated, for BLM to reach such conclusions.

In fact, what information the draft EIS does include demonstrates that the proposed mitigation measures articulated in the stipulations and ROPs are unlikely to be effective. NSO stipulations, timing limitations, and surface use limitations designed to protect Arctic Refuge resources are only effective to the extent that the safeguards will actually be applied. Waivers (permanent exemption that applies to the entire leasehold), exceptions (one-time exemption for a particular site within the leasehold), and modifications (change to the lease stipulation, either temporarily or for the term of the lease, can apply to the entire leasehold or certain areas) all permit an operator to avoid compliance with the requirements of a stipulation. Where these loopholes are permitted and used, the protections that the stipulations are supposed to provide can be undermined.

The draft EIS states broadly that:

> A stipulation included in an oil and gas lease would be subject to the following, as appropriate:
>
> - A waiver—A permanent exemption to a stipulation on a lease
> - An exception—A one-time exemption to a lease stipulation, determined on a case-by-case basis
> - A modification—A change attached to a lease stipulation, either temporarily or for the life of the lease
>
> The BLM Authorized Officer may authorize a modification to a lease stipulation only if they determine that the factors leading to the stipulation have changed sufficiently to make the stipulation no longer justified; the proposed operation would still have to meet the objective stated for the stipulation.
>
> While the BLM may grant a waiver, exception, or modification of a stipulation through the permitting process, it may also impose additional requirements through permitting terms and conditions to meet the objectives of any

[220] *See, e.g.*, DEIS vol. 1 at 3-205 (referencing unspecified protective measures to mitigate adverse impacts to night sky conditions from artificial light).

[221] DEIS vol. 1 at 3-116.

> stipulation. This would be the case if the BLM Authorized Officer considers that such requirements are warranted to protect the land and resources, in accordance with the BLM's responsibility under relevant laws and regulations.[222]

The only other detail regarding how waivers, exceptions and modifications might be limited states:

> While the language in Table 2-2 refers only to the BLM or its Authorized Officer, it is understood that all activities, including plan development and consideration of exceptions, modifications, or waivers would include coordination with the USFWS as the surface management agency. In addition, the BLM would coordinate with other appropriate federal, state, and NSB agencies, tribes, and ANCSA corporations.[223]

The *only* specific conditions noted for granting a waiver, modification or exception appear in connection with Required Operating Procedure 46, which states: "Exemption waivers to this operating condition may be issued by the NMFS and USFWS on a case-by-case basis, based on a review of seasonal ice conditions and available information on marine mammal distributions in the area of interest."[224] BLM is fully capable of identifying specific conditions for waiver, modification and exception for lease stipulations. For example, in the recently-released proposed plan for managing greater sage-grouse in Colorado, BLM included the following detailed criteria for a modification to an NSO stipulation for drilling in priority habitat:

> ****Modification**:
>
> The BLM will grant modifications (changes to the stipulation either temporarily or for the term of either part of the entire lease) to NSO-2 after consultation with the State of Colorado, consistent with MD-SSS-3 and based on the following factors:
>
> 1. It is determined that there is no impact on Greater Sage-Grouse based on an evaluation of the proposed lease activities in relation to the site-specific terrain and habitat type. For example, in the vicinity of leks, local terrain features such as ridges and ravines may shield potential disruptive impacts from affecting nearby Greater Sage-Grouse habitat
>
> **or**
>
> 2. It is determined, based on site-specific information (using tools such as the Habitat Assessment Framework, the Colorado Habitat Exchange Habitat Quantification Tool, or others), that the impacts anticipated by the proposed activity would be fully offset through compensatory mitigation developed in coordination with the State of Colorado (as a requirement of State policy or authorization or as offered voluntarily by leaseholder) that meets principles of compensatory mitigation including:

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[222] DEIS vol. 1 at 2-3.
[223] DEIS vol. 1 at 2-4.
[224] DEIS vol. 1 at 2-37.

- achieving measurable outcomes for Greater Sage-Grouse habitat function that are at least equal to the lost or degraded values;
- providing benefits that are in place for at least the duration of the impacts;
- accounting for a level of risk that the mitigation action may fail or not persist for the full duration of the impact[225]

Without any criteria for granting waivers, exceptions and modifications, there is not reliability or foreseeability as to how and when the stipulations will be applied, resulting in little certainty that the stipulations will protect fish, wildlife, water, air, vegetation or wilderness. The lack of sideboards on granting waivers, exceptions and modifications also renders a NEPA analysis that relies on their effectiveness deficient, since their continued application depends on the unfettered discretion of the BLM authorized officer. The U.S. Government Accountability Office has opined that BLM's failure to have consistent standards or practices in waiving lease stipulations and operating procedures means that the effectiveness cannot be measured: "[W]ithout sufficiently detailed documentation of inspections and effective use of data from inspectors, BLM is unable to fully assess the effectiveness of its best management practices polity to mitigate environmental impacts."[226]

The draft EIS also relies on the ROPs to protect the other resources of the Coastal Plain, stating that the ROPs "describe the protective measures that the BLM would impose on applicants during the permitting process" and "with the lease stipulations, the ROPs also provide a basis for analyzing the potential impacts of the alternatives in this Leasing EIS."[227] While the ROPs similarly lay out requirements that apply to a variety of resources, the language on page 2-36 of the draft EIS for conditions permitting a waiver of ROP 46 implies that ROPs are also subject to waivers, exceptions and modifications, rendering them similarly questionable as a "basis for analyzing the potential impacts of the alternatives in this Leasing EIS." Moreover, the language in the draft EIS should be clearer that any and all applicable ROPs must be included in permits to drill. The current language provides that:

> Any applicant requesting authorization for an activity from the BLM will have to address the applicable ROPs in one of the following ways:
>
> - Before submitting the application (e.g., performing and documenting subsistence consultation or surveys)
> - As part of the application proposal (e.g., including in the proposal statements that the applicant will meet the objective of the ROP and how the applicant intends to achieve that objective)
> - As a term imposed by the BLM in a permit[228]

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[225] Northwest Colorado Greater Sage-Grouse Proposed RMP Amendment and Final EIS at 2-7–2-8.

[226] U.S. Government Accountability Office, Oil and Gas Development: Improved Collection and Use of Data Could Enhance BLM's Ability to Assess and Mitigate Environmental Impacts (Apr. 2017).

[227] DEIS vol. 1 at 2-3.

[228] DEIS vol. 1 at 2-3.

This language implies that an operator could merely "address" ROPs in an application and not have the applicable requirements incorporated as legal requirements in a permit to drill that would be apparent in applicable NEPA review by the public and easily enforceable by the BLM. All ROPs must be incorporated into all relevant permits, just as all applicable lease stipulations must be incorporated into leases.

In order to rely on lease stipulations, BLM must set out narrowly prescribed waivers, exceptions and modifications to lease stipulations that are based on very specific criteria; having no sideboards, as the draft EIS currently proposes is not acceptable. Additional conditions governing waivers, exceptions and modifications that we propose include:

- Overall, one-time exceptions should be the preferred approach where relief is sought from protective stipulations, such that the safeguards prescribed in the stipulations will remain in place for the majority of oil and gas leases. If the BLM determines that a waiver or modification is more appropriate for any stipulation, the reasons for such decisions will be documented.

- Waivers, exceptions and modifications should only be granted from no surface occupancy (NSO) stipulations after a 30-day public notice and comment period.

- The U.S. Fish and Wildlife Service should have the opportunity to submit information for consideration prior to granting waivers, exceptions, or modifications to address its expertise, surface management obligations, and potential impacts on any listed species.

- Finally, it is critical that BLM track waivers, exceptions, and modifications requested and those granted, and make that information available to the public on a quarterly basis. These records will provide important insight into how the stipulations are being applied and the potential impact of waivers, exceptions, and modifications on the overall function of the EIS. This information will also allow BLM to determine if the availability of or criteria for granting waivers, exceptions and modifications needs to be further narrowed in order to ensure sufficient protection for affected species.

- ROPs should not be subject to waiver, exception, or modification and justification should be provided as to the use of any reason that an ROP would not apply.

In short, the draft EIS provides no analysis of or assurance that the mitigation measures it is considering will be effective or enforced. This violates NEPA. In light of these unanswered questions about the effectiveness and waivability of mitigation measures, BLM's repeated description in the draft EIS that they will reduce impacts is misleading and violates NEPA.

7. *BLM Cannot Defer Its NEPA Analysis to Subsequent Stages of the Oil and Gas Process.*

BLM acknowledges in the draft EIS that the issuance of a lease is an irretrievable commitment of resources.[229] But BLM also says that lease issuance does not cause any direct impacts in and of itself because it does not authorize any activities.[230] As a result, BLM defers a site-specific analysis until later.[231] This is contrary to law.

a. BLM Cannot Make an Irretrievable Commitment of Resources Without First Conducting a Site-Specific NEPA Analysis.

In the oil and gas context, projects and agency review typically follow a tiered process, with NEPA review beginning broad and becoming more site-specific at each later step. As part of the earliest and broadest level of decision-making, BLM develops a broad programmatic-level environmental analysis, such as a land use plan.[232] BLM next holds lease sales and issues leases for the use of a specific area.[233] Third, the lessee may apply for a permit to drill to develop its lease.[234] The level of detail required by NEPA at each step varies, and depends on the nature and scope of the proposed action.[235]

NEPA requires that agencies evaluate the environmental consequences of a project at an early stage of the planning process.[236] While agencies can "defer detailed analysis until a concrete development proposal crystallizes the dimensions of a project's probable environmental consequences,"[237] agencies are required to undertake site-specific analysis prior to making an irretrievable commitment of resources. As the Ninth Circuit explained, the key inquiry is not "*whether* the project's site-specific impact should be evaluated in detail, but *when* such detailed evaluation should occur."[238] An agency is required to fully evaluate site-specific impacts once it reaches the point of making "a critical decision . . . to act on site development."[239] An agency reaches the threshold triggering site-specific review when it proposes to make an irreversible and

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[229] DEIS vol. 2 Appendix F at F-1.

[230] DEIS vol. 2 Appendix F at F-1.

[231] *See, e.g.*, DEIS vol. 1 at ES-4 ("Direct and indirect impacts cannot be analyzed on a site-specific basis within this EIS, but they are analyzed for the program area generally, based on the hypothetical development scenario.".

[232] *Pennaco Energy, Inc. v. U.S. Dep't of the Interior*, 377 F.3d 1147, 1151 (10th Cir. 2004).

[233] *New Mexico ex. rel. Richardson v. Bureau of Land Mgmt.*, 565 F.3d 683, 716 (10th Cir. 2009).

[234] *Id.*

[235] *California v. Block*, 690 F.2d 753, 761 (9th Cir. 1982).

[236] *Id.*

[237] *Id.*

[238] *Id.* (emphasis added).

[239] *Friends of Yosemite Valley*, 348 F.3d at 800 (quoting *N. Alaska Envtl. Ctr. v. Lujan* (*NAEC*), 961 F.2d 886, 890–91 (9th Cir. 1992)); *see also Block*, 690 F.2d at 761 ("The standards normally applied to assess an EIS require further refinement when a largely programmatic EIS is reviewed.").

irretrievable commitment of resources.[240] In the oil and gas context, this occurs when an agency decides to issue a lease that does not contain an express provision retaining the agency's authority to fully prohibit later activities on those leases.[241] Once this critical decision-point is reached, "any vague prior programmatic statements are no longer enough" to satisfy NEPA.[242] Here, if BLM is going to make an irretrievable commitment of resources, it cannot defer its site-specific analysis and cannot rely on vague programmatic statements in the draft EIS.

BLM makes conflicting statements about the exact scope of the authority it will retain under any leases. On the one hand, BLM states that issuance of a lease constitutes an irreversible and irretrievable commitment of resources.[243] On the other hand, BLM claims that it retains at each decision stage "the authority to approve, deny, or reasonably condition any proposed on the ground-disturbing activity based on compliance with the terms and conditions of the lease and applicable laws and policies."[244] Because BLM has failed to provide even a template lease, and provides conflicting statements about the nature of the right it is granting under the leases, the public is unable to meaningfully determine the exact nature of these leases or whether BLM has truly retained the right to later preclude all activities on those leases. This is particularly concerning in light of how BLM has proceeded with issuing leases in the NPRA. In the NPRA, BLM has issued leases constituting an irretrievable commitment of resources, without first conducting a site-specific NEPA analysis; once development projects have arisen, BLM claims that it no longer retains the right to deny development proposals by adopting the no action alternative because "oil and gas leases provide a right of development."[245] BLM cannot play that shell game here. BLM needs to either fully retain the authority to preclude all activities pending submission of later site-specific proposals — i.e., not make an irretrievable commitment of resources — or conduct a far more robust, site-specific analysis at this stage. Put another way, BLM should acknowledge the difference between retaining authority to deny a particular application for a permit to drill or conduct other activities pursuant to a lease, and retaining the authority to preclude development altogether, even if that means barring access to some or all of the oil and gas associated with the leased parcel. Anything short of the latter irretrievably commits resources because some amount of damage will inevitably occur for the lessee to explore and extract the oil and gas resources. If BLM is granting rights with its leases and not retaining the authority to deny all activities, the exercise of those rights is a direct effect of this decision, which is contrary to BLM's often-repeated statement throughout the EIS that granting leases does not have direct impacts.[246] The effects of foreclosing a no action alternative for future

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[240] *Block*, 690 F.2d at 761.

[241] *Conner v. Burford*, 848 F.2d 1441, 1448 (9th Cir. 1988).

[242] *Pit River Tribe v. U.S. Forest Serv.*, 469 F.3d 768, 784 (9th Cir. 2006).

[243] DEIS vol. 2 Appendix F at F-1.

[244] DEIS vol. 1 at 3-1.

[245] *See, e.g.*, BUREAU OF LAND MGMT., GREATER MOOSES TOOTH 2 OIL AND GAS DEVELOPMENT PROJECT: JOINT RECORD OF DECISION AND PERMIT EVALUATION 8 (2018) ("Alternative D is not a practicable alternative in the JROD, due to the fact that the BLM cannot select this alternative as its decision for GMT2. Once issued, oil and gas leases provide a right of development, subject to reasonable regulation.").

[246] *See, e.g.*, DEIS vol. 2, Appendix E, at E-4.

decisions must be disclosed now and evaluated as a direct effect of the leases. BLM should also provide the public with template lease language in the final EIS so it is clear that BLM has in fact retained the authority to fully preclude development on the leases to protect resources based on site-specific considerations. As discussed earlier, BLM should retain its authority to preclude all later activities on the leases to ensure that it is able to fully comply with the Tax Act's 2,000-acre provision.

BLM similarly fails to distinguish between what decisions are irreversible or irretrievable at this point in time and instead improperly defers to the IAP for the NPRA. The draft EIS states that a "detailed description of irreversible or irretrievable commitments of resources from oil and gas development on the North Slope is in Section 4.10 of the NPR-A EIS" and includes a bullet list of types of effects that would be irreversible.[247] These are effects of the leasing program as a whole, and fail to distinguish between what becomes irreversible now and what becomes irreversible at later decision points. It is important for the public to understand the effects that would occur solely because of a lease and this specific oil and gas program — as opposed to those that might occur from a potentially different program hundreds of miles away in the NPRA.

Relatedly, BLM cannot defer the analysis of foreseeable impacts by asserting that the consequences are unclear or that the agency will analyze the impacts at a later point in time when there is a development proposal if it is going to make an irretrievable commitment of resources.[248] Here, BLM claims that until it "receives and evaluates an application for an exploration permit, permit to drill, or other authorization that includes site-specific information about a particular project, impacts of actual exploration and development that might follow lease issuance are speculative, as so much is unknown as to location, scope, scale, and timing of that exploration and development."[249] If BLM does not have sufficient information at the lease sale stage to conduct a site-specific NEPA analysis, it can delay that analysis "provided that it reserves both the authority to *preclude* all activities pending submission of site-specific proposals and the authority to *prevent* access to oil and gas completely if the environmental consequences are unacceptable."[250] If there is too much uncertainty to conduct a more robust analysis at this stage, BLM has a choice: it must either reserve the authority to preclude all access to oil and gas and related activities on the leases or it must conduct a site-specific analysis prior to making an irretrievable commitment of resources.[251]

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[247] DEIS vol. 1 at 3-248.

[248] *Kern*, 284 F.3d at 1072.

[249] DEIS vol. 1 at 3-1.

[250] *Ctr. for Biological Diversity v. BLM*, 937 F. Supp. 2d 1140, 1153 (N.D. Cal. 2013) (quoting *Sierra Club v. Peterson*, 717 F.2d 1409, 1415 (D.C. Cir. 1983)).

[251] *Id.*

b. BLM Cannot Shirk Its Responsibility to Consider All Foreseeable Direct and Indirect Impacts.

NEPA requires that an agency analyze the environmental consequences of a proposal as soon as it is "reasonably possible" to do so.[252] Although the scope of the agency's analysis in an EIS must be appropriate to the action in question, NEPA is also not "designed to postpone analysis of an environmental consequence to the last possible moment."[253] NEPA requires that this analysis be done "as soon as it can reasonably be done."[254] "Reasonable forecasting and speculation is . . . implicit in NEPA," and agencies cannot "shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as 'crystal ball inquiry.'"[255] If it is "reasonably possible to analyze the environmental consequences in [a programmatic-level EIS], the agency is required to perform that analysis."[256] The EIS is required to provide "as much environmental analysis as is reasonably possible under the circumstances, thereby 'provid[ing] sufficient detail to foster informed decision-making' at the stage in question."[257]

There are several areas in the draft EIS where BLM does not analyze impacts on the basis that it will analyze those impacts at later stages. Examples where BLM has improperly deferred or completely failed to analyze impacts include the following:

- BLM did not complete a health impact assessment at this stage or analyze the potential health impacts of the oil and gas program, and instead plans to conduct that analysis as part of its analysis of later development projects.
- BLM improperly segmented its review and failed to analyze the foreseeable impacts of SAExploration, LLC's proposed seismic exploration program.
- BLM failed to analyze the foreseeable impacts to air quality that would be likely to occur from oil and gas activities on the Coastal Plain.
- BLM failed to conduct a visual resource impacts analysis and states it will do so in post-leasing NEPA processes.
- BLM inadequately considered the impacts of water withdrawals for oil and gas on water quantity despite there being much more information available to the agency regarding water quantity on the Coastal Plain and wildlife and habitat needs related to stream flow and water quantity.

BLM is obligated to analyze these foreseeable impacts to the extent possible at this stage and cannot postpone this analysis. BLM's failure to analyze these foreseeable impacts deprives the public of the ability to fully understand the potential consequences of the oil and gas

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[252] *Native Village of Point Hope v. Jewell*, 740 F.3d 489, 497 (9th Cir. 2014).
[253] *Kern v. U.S. Bureau of Land Mgmt.*, 284 F.3d 1062, 1072 (9th Cir. 2002).
[254] *Id.*
[255] *Id.* (quoting *Save Our Ecosystems v. Clark*, 747 F.2d 1240, 1246 n.9 (9th Cir. 1984)).
[256] *Id.*
[257] *Native Vill. of Point Hope*, 740 F.3d at 498 (quoting *Friends of Yosemite Valley*, 348 F.3d 789, 800 (9th Cir. 2003)).

program. BLM needs to revise and release the EIS with this information available for public review.

8. *BLM's Failure to Analyze SAExploration's Seismic Proposal in the Draft EIS Violates NEPA.*

a. BLM Has Improperly Segmented and Omitted Any Review of SAExploration's Seismic Proposal from Its Analysis of the Oil and Gas Program.

BLM's treatment of SAExploration, Inc.'s (SAE) proposal to conduct 3-Dimensional (3D) seismic surveys across the Coastal Plain of the Arctic Refuge is unacceptable and contrary to law. BLM is currently in the process of reviewing an application from SAE to conduct extensive 3D seismic surveys across the entire Coastal Plain.[258] Currently re-proposed for 2019–2020 and 2020–2021, the seismic program will involve two camps of 160 people, 12–15 tracked vibrators, 20,000 to 25,000 nodes, and 6,000–7,000 gallons of fuel usage per day, for each camp.[259] There would be approximately 50 trailers and support trailers that make up each camp, with generators, lighting, temporary airstrips, incinerators and waste discharges, and other industrial equipment and activities.[260] SAE would move the camps with heavy vehicles every two to three days, eventually covering the entire Coastal Plain.[261] Given the extent of the proposed program, there would be approximately forty to fifty different camp locations for each of the two crews throughout the Coastal Plain. Operations would continue 24 hours a day, 7 days a week.[262] The impacts from this extensive proposal from SAE will be significant — far more so than those associated with the two-dimensional seismic survey conducted in the 1980s, the scars of which remain detectable on the Refuge to this day.

To date, BLM has not publicly identified any source of authority for permitting pre-leasing seismic exploration anywhere in the Coastal Plain, nor is any such authority apparent. BLM should not pursue authorization for SAE to explore for oil and gas on the Coastal Plain unless and until it can identify such authority, and it should do so publicly, to justify the time and resources that BLM, other agencies, and the public would invest in a permitting process. Regardless, we oppose authorizing SAE to conduct seismic surveys even if BLM claims to have that authority, and strongly oppose any oil and gas activities on the Coastal Plain, including seismic exploration.

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[258] *See* U.S. Dep't of the Interior, Bureau of Land Mgmt., NEPA Register, DOI-BLM-AK-R000-2018-0040-EA (SAExploration, Inc. Seismic Application), *available at* https://eplanning.blm.gov/epl-front-office/eplanning/projectSummary.do?methodName=renderDefaultProjectSummary&projectId=111085 [hereinafter BLM NEPA Register].

[259] SAEXPLORATION, INC., MARSH CREEK 3D PLAN OF OPERATIONS WINTER SEISMIC SURVEY (2018), https://eplanning.blm.gov/epl-front-office/projects/nepa/111085/153349/187888/Marsh_Creek_Plan_of_Operations_Submitted_May2018.pdf [hereinafter SAExploration Plan].

[260] *Id.*

[261] *Id.*

[262] *Id.* at 9.

Legal authority aside, we also have significant concerns about BLM's failure to comply with NEPA with regard to SAE's proposal. BLM has a legal obligation to comply with NEPA's mandate to prepare a detailed EIS for any major federal action that may significantly affect the quality of the human environment. Despite this, BLM is currently in the process of preparing only an Environmental Assessment for SAE's proposal and is separately preparing the draft EIS for the leasing program.

In the draft EIS, BLM completely disregards the potentially serious direct, indirect, and cumulative impacts of SAE's proposal and omits any discussion about the significant impacts that will occur from the proposal. BLM makes only a handful of cursory references to SAE's proposal in the appendix for the EIS: (1) in a table where BLM notes that 3D seismic will be complete by the time BLM publishes the record of decision for the leasing EIS; (2) when noting in passing that BLM is preparing an EA related to a seismic proposal, and (3) when BLM provides a cursory summary of SAE's proposal and makes the wholly unsubstantiated claim that the agency considered SAE's proposal in its cumulative effects analysis.[263] The remainder of BLM's references to seismic activities in the EIS are only to post-leasing seismic activities and in no way address this hugely impactful seismic proposal.[264]

There is no indication BLM took a hard look at any of the potential direct, indirect, and cumulative impacts of SAE's seismic proposal in the EIS, as required by NEPA. BLM should have addressed the potentially significant impacts of seismic exploration on every resource considered in the EIS, but failed to do so. In one of the few areas where BLM acknowledged it is preparing an EA related to seismic, it stated "[s]eismic exploration will be further detailed in the seismic environmental assessment, which is in preparation."[265] In other words, BLM wholly omitted any substantive discussion of these significant impacts based on the assertion that it will discuss them in a separate, yet-to-be-completed EA. That is contrary to NEPA. BLM is obligated to take a hard look at the direct, indirect, and cumulative impacts of the entire oil and gas program in the draft EIS. BLM cannot simply ignore these significant impacts by pointing to another analysis that has yet to be completed and has yet to be made available to the public for meaningful review as a way to bypass its current NEPA obligations.

BLM's failure to adequately consider SAE's proposal also leads it to dramatically underestimate the potential impacts of seismic as a whole. BLM assumes that only 900 square miles will be surveyed by 3D seismic vehicles.[266] BLM makes this assumption based on what it

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[263] DEIS vol. 2 at B-10, B-12, F-8.

[264] *See, e.g.*, DEIS vol. 1 at ES-1, ES-4, 1-2, 3-5, 3-13, 3-33.

[265] DEIS vol. 2 at B-12.

[266] DEIS vol. 2 at B-12; DEIS vol. 1 at 3-48. For purposes of its analysis of Alternative B, BLM asserts that it only anticipates there will be 500 line miles of seismic data collected. DEIS vol. 1 at 3-117. It is unclear whether this number is inconsistent with its assertion elsewhere that there would be only 900 square miles that would be surveyed. BLM should clarify or correct this potential inconsistency.

concludes is the size of a typical 3D survey, as seen in the NPRA and adjacent state lands.[267] But SAExploration's seismic proposal alone, which would encompass the entire Coastal Plain, is projected to cover 2,602 square miles.[268] Despite the significant impacts likely to occur from that proposal alone, BLM fails to discuss any of the impacts of pre-leasing seismic. It is also unclear how BLM's conclusion that there will only be 900 square miles of additional seismic surveys is consistent with reality. It does not appear to take into consideration the fact that seismic is often conducted as an ongoing activity that occurs throughout other stages of the oil and gas process, such as at the development and production stages for purposes of delineating oil and gas reservoirs, and not only prior to exploratory well drilling.

BLM also needs to revise its analysis to take into account potential delays in SAExploration's plans to conduct seismic exploration. The draft EIS assumes that multiple lease sales will be held within the first year after the signing of the Record of Decision, but also assumes that processed areawide three-dimensional seismic data will be available to all potential bidders at the time of the first lease sale.[269] If BLM still rushes to hold a lease sale by the end of 2019, that will presumably occur prior to SAE completing its proposed seismic activities. BLM needs to revise the draft EIS to account for any changes in SAExploration's proposal to ensure that the reasonably foreseeable future development scenario and any analysis stemming from those assumptions is accurate.

BLM's complete omission of any discussion about pre-leasing seismic activities, even outside of SAE's proposal, is also inconsistent with its statements in the EIS. On the one hand, BLM asserts for purposes of Alternative D that it would close 476,600 acres of caribou calving habitat to lease sales, but would still allow seismic activity over the entire program area.[270] First, BLM should not allow seismic activities in areas that are not subject to leasing. Areas that are off limits for purposes of leasing should also be off limits for purposes of seismic exploration. But second, BLM's statement that it will allow seismic in areas closed to leasing makes no sense unless BLM anticipates authorizing pre-leasing seismic in those areas, and yet BLM has wholly failed to consider pre-leasing seismic in the EIS. BLM's statement that it will allow seismic in areas that are closed to leasing, without any analysis of the potential impacts of those seismic activities, is contrary to NEPA and leads to the agency underestimating the potential impacts in its analysis. BLM's omission of any meaningful analysis of the impacts of SAE's proposal and other pre-leasing seismic activities, as well as its arbitrary conclusion that there will only be 900 square miles of seismic impacts, is contrary to NEPA and means BLM has dramatically underestimated the direct, indirect, and cumulative impacts of seismic surveys in the program area.

BLM cannot unlawfully segment out its review of SAE's seismic proposal from its consideration of the broader oil and gas program; the agency must prepare an EIS that examines the full range of potential impacts from all phases of oil and gas activities. BLM needs to

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[267] DEIS vol. 2 at B-12.
[268] SAExploration Plan, *supra*, at 3.
[269] DEIS vol. 2 at B-8 & tbl.B-3.
[270] DEIS vol. 1 at 3-120.

examine how the potential impacts of seismic exploration would combine with those of all other ensuing, reasonably foreseeable oil and gas related authorizations in the region—including leasing, exploration, development, production, and transportation—in a single EIS to ensure that BLM will protect the resources of the Arctic Refuge.[271] The entire purpose of SAExploration's seismic program is to conduct seismic imaging to help inform potential targets for future lease sales on the Coastal Plain.[272] It is therefore intricately tied to BLM's consideration of the leasing program, and its impacts should be considered as part of the current EIS and not in a separate environmental analysis. BLM cannot improperly separate out its NEPA reviews of these directly connected and foreseeable actions, all of which have the potential to cause substantial impacts to the habitat and values of the Coastal Plain that have not been adequately considered by BLM as a result of its improperly carved up NEPA analysis.

b. BLM Has Prejudiced the EIS Process by Evaluating a Seismic Survey Application Prior to Finalizing the Current Leasing Program Decision.

When an EIS for a program is underway, as here, NEPA regulations established by the Council of Environmental Quality ("CEQ") prohibit an agency from taking any actions that could undermine that decision-making process. *See* 40 C.F.R. § 1506.1(c). The purpose of NEPA is to study the impact of an action on the environment before the action is taken. *See Conner*, 848 F.2d at 1452 (NEPA requires that agencies prepare an EIS before there is "any irreversible and irretrievable commitment of resources"). Where "[i]nterim action prejudices the ultimate decision on the program," NEPA forbids it. 40 C.F.R. §§ 1506.1(c)(1)-(3). Action prejudices the outcome "when it tends to determine subsequent development or limit alternatives." *Id*. Further, the agency may not take such interim action when that action is not "justified independently of the program" subject to the ongoing NEPA process. *Id*. at § 1506.1(c)(1).

During the scoping process for the DEIS, BLM asserted that the EIS here "will serve to inform BLM's implementation of the Tax Act, including the requirement to hold…lease sales" and "may also inform post-lease activities, including seismic and drilling exploration" and "will consider and analyze the potential environmental impacts of various leasing alternatives, including … the terms and conditions (i.e., lease stipulations and best management practices) to be applied to leases *and associated oil and gas activities* to properly balance oil and gas development with existing uses and conservation of surface resources."[273] As the DEIS itself evinces, the requirements and limitations to be imposed upon seismic surveys cannot be considered in isolation of the leasing program. Indeed, the alternatives presented in the DEIS include specific required operating procedures (ROPs) addressing seismic surveys.[274] The DEIS also contains lease stipulations that would ostensibly apply to seismic surveys conducted by lessees, such as keeping all oil and gas "activities" out of specified geographic areas during certain times of the year.[275] Plainly, these requirements to protect resources should constrain

[271] *See* 40 C.F.R. § 1508.25.
[272] SAExploration Plan, *supra*, at 3.
[273] 83 Fed. Reg. 17,562 (Apr. 20, 2018) (emphasis added).
[274] *See* DEIS vol. 1 at 2-20.
[275] *See* DEIS vol. 1 at 2-10.

seismic surveys regardless of whether the seismic survey occurs before or after leasing. Thus, in the current EIS process, BLM is making decisions on the standards to apply to seismic surveys.[276]

For BLM to authorize an extensive seismic survey prior to concluding this process, whereby it will decide upon the protective measures to apply to seismic exploration, invariably prejudices the process. To the extent that BLM has any authority to authorize seismic surveys at all, which is unclear and we do not concede, BLM would be confined by the requirement that BLM not authorize activities that would result in undue or unnecessary degradation to the resources of the Refuge. Consequently, if BLM authorizes extensive seismic surveys, like the one SAExploration has proposed, the necessity of any subsequent seismic surveys would have to be evaluated in light of the SAExploration survey having already collected information. In short, the effort to regulate the future surveys by developing requirements for them in this current EIS process will be circumvented by authorizing an extensive survey beforehand.

Moreover, any seismic survey authorized by BLM would lack justification in the absence of the leasing program. Again, if BLM actually has any authority to authorize seismic, which we do not concede, BLM still cannot authorize an activity that would result in undue or unnecessary degradation. Therefore no survey can occur without the program itself. There would be no reason to survey for oil and gas resources on lands unless they can be leased, thus the purpose of the proposed seismic survey as a practical matter turns on the leasing program. For this independent reason, BLM's approval of SAExploration's application prior to completion of the current process violates NEPA even if the ongoing NEPA process were not prejudiced by the interim action.

To correct this NEPA violation, BLM at a minimum should defer any authorization of seismic surveys at least until after it has properly completed the current EIS process and issued a record of decision on the program. Moreover, the current EIS process should transparently address that BLM is developing the standards and terms applicable to seismic survey applications, and the draft EIS must be revised to properly evaluate the impacts of those activities in this EIS and not a separate EA process.

9. DOI's process is insufficient to meet legal requirements for public participation and consultation.

To achieve NEPA's goal of ensuring public participation, the statute requires federal agencies to "[e]ncourage and facilitate public involvement in decisions which affect the quality of the human environment."[277] "Accurate scientific analysis, expert agency comments, and

[276] Notably, although BLM puts forward ROPs and stipulations pertaining to seismic surveys, the draft EIS fails to analyze the foreseeable impacts of SAExploration, LLC's proposed seismic exploration program in the EIS process, despite purporting to analyze seismic exploration on the Coastal Plain generally.

[277] 40 C.F.R. § 1500.2(d).

public scrutiny are essential to implementing NEPA."[278] BLM must ensure that its process to consider an oil and gas program on the Coastal Plain allows for robust participation by the interested public.[279] Groups pointed out in scoping comments that the time and page limits envisioned by DOI Secretarial Order 3355 and associated guidance memoranda are particularly inappropriate for an oil and gas program for the Coastal Plain. Groups also pointed out that any leasing process on the Coastal Plain should be based on science and sound decision-making and not driven by political deadlines. Groups' also supported requests by the Gwich'in Steering Committee to translate all EIS documents into Gwich'in, so that affected communities could engage in this process. Though BLM provided some resources for the Arctic Village Council to undertake translation which was completed on March 10, 2019 — a mere three days before the close of the public comment period. Moreover, only a portion of the EIS was translated into Gwich'in, such as the sections on cultural resources, subsistence uses and resources, and ANILCA 810, while the vast majority of the document remains in English only. While we appreciate that BLM responded to requests to provide such resources, translated materials were necessary during the entirety of comment period to allow for meaningful review and comment. Even more concerning, appears to have failed to translate scoping comments from Gwich'in speakers into English so that they could be incorporated into the agencies analysis.[280] BLM thus ignored important input from affected communities during scoping, and has made further continued participation by these communities exceedingly difficult. BLM's flawed analysis and public process have shown these concerns to be well-founded.

a. BLM's Approach to Issue a Short EIS Improperly Truncates the EIS Analysis.

An oil and gas program for the Coastal Plain is unprecedented and BLM has failed to provide the public with a document sufficient for commenting. Because BLM has not considered the full scope of impacts in the draft EIS, such as impacts from all phases of oil and gas development, meaningful mitigation measures, and meaningful analysis of differing impacts among alternatives, the public cannot review or comment on these issues. BLM's attempt to adhere to arbitrary page limits has resulted in less transparency in the analysis, more mistakes, and missing key data and analysis, as explained in detail below. While BLM did not necessarily adhere to the page limits in the Executive Order and guidance memorandum, its attempt to do so has led to the many documents simply being incorporated as appendices, resulting in a disjointed analysis that is hard for the public to follow.

As discussed later in these comments, BLM has also referred to or incorporated by reference numerous documents into its current analysis as a way of further truncating its analysis in the draft EIS. However, BLM has done so without citations to specific pages in those documents and often without any clear indication of how the analysis in the previous document applies in the context of the current proposal before the agency. This is improper and deprives the public of the ability to fully understand and comment on BLM's analysis and the potential impacts of the oil and gas program.

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[278] *Id.* § 1500.1(b).
[279] 40 C.F.R. § 1503.1(a)(4).
[280] *See e.g.*, Transcript from Venetie scoping meeting, at 19-20 (Jun. 12, 2018).

b. BLM's Hasty Timeframes are Impeding Meaningful Public Review.

Moreover, BLM's timeframes for review of the draft EIS are insufficient to allow for meaningful public involvement. Ensuring that the public has sufficient time to receive and review all of the documents and understand their relationship to what is being proposed is essential to the public's ability to analyze and provide meaningful comments to the agency on the project. BLM has stated that it intends to hold a lease sale this year and is rushing toward that goal at the expense of the public and a thorough analysis. Rushing the analysis and public review is not consistent with BLM's obligations when considering an issue as important and controversial as destructive oil and gas exploration and development on the Coastal Plain. The public interest and controversy of this project is demonstrated by the over 700,000 comments submitted during scoping. Careful public scrutiny of BLM's proposal is needed.

The public comment period offered for this EIS was simply too short to allow for meaningful opportunity to comment. BLM established a 7-week comment period over the winter holiday season, when workplaces, including federal offices, are closed and many people travel to visit family. Having the comment period include the holiday season effectively shortened the comment period by a number of days. In light of this, many of our groups and tribal entities submitted requests for a comment extension before the winter holidays for an additional 77 days. BLM rejected this request, adding only 30 days to the comment period to account for the government shutdown (which was in fact longer than 30 days). It is particularly inappropriate for BLM to limit the length of public comment periods when tribal entities ask for additional time.

The public comment period was also seriously hindered by the government shutdown, and BLM did not extend the comment period to cover the whole of the shutdown (BLM extended the comment period for 30 days, while the shutdown was 35 days). At the end of the day on December 21st, funding for the Department of the Interior lapsed. Despite agency guidance that websites are to remain active during a shutdown, BLM's Coastal Plain e-planning page and comment portal were unavailable at various points during that time (Dec. 22–26 and Dec. 28, Jan. 21), meaning that no one could access the draft EIS and related documents or utilize the commenting portal. In addition, BLM staff have not been available to answer questions and respond to information requests or to provide cited materials. The lack of staff and online availability during the shutdown made it impossible for the public to engage in meaningful review during that time period. The shutdown also led to confusion over whether and when public meetings will be held on the Draft EIS, due to BLM's continued efforts to schedule these meetings when agency staff should not have been working.[281] As explained in correspondence to the agency requesting extensions, the shutdown seriously hindered public ability to participate.[282]

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[281] *See* Alex DeMarban, *Shuttered agency continues efforts to open up drilling in refuge, reserve*, ANCHORAGE DAILY NEWS, Jan. 7, 2019; Elizabeth Harball, *Despite shutdown, Trump administration continues work to begin oil drilling in ANWR*, ALASKA PUBLIC MEDIA, Jan. 4, 2019.

[282] *See* Letter from Alaska Wilderness League, *et al.* (January 23, 2018).

Moreover, the agency failed to provide sufficient notice of its public hearings or hold sufficient public hearings to involve the public in this important process and decision. On the first issue, BLM announced its public hearing schedule on Wednesday, January 30th. The hearing dates were as follows: Fairbanks- February 4th; Kaktovik-February 5th; Utqiagvik-February 6th; Fort Yukon-February 7th; Arctic Village-February 9th; Venetie-February 10th; Anchorage-February 11th; and Washington, D.C.-February 13th. This means that every single hearing was given less than two weeks' notice, and the Fairbanks hearing was given only 4-days notice. Additionally, many meetings were held primarily — or even exclusively in the case of Fort Yukon — during the work day, further limiting the public's ability to participate. On the issue of additional hearings, groups requested that additional hearings be held to allow greater public participation and recommended four cities for additional hearings. BLM denied this request as well. Additionally, we note that only after BLM's attempts in major cities to host "open-houses" failed, did BLM allow the public to provide formal testimony. In Fairbanks, where BLM did not originally provide an opportunity for formal testimony, many individuals provided testimony prior to BLM moving a transcriber into the room. BLM should transcribe any audio or video recordings of that hearing to ensure that the complete hearing and all testimony is part of the administrative record.

This comment period on the Draft EIS was insufficient to meet BLM's NEPA obligations to provide robust participation by the interested public, given the pristine and sensitive resources, the complexity of the issues and analysis required, and the timing of the proposal.[283]

c. BLM is Failing in its Consultation Obligations.

The Gwich'in people live in fourteen small villages across a vast area extending from northeast Alaska to the northern Yukon and Northwest Territories in Canada. It is unclear which communities have been contacted by BLM for consultation. Though the Inupiat community of Kaktovik is the only community located on the Coastal Plain, other villages such as Arctic Village, Fort Yukon, Venetie, Chalkyitsik, Beaver, and Canadian villages such as Old Crow and Fort McPherson, are located within the range for the Porcupine Caribou Herd and will be impacted by any oil and gas activities on the Coastal Plain.[284] BLM also recognizes that many other communities, such Wiseman, Birch Creek, and Stevens Village, have reported geographic, historic/prehistoric, or cultural ties to the Arctic Refuge as a whole.[285] BLM further acknowledges that subsistence harvesting and sharing patterns for "22 Alaskan communities and seven Canadian user groups are relevant if post-lease oil and gas activities changes caribou resource availability or abundance for those users."[286] However, BLM has not meaningfully engaged with all of these potentially affected communities.

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[283] 40 C.F.R. § 1503.1(a)(4).

[284] Gwich'in Steering Committee, Primary Habitat of the Porcupine Caribou Herd Map, *available at*: http://ourarcticrefuge.org/wp-content/uploads/2012/10/mappch.pdf.

[285] DEIS vol. 1 at 3-160.

[286] DEIS vol. 1 at 3-167.

Tribal governments for every affected community within Alaska and Canada should have been contacted for government-to-government consultation. BLM does not provide a list of the tribal governments that the agency reached out to for purposes of government-to-government consultation. The EIS merely lists the 7 meetings which took place.[287] It is concerning that only 7 government-to-government meetings took place for an oil and gas leasing program that may significantly impact subsistence in 29 different communities. Moreover, there is no indication that BLM contacted any communities in Canada for purposes of consultation or public meetings. This is egregious, particularly in light of the fact that Canadian users account for the vast majority – in the past up to 85 percent - of the harvest of the Porcupine Caribou Herd.[288]

Moreover, BLM's ANILCA 810 evaluation finds that the cumulative case may significantly restrict subsistence uses and needs for the community of Kaktovik. Due to these findings, the agency intends to hold a public subsistence hearing in Kaktovik during the Draft EIS comment period, but will not hold ANILCA 810 hearings in any other communities, including any Gwich'in communities. The finding that there may not be impacts to subsistence use and resources for Gwich'in villages is contrary to science and BLM's own discussion elsewhere in the Draft EIS. The Gwich'in of Alaska and Canada are culturally and spiritually connected to the Porcupine Caribou Herd, which in turn relies on the Coastal Plain for calving, post-calving and summer habitat. Because of this connection, protecting the Coastal Plain is vital to their human rights and food security. Despite acknowledging that oil and gas can have impacts on caribou, BLM concludes that there will not be an impact on the subsistence resources for the Gwich'in. This ignores the traditional knowledge and human rights of the Gwich'in, a problem which is exacerbated by the fact that BLM will not hold ANILCA 810 hearings in any Gwich'in communities.

BLM has repeatedly failed to listen carefully to the millions of Americans and the Gwich'in Nation and take the time to conduct the necessary analysis comply with its federal and international legal obligations. BLM failed to engage the public, the scientific community, and Alaska Natives and Canadian First Nations people who will be most impacted by this decision.

10. DOI and BLM's FOIA Deadline Violations Impeded Public Participation.

DOI and BLM's failure to disclose information sought by our numerous outstanding Freedom of Information Act (FOIA) requests hindered the public's ability to participate. FOIA promotes government transparency and requires agencies to make certain information available to the public.[289] An agency has twenty workdays to respond to a request, and may take an additional ten when unusual circumstances are involved.[290] Some Groups have numerous outstanding FOIAs to BLM, DOI (denoted by OS below), FWS, and USGS, specifically seeking information to assist the public and our preparation of leasing DEIS comments. These include but are not limited to:

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[287] DEIS vol. 2 at Appendix C-3.
[288] DEIS vol. 1 at 3-168.
[289] 5 U.S.C. 552.
[290] 43 C.F.R. §§ 2.16, 2.19.

- BLM-2018-00690 due May 1, 2018
- BLM-2018-00695 due May 3, 2018
- OS-2018-00980 due May 3, 2018
- USGS-2018-00130 due May 3, 2018
- OS-2018-00971 due May 15, 2018
- FWS-2018-00940 due July 18, 2018
- USGS-2018-00126 due July 26, 2018
- OS-2018-01415 due July 26, 2018
- BLM-2018-01011 due July 26, 2018
- FWS-2018-1008 due July 26, 2018
- BLM-2018-01143 due September 4, 2018
- FWS-2018-01120 due September 4, 2018
- OS-2018-01484 due September 18, 2018
- BLM-2018-01234 due October 23, 2018
- OS-2019-00166 due December 21, 2018
- OS-2019-00205 due January 3, 2019
- OS-2019-00241 due January 15, 2019
- OS-2019-00261 due January 17, 2019
- BLM-2019-00324 due February 7, 2019
- OS-2019-00314 due February 7, 2019
- OS-2019-00315 due February 7, 2019
- OS-2019-00378 due March 7, 2019

The above FOIAs request material related to the leasing DEIS including: the Tax Cut and Jobs Act of 2017; SAExploration's seismic proposal, development of lands owned by Kaktovik Inupiat Corporation and Arctic Slope Regional Corporation; David Bernhardt, Joseph Balash, James Cason, and Steve Wackowski's schedules, ethical pledges, meeting requests; records related to the leasing DEIS's compliance with Secretarial Order 3355; leasing DEIS records subject to the National Archives and Records Administration notice of availability of proposed records schedules;[291] and communications and records concerning the Agreement Between the Government of Canada and the Government of the United States of America on the Conservation of the Porcupine Caribou Herd and the U.S.-Canada International Porcupine Caribou Board. The documents sought by our requests are records, communications, policies, plans, technical and scientific assessments relevant to the DEIS. Our requests and subsequent follow-up letters have emphasized that time is of the essence to receive the documents as we planned to use the information to engage and inform the public about proposed oil and gas development in the Arctic National Wildlife Refuge, including during the DEIS comment period. BLM and DOI's FOIA violations thwarted the purpose of FOIA and hindered public participation, as we were unable to disseminate the relevant requested information during the public comment period.

[291] 83 Fed. Reg. 45,979 (Sept. 11, 2018).

11. BLM Failed to Engage or Adequately Involve Important Cooperating Agencies.

CEQ regulations call for early and significant involvement by other federal agencies with jurisdiction by law or special expertise.[292] While the draft EIS lists the Environmental Protection Agency and U.S. Fish & Wildlife Service as other federal cooperating agencies, it inexplicably does not include the U.S. Geological Survey (USGS) or the National Marine Fisheries Service (NMFS) — both of which have significant and critical expertise relevant to the development of an oil and gas program for the Coastal Plain. Indeed, BLM's Reasonably Foreseeable Development (RFD) Scenario — which underpins the alternatives and impacts analysis — is premised largely on USGS data and information. Yet, our understanding is that USGS did not participate in the preparation of the RFD and was unable to lend its critical expertise, resulting in fundamental and significant flaws in the entire basis for the draft EIS.[293]

Similarly, NMFS has significant expertise in and jurisdiction by law over marine mammals and fish species. For instance, NMFS is responsible for designating, managing, and consulting with BLM on Essential Fish Habitat under the Magnuson-Stevens Fishery Conservation & Management Act. NMFA also has statutory obligations regarding management of marine mammals relevant to BLM's analysis of the impacts of an oil and gas program under the Endangered Species Act and Marine Mammal Protection Act. Absent meaningful cooperation with these federal agencies, BLM's analysis lacks important information that these expert federal agencies could contribute.

Additionally, it appears that existing cooperating federal agencies' participation has been truncated or limited. Specifically regarding FWS, there are numerous issues and impacts identified by BLM that are highly relevant to FWS's administration and management of the Refuge, but it is unclear how BLM and FWS are working to address these issues or how FWS will undertake its independent obligations in light of the oil and gas program.

12. BLM Improperly Relies on Other Documents in the Draft EIS.

To "eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision," NEPA regulations allow agencies to "tier" environmental assessments and environmental impact statements to previous environmental impact statements.[294] "Tiering" means the agency may incorporate by reference discussions from a prior, broader environmental impact statement into the current environmental analysis so that the agency can concentrate on the issues specific to the current environmental analysis.[295] Tiering is appropriate when the sequences of analysis is either from a programmatic-level statement to an analysis of lesser scope or to a site-specific analysis, or when an EIS is done on a specific action at an early stage to a supplement or subsequent statement at a later stage.[296] BLM's NEPA Handbook similarly states

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[292] 40 C.F.R. § 1501.6.
[293] *See infra* Part IV.A.
[294] 40 C.F.R. § 1502.20.
[295] 40 C.F.R. § 1502.28.
[296] *Id.*

that tiering is appropriate when the analysis for the proposed action will be a more site-specific or project-specific refinement or extension of the existing NEPA document.

The Council on Environmental Quality's (CEQ) regulations also indicate that agencies can incorporate material by reference "when the effect will be to cut down on bulk without impeding agency and public review of the action."[297] Any incorporated material is required to be cited in the statement along with a brief description of its content.[298] Material cannot be incorporated by reference unless it is reasonably available for inspection within the public comment period.[299] BLM's NEPA Handbook explains that incorporation by reference involves two steps: citation and summarization.[300] In citing documents, BLM must provide the name of the document and the page numbers where the incorporated material can be found.[301] BLM is supposed to "[m]ake this citation as specific as possible so there is no ambiguity for the reader about what material is being incorporated."[302] BLM is also supposed to summarize the incorporated material. BLM is supposed to describe the content of the incorporated material and place it in the context of the specific NEPA document.[303] The NEPA document is where the agency's explanation of its findings and conclusions must be found.[304] BLM should "summarize the previous analysis, and explain what you conclude based on that previous analysis and how it relates to the action in question."[305] This summary is supposed to be "sufficient to allow the decision-maker and other readers to follow the analysis and arrive at a conclusion."[306]

BLM refers to and incorporates by reference numerous documents that collectively amount to thousands of pages, without providing citations to specific pages in these documents and without an adequate explanation of how they are being relied on in this specific context.[307]

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[297] 40 C.F.R. § 1502.21.

[298] *Id.*

[299] *Id.*

[300] BUREAU OF LAND MGMT., NATIONAL ENVIRONMENTAL POLICY ACT HANDBOOK H-1790-1, at § 5.2.1 (2008).

[301] *Id.*

[302] *Id.*

[303] *Id.*

[304] The Supreme Court has held that NEPA "guarantees that the relevant information will be made available to the larger [public] audience." *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349, (1989). A NEPA document must "provide the public with a basis for evaluating the impact" of the proposed action. *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, 1150 (9th Cir. 1998).

[305] *Id.*

[306] *Id.*

[307] *See, e.g.*, DEIS vol. 1 at 3-133 ("The Final EIS on Effects of Oil and Gas Activities in the Arctic (NMFS 2016a) provides detailed descriptions of potential impacts of petroleum-related industrial activities on marine mammal populations, including seismic exploration and drilling activities.").

This is improper.[308] BLM cannot reasonably expect the public to pore over entire EIS's in order to locate the basis for its assertions. BLM is required to provide this information to the public and to fully explain how the information applies in the context of this specific decision. The EIS must be revised to include page numbers for all citations to external documents and re-released. BLM must also summarize and describe the information that it is incorporating, rather than simply offering unexplained and conclusory statements that point to other documents.[309] The summary of the incorporated material must be sufficient to allow the decision-maker and other readers to follow the analysis and arrive at a conclusion. The EIS should be revised to ensure that analyses and conclusions incorporated by reference allow readers to follow the analysis and arrive at a rational conclusion.

As a general matter, BLM's reliance on documents and materials concerning the NPR-A to support its analysis for the impacts of oil and gas activities on the Coastal Plain is questionable. As explained in greater detail and specificity below, the Coastal Plain is very different in fundamental ways from the western Arctic. For example, the main physiography of the NPR-A is thaw-lake plain, but this regime only covers 3% of the Coastal Plain. Additionally, the hydrology of the NPRA and the Coastal Plain is very different. Relying on the analysis for an area that is distinct from the Coastal Plain is improper. If BLM believes that there are relevant parts of analyses despite these differences between the two areas, the agency must explain that, articulating the differences and providing its rational for why it can still rely on that analysis. This was not done in the draft EIS but it is critically important. Additionally, to the extent that the BLM is relying on the CCP in this draft EIS, BLM cannot rely on this document for its analysis of the impacts of oil and gas, as the FWS did not consider oil and gas impacts in that document.

BLM also improperly tiers to multiple documents, including the Greater Mooses Tooth 2 decision and the NPRA Integrated Activity Plan, amongst other documents. For example, BLM in its analysis of solid and hazardous waste indicates generally that its analysis of the impacts of solid waste, wastewater, produced fluids, drilling muds, and spills of oil, salt water, and hazardous substances are tiered in general to the GMT-2 and IAP decisions.[310] BLM expands to a very limited extent on the spill information, but otherwise wholly bypasses any analysis of these impacts on the basis that it is tiering to those other documents. At no point does BLM provide any page cites for precisely what it is tiering to in those documents. BLM also fails to

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[308] *See* DEIS vol. 1 at 3-61, 3-210; *see, e.g.. Kern v. Bureau of Land Mgmt.*, 284 F.3d 1062 (9th Cir. 2002) (stating that it is not enough to cite to documents to which an EA is tiered as a justification for failure to consider cumulative impacts analysis in a site-specific EA and that those documents must have addressed the impacts in question). In order to properly tier to these documents, BLM must point to where these documents considered all relevant cumulative impacts.

[309] *See e.g.*, DEIS vol. 1 at 3-137 ("The USFWS (2006, 2008b, 2009; 81 FR 52276) has concluded that the types of activities typical of oil and gas exploration, development, and production projects in northern Alaska were not likely to have population-level effects on polar bear populations at the levels analyzed in developed areas.").

[310] DEIS vol. 1 at 3-61.

provide a meaningful summary of the information in those documents so the public can understand what analysis it is relying on and how that analysis might apply or not apply in this context. The public cannot meaningfully determine what BLM is relying on or how it may or may not apply in the Coastal Plain from such a limited and cursory cross-reference to those other documents. The GMT-2 decision and the IAP also relate to wholly different areas and completely different developments and decisions. It is generally not appropriate for BLM to tier to those analyses, which in no way relate to the area or action at issue in this draft EIS. As the CEQ regulations state, a document can be tiered "whenever a broad environmental impact statement has been prepared (such as a program or policy statement) and a subsequent statement or environmental assessment is then prepared on an action *included within* the entire program or policy."[311] BLM can hardly argue an analysis of impacts to the Coastal Plain was "included within" the GMT-2 and IAP decisions when the Coastal Plain was not a part of that analysis.

13. The Draft EIS Contains Inconsistencies Making Commenting Extremely Challenging

The draft EIS contains important inconsistencies that must be remedied in a revised draft EIS to enable reasonable public comments. These inconsistencies include but are not necessarily limited to the following two examples.

Appendix B says that mean oil production in the Coastal Plain is estimated at 3.4 BBO by 2050.[312] This estimate is used to develop the number of spills and spill sizes.[313] Appendix B also says, however, that "the projected ultimate recovery in the Coastal Plain is estimated to be anywhere from 1.5 BBO to 10 BBO…"[314] This range of values is not used in the spill analysis. Based on the limited seismic, well, and geologic data available to estimate production, it seems technically supportable for BLM to utilize a range of production values in its analyses.

The draft EIS is inconsistent in its acreage numbers for each anchor development, listed in most places as 750 acres.[315] In the draft EIS analysis of development impacts on subsistence, however, it states in two places that an anchor development consists of only 488 acres.[316]

Note that these two examples are not insignificant or unimportant parts of the NEPA analysis and its ultimate findings and conclusions.

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[311] 40 CFR § 1502.20 (emphasis added).
[312] DEIS at B-1.
[313] DEIS at 3-38.
[314] DEIS at B-18.
[315] DEIS at 3-71, 3-93, 3-95, 3-97, 3-112, F-21 and F-27.
[316] DEIS vol. 2 Appendix E at E-9.

C. BLM'S DRAFT EIS FAILS TO ACKNOWLEDGE AND COMPLY WITH REFUGE LEGAL MANDATES.

The Coastal Plain is part of the Arctic National Wildlife Refuge, the largest and wildest unit of the National Wildlife Refuge System. In scoping comments, Groups identified that in developing the EIS, BLM must pay particular attention to refuge law and polices that govern both the Arctic Refuge specifically and the National Wildlife Refuge System more broadly, including addressing the management role of FWS, the conservation purposes of the Coastal Plain, and Refuge System management laws and policies.[317] BLM has failed to do so in the draft EIS, rendering the draft EIS deficient.

1. *BLM Failed to Acknowledge and Fully Account for the U.S. Fish and Wildlife Service's Role as the Sole Administrator and Primary Management Agency of the Coastal Plain.*

The U.S. Fish and Wildlife Service is the administrator and management agency for the entire Arctic Refuge.[318] While the Tax Act instructed that the Secretary, acting through the BLM, will establish and manage the oil and gas program on the Coastal Plain,[319] the legislation did not otherwise alter or supplant the FWS administration and management role and obligations for the Coastal Plain or for the entire Arctic Refuge. FWS is the science and resource expert for the Arctic Refuge and the Coastal Plain.[320] The Secretary cannot abdicate any management authority to the BLM beyond the limited role provided for in the Tax Act to establish and manage an oil and gas program in the Coastal Plain.[321] FWS and Interior are still subject to the requirements of other statutes, such as the NWRSAA and ANILCA, which were in no way abrogated or limited by the Tax Act.

Despite having raised this issue during scoping, BLM fails to fully acknowledge or explain FWS's role. While BLM states that FWS "is the predominate land manager in the program area,"[322] BLM does not explain what this means. To be clear, FWS is the sole administrator of the Arctic Refuge. BLM has failed to explain how FWS's superior role impacts both BLM's management of the oil and gas program as well as how the oil and gas program fits into FWS's administration of the Refuge overall. In other situations where DOI has granted some measure of jurisdiction over refuge management to agencies other than FWS, courts and Congress have clarified that the ultimate decisions about resource uses, impacts, mitigation, and

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[317] Scoping Comment Letter at 12–16.

[318] 16 U.S.C. § 668dd(a)(1); ANILCA § 304(a).

[319] Pub. L. 115-97, Title II, sec. 20001(a)(2), (b)(2)(A), (3).

[320] In this capacity, FWS should approve all Refuge activities, including oil and gas activities.

[321] *Trustees for Alaska v. Watt*, 524 F. Supp. 1303, 1309–10 (D. Alaska 1981), aff'd 690 F.2d 1279 (9th Cir. 1982).

[322] DEIS vol. 1 at ES-2, 1-2.

regulatory compliance must be made by FWS.[323] In particular, as the court recognized in *Trustees v. Watt*, ANILCA and the NWRSAA mandate that refuges be administered solely by FWS; split administration is not permitted.[324] As the sole administrator of the Arctic Refuge, FWS has a superior role to BLM, and no administration functions may be performed by BLM. The EIS must be revised to explain and accurately characterize this structure.

Without more information about how DOI is structuring the relationship between the BLM and FWS, and how FWS administration and management actions may be impacted by the oil and gas program, the public cannot be sure that Secretary is complying with ANILCA and the NWRSAA regarding administration and management of the Refuge by FWS. BLM must clarify this information, and in doing so, it must be sure that its roles and responsibilities are consistent with current laws regarding Refuge administration.

2. BLM Fails to Acknowledge or Address the Original Conservation Purposes of the Arctic Refuge.

While BLM purports to recognize the purposes of the Arctic Refuge, it repeatedly recognizes only an incomplete set of purposes, fails to acknowledge that the conservation purposes are the priority purposes, and overall fails to ensure that the oil and gas program will be consistent with these priority conservation purposes.

Prior to the passage of the tax bill, there were seven articulated purposes for the Coastal Plain: those from the original 1960 Range designation and the additional four added by ANILCA.[325] Those seven purposes include (1) preserving wildlife values, (2) preserving wilderness values, (3) preserving recreation values, (4) conserving fish and wildlife and habitat, (5) meeting international treaty obligations regarding fish, wildlife, and habitat, (6) continuing to provide for subsistence, and (7) protecting water quantity and quality needed to meet fish, wildlife, and habitat needs.[326]

BLM repeatedly fails to include the original three purposes from the 1960 Range designation among the recognized Arctic Refuge purposes in the draft EIS, acknowledging only the four ANILCA purposes.[327] FWS policy is clear the original three purposes set out in PLO 2214 apply to the Coastal Plain equally.[328] BLM must include the three purposes from PLO 2214

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[323] Pub. L. No. 94-223, 90 Stat. 199 (Feb. 27, 1976) (codified at 16 U.S.C. § 668dd(a)(1); *Trustees for Alaska v. Watt*, 524 F. Supp. at 1309–10.

[324] 524 F. Supp. at 1305, 1310.

[325] ANILCA §§ 303, 305; CCP Final EIS, Chapter 1 at 1-21.

[326] PLO 2214 at 1; ANILCA § 303(2)(B). There are numerous other purposes that apply as well from broader management statutes and policies, like the National Wildlife Refuge Administration Act and the Wilderness Act.

[327] DEIS vol. 1 at ES-1. 1-1, 2-1, DEIS vol. 2 at D-3.

[328] ANILCA § 305; FWS Refuge Management Part 601 National Wildlife Refuge System, 601 FW 1 at 1.16 (July 26, 2006); U.S Fish and Wildlife Service, Arctic National

among the purposes of the Coastal Plain outlined in the draft EIS. Additionally, the BLM must include these three purposes with the ANILCA purposes when identifying the Refuge purposes with which the oil and gas program must be consistent. By not recognizing or including the original three purposes in its analysis, BLM cannot ensure that an oil and gas program would be consistent with Refuge purposes. For example, by failing to recognize that protecting wilderness is a purpose of the Coastal Plain, BLM is not including any stipulation or required operating procedure that would protect these values in the Coastal Plain. Instead, the wilderness-related stipulation only attempts to protect the wilderness values in the Mollie Beattie designated Wilderness area of the Refuge, and even then only for one alternative.[329]

Additionally, while the Tax Act added an additional purpose for the Coastal Plain of an oil and gas program,[330] the Tax Act did not prioritize the oil and gas purpose over any of the seven pre-existing purposes and in no way altered the applicability of the NWRSAA or ANILCA. Accordingly, as Groups pointed out in their scoping comments, FWS policy instructs that the oil and gas purpose of the Coastal Plain is subservient to the seven conservation purposes. FWS's policy manual states the following regarding refuges with multiple purposes and priority of purposes:

> **1.15 If a refuge has multiple purposes, do some purposes take priority over others?** Purposes dealing with the conservation, management, and restoration of fish, wildlife, and plants and the habitats on which they depend *take precedence over other purposes* in the management and administration of a refuge unless otherwise indicated in the establishing law, order, or other legal document. The Improvement Act states that "compatible wildlife-dependent recreational uses are the priority general public uses of the System and shall receive priority consideration in refuge planning and management."[331]

Despite this clear and directly applicable policy, the EIS fails to recognize that the seven conservation purposes are the priority purposes for the Coastal Plain and BLM fails to address how the proposed program will impact these existing purposes. For example, the draft EIS does not specifically evaluate whether the existing purposes will be met by each alternative and does not include an analysis of whether the lease stipulations, required operating procedures, and proposed mitigation measures are sufficient to ensure that the pre-existing Refuge purposes will continue to be achieved. The EIS must be revised to thoroughly consider these issues. The failure of the EIS to specifically consider the purposes when considering protective measures is

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Wildlife Refuge, Revised Comprehensive Conservation Plan Final Environmental Impact Statement, Chapter 1 at 1-21 [hereinafter CCP Final EIS].

[329] DEIS vol. 1 at 2-15–2-16. As explained below, this stipulation is insufficient. *See supra*, part V.T.3.

[330] Pub. L. 115-97, Title II, sec. 20001(b)(2)(B)(iii).

[331] U.S. Fish and Wildlife Service, 601 FW 1, 1.15, National Wildlife Refuge System Mission and Goals and Refuge Purposes (July 26, 2006) (emphasis added), *available at:* https://www.fws.gov/policy/601fw1.html. Congress is presumed to know these policies when it passes laws.

particularly concerning given that the lease stipulations and required operating procedures can all be waived, exempted, or modified on a case-by-case basis.[332] It is equally unclear what role FWS had developing the program to ensure consistency with FWS's administration of the Refuge to ensure that refuge purposes can be met, as required by law.

3. BLM Fails to Address the Refuge Compatibility Mandate.

Compatibility is a cornerstone of refuge management.[333] The compatibility requirement obliges FWS to determine whether proposed "uses are compatible with the major purposes for which such areas were established."[334] Section 304(b) of ANILCA adopted the compatibility standard for refuges in Alaska and indicates that the Secretary cannot authorize any use or grant easements for any purposes unless that use is compatible with the purposes of the Refuge. FWS policy describes a "compatible use" as "[a] proposed or existing wildlife-dependent recreational use or any other use of a national wildlife refuge that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of the national wildlife refuge."[335] "Refuge use" is defined as "[a] recreational use (including refuge actions associated with a recreational use or other general public use), refuge management economic activity, or other use of national wildlife refuge by the public or other non-National Wildlife Refuge System entity."[336]

Despite the clear compatibility requirements, BLM fails to acknowledge them, let alone discus them in the EIS. In fact, entirely absent from BLM's discussion of the NWRSAA in Appendix D is any mention of the compatibility requirement or how BLM is working with FWS to ensure that the proposed oil and gas program is compatible. For instance, the FWS compatibility policy states uses, such as roads and pipelines that may reasonably be anticipated "to reduce the quality or quantity or fragment habitat on a national wildlife refuge will not be compatible."[337] Yet, the DEIS does not address how the impacts of the leasing program will comply with this clear statement of activities that are not compatible with the refuge system mission.

The BLM cannot dismiss the obligation to consider and account for these purposes as outside the scope of its obligations or as something limited to only FWS decisions when the BLM is considering various uses of the Refuge as part of the oil and gas program. We note that FWS has not proposed any compatibility determinations as part of this leasing EIS and there are no current compatibility determinations that cover the proposed oil and gas program.[338] It is unclear how the Secretary will ensure that compatibility mandates are complied with for the oil

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[332] DEIS vol. 1 at 2-2–2-3.

[333] 16 U.S.C. § 668dd(d).

[334] *Id.* § 668dd(d)(1)(A).

[335] U.S. Fish and Wildlife Service, Compatibility, 603 FW 2, 2.6.B. A (Nov. 17, 2000), *available at*: https://www.fws.gov/policy/603fw2.html.

[336] 603 FW 2 2.6.Q.

[337] 65 Fed. Reg. 62,486 (2000); 603 FW 2.5.

[338] CCP Final EIS at Appendix G.

and gas program, or when FWS will propose compatibility determinations to cover the activities proposed by BLM in the EIS. No oil and gas activities, including a lease sale, can proceed prior to completion of a compatibility determination by FWS.

4. *BLM Fails to Account for Current Management of the Coastal Plain Under the Comprehensive Conservation Plan.*

FWS currently manages the entire Arctic Refuge — including the Coastal Plain — under the Comprehensive Conservation Plan (CCP) adopted on April 3, 2015.[339] The CCP establishes "management goals and objectives," "define[s] compatible use," "[u]date[s] management direction related to national and regional policies and guidelines used to implement Federal laws governing Refuge management," and "[e]stablish[es] broad management direction for Refuge programs and activities" among other things.[340] Currently, the Coastal Plain is managed under the Minimal Management category as set out in the CCP.[341]

Throughout the CCP revision process, FWS properly declined to consider oil and gas development on the Coastal Plain.[342] Specifically regarding the management of the Arctic Refuge and the lack of consideration of oil and gas development in the CCP process, the CCP states:

> Until Congress takes action to change the provision of ANILCA 1003 or to implement the 1987 report, the Service will not and cannot permit oil and gas leasing in the Refuge under any of the alternatives in the Plan. *When Congress makes a management decision, that action will be incorporated into the Plan and implemented*.[343]

Congress bound the Secretary to "manage the refuge . . . in a manner consistent with the plan."[344] Oil and gas leasing and any related activities on the Coastal Plain are, therefore, inconsistent with the CCP and present management of the Coastal Plain.

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[339] U.S Department of the Interior, Fish and Wildlife Service, Region 7, Record of Decision, Revised Comprehensive Conservation Plan, Arctic National Wildlife Refuge (Apr. 3, 2015) [hereinafter CCP ROD].

[340] CCP Final EIS, Summary at S-9.

[341] CCP Final EIS, Chapter 3 at 3-34; CCP ROD at 5.

[342] *See, e.g.*, CCP Final EIS, Chapter 3 at 3-6.

[343] CCP Final EIS, Chapter 1 at 1-1 (emphasis added); *see also* Arctic National Wildlife Refuge, Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, Wild River Plans Final, Dear Reader Letter at 2 (Sept. 1988) (stating, "[w]hen Congress makes a management decision [re: oil and gas], that action will be incorporated into the Plan implemented").

[344] 16 U.S.C. § 668dd(e)(1)(E); *see also e.g.*, *Ctr. for Food Safety v. Jewell*, 83 F. Supp. 3d 126 (D. D.C. 2015) (overturning certain farming activities on a refuge unit because its CCP had not addressed site-specific impacts of the activities).

In scoping comments, Groups flagged this issue and explained that the draft EIS must acknowledge this inconsistency.[345] The draft EIS, however, fails to explain how BLM and the Secretary are addressing this problem. For example, under Alternative A, BLM states that the "current management will be maintained."[346] But then when describing the impacts of oil and gas under the action alternatives, the draft EIS states that minimal management will have to change to account for the oil and gas program. BLM states on the one hand that "the minimal management standard for the Coastal Plain must now be adjusted to account for the oil and gas program," but then fails to explain how FWS's minimal management will be in fact adjusted.[347] Similarly, while BLM states that under Alternative A, the no-action alternative, current management actions would continue, the agency does not explain how current management actions would be impacted under the three action alternatives.[348] It is important to note that under the Minimal Management category governing present use of the Coastal Plain,[349] many of the activities that BLM is considering as part of the oil and gas program are not permitted.[350] But BLM cannot take any action that is inconsistent with the CCP.

Groups are deeply concerned that BLM is attempting to indirectly and implicitly amend or alter the CCP through this EIS process. This cannot be permitted. To amend the CCP, FWS must take clear action and do so and in compliance with multiple statutes and regulations that mandate notice and public participation.[351]

D. BLM'S DRAFT EIS FAILS TO COMPLY WITH ADDITIONAL RELEVANT LEGAL REQUIREMENTS.

1. *BLM Fails to Explain How its Oil and Gas Program and Lease Sales Will Comply with the Endangered Species Act.*

NEPA's implementing regulations require an EIS to "state how alternatives considered in it and decisions based on it will or will not achieve the requirements [of NEPA] and other environmental laws and policies."[352] Here, the draft EIS fails to explain how BLM will comply

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[345] Scoping Comment Letter at 4-6.

[346] DEIS vol. 1 at 2-2.

[347] *See, e.g.*, DEIS vol. 1 at 3-211 (stating that Minimal Management related to wilderness characteristics will be adjusted but failing to explain what that means or how it will be adjusted).

[348] DEIS vol. 1 at 2-2.

[349] CCP Final EIS, Chapter 3 at 3-34; CCP ROD at 5.

[350] For example, gravel mining is not permitted under Minimal Management in the Arctic Refuge. CCP Final EIS vol. 1 at 2-72. But under the action alternatives proposed by BLM, gavel mining would proceed. DEIS vol. 1 at 3-49–3-50.

[351] ANILCA § 304(g); U.S. Fish and Wildlife Service, Comprehensive Conservation Planning Process, 602 FW 3 at 8(b) (June 21, 2000).

[352] 40 C.F.R. § 1502.2(d); *see Montana Wilderness Ass'n v. McAllister*, 658 F. Supp. 2d 1248, 1255–56 (D. Mont. 2009); *Pac. Coast Fed. of Fishermen's Ass'ns v. Interior*, 929 F. Supp. 2d 1039, 1059–60 (E.D. Cal. 2013).

with its substantive and procedural obligations under the Endangered Species Act (ESA). In their scoping letter, the Groups identified the statutory mandate for BLM to ensure that the leasing program met the agency's obligations under the ESA as a key issue that the EIS must address.[353] Several species protected under the ESA[354] inhabit the Arctic Refuge and its nearshore waters, including bowhead whales, ringed and bearded seals, spectacled eider, and polar bears.[355] The majority of the Coastal Plain (approximately 77 percent) is designated as critical habitat for threatened polar bears.[356]

Congress enacted the ESA to conserve endangered and threatened species and the habitats and ecosystems upon which they depend. [357] As the Supreme Court observed, the ESA is "the most comprehensive legislation for the preservation of endangered species ever enacted by any nation."[358] Federal agencies must scrupulously comply with the ESA to effectuate Congress' intent to require them to "afford first priority to the declared national policy of saving endangered species," even above their primary missions.[359]

"The heart of the ESA is section 7(a)(2)."[360] Section 7(a)(2) mandates that every federal agency, in consultation with the appropriate wildlife agency, ensure that any action over which it has discretionary involvement or control is not likely to (1) jeopardize the continued existence of any threatened or endangered species or (2) result in the destruction or adverse modification of critical habitat.[361] "This language admits of no exception."[362]

Once a species is listed as endangered or threatened, Section 9 of the ESA prohibits any person, including any federal agency, from "taking" any member of an endangered species

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[353] Scoping Comment Letter at 18.

[354] 16 U.S.C. §§ 1531–1544.

[355] *See* U.S. Fish and Wildlife Service, Arctic National Wildlife Refuge, Mammal List, *available at*: https://www.fws.gov/refuge/arctic/mammlist.html; U.S. Fish and Wildlife Service, Arctic Refuge, Bird List, *available at:* https://www.fws.gov/refuge/arctic/birdlist.html; *see also* 35 Fed. Reg. 18319 (Dec. 1, 1970) (bowhead whale listing); 77 Fed. Reg. 76706 (Dec. 28, 2012) (ringed seal listing); 77 Fed. Reg. 76740 (Dec. 28, 2012) (bearded seal listing); 73 Fed Reg. 28212 (May 15, 2008) (polar bear listing); 58 Fed Reg. 27474 (May 10, 1993) (spectacled eider listing).

[356] 75 Fed. Reg. 76086 (Dec. 7, 2010).

[357] *Id*.

[358] *Tenn. Valley Authority v. Hill*, 437 U.S. 153, 180 (1978).

[359] *Id.* at 184–85; *see also id.* at 173–74

[360] *W. Watersheds Project v. Kraayenbrink*, 632 F.3d 472, 495 (9th Cir. 2011).

[361] 16 U.S.C. § 1536(a)(2); 50 C.F.R. §§ 402.03, 402.14(a). "*Action*," "*jeopardize the continued existence of*," and "*destruction or adverse modification*" are defined by regulation. 50 C.F.R. § 402.02.

[362] *TVA v. Hill*, 437 U.S. at 173. Congress later amended Section 7(a)(2) to allow exceptions in extraordinary circumstances, none of which apply here. *See* 16 U.S.C. § 1536(h).

without a valid permit.[363] "Take" includes habitat modification or degradation that results in actual injury.[364] Only through the Section 7(a)(2) consultation process may a federal agency (the "action agency") receive authorization, via an incidental take statement included in a biological opinion, to undertake agency actions that may result in incidental take of listed species.[365] The U.S. Fish and Wildlife Service and the National Marine Fisheries Service (generically, "wildlife agency" or "Service") administer the ESA and have promulgated regulations governing the consultation process.[366]

The Section 7 process begins when the action agency determines whether its action "may affect" listed species in the "action area".[367] The threshold for triggering consultation is low: if its action *may* affect any listed species or critical habitat, the action agency *must* engage in formal or informal consultation with the Service.[368] "Any possible effect, whether beneficial, benign, adverse, or of an undetermined character, triggers the formal consultation requirement."[369] The "threshold for formal consultation must be set sufficiently low to allow Federal agencies to satisfy their duty to 'insure' under Section 7(a)(2)."[370] Only where the action agency determines its actions will have *no* effect on listed species or critical habitat may it forego consultation.[371]

If the action agency properly determines with the written concurrence of the Service that its action is likely to affect, but not likely to adversely affect, listed species or critical habitat ("NLAA finding"), consultation may terminate at the informal stage without formal consultation.[372] To concur in an NLAA finding, the Service must find that "effects on listed species are expected to be discountable, or insignificant, or completely beneficial."[373]

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[363] 16 U.S.C. § 1538(a)(1)(B); 50 C.F.R. § 17.31(a) (FWS regulation extending the "take" prohibition to threatened species under FWS jurisdiction). The prohibition against jeopardy, however, extends to both endangered and threatened species.

[364] 16 U.S.C. § 1532(19); 50 C.F.R. § 17.3.

[365] 16 U.S.C. §§ 1536(b)(4)(iv), (o)(2).

[366] 50 C.F.R. Part 402.

[367] 16 U.S.C. § 1536, 50 C.F.R. §§ 402.11, 402.14. The "*action area*" includes "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." 50 C.F.R. § 402.02.

[368] 50 C.F.R. §§ 402.13(a), 402.14(a).

[369] 51 Fed. Reg. 19,926, 19,949 (June 3, 1986).

[370] *Id.*

[371] 50 C.F.R. § 402.14(a); *see also Sw. Ctr. for Biological Diversity v. USFS*, 100 F.3d 1443, 1447–48 (9th Cir. 1996).

[372] 50 C.F.R. §§ 402.13(a), 402.14(b).

[373] U.S. Fish and Wildlife Service and National Marine Fisheries Service, *Endangered Species Consultation Handbook* (1998) at 3–12. https://www.fws.gov/ENDANGERED/esa-library/pdf/esa_section7_handbook.pdf. "*Insignificant effects* relate to the size of the impact and should never reach the scale where take occurs. Based on best judgment, a person would not . . . be able to meaningfully measure, detect, or evaluate insignificant effects[.]" *Id.* at 3–12—3–13.

If the action may adversely affect listed species or critical habitat, including via potential incidental take, the action agency must request formal consultation.[374] The request "shall include" descriptions of: the action, the specific area that may be affected, listed species and critical habitat that may be affected, and the manner in which the action may affect listed species.[375] It must also include a cumulative effects analysis.[376] The action agency has an obligation to provide the Service "with the best scientific and commercial data available . . . for an adequate review of the effects" of the action on listed species and critical habitat.[377]

At the conclusion of formal consultation, the Service provides the action agency with its biological opinion. This opinion must be based on the best available scientific information.[378] A biological opinion advises the action agency as to whether the proposed action, standing alone or considered together with cumulative effects, is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.[379] "Jeopardy" results when an action "reduce[s] appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species."[380]

If the biological opinion determines that jeopardy will result from the agency action as proposed, the Service must provide the action agency with "reasonable and prudent alternatives" to the proposed action that "would avoid the likelihood of jeopardizing the continued existence of listed species or resulting in the destruction or adverse modification of critical habitat."[381]

If the Service makes a no-jeopardy finding, it provides an incidental take statement (ITS) specifying the amount or extent of permitted incidental take, reasonable and prudent measures (RPMs) necessary to minimize the impacts of take, and terms and conditions to implement the RPMs.[382] RPMs and the associated terms and conditions are conservation measures intended to

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[374] 50 C.F.R. § 402.14(a).

[375] *Id.* §§ 402.14(c)(1)–(4). The "*effects of the action*" include: "the *direct and indirect effects* of an action . . . that will be added to the *environmental baseline*. The *environmental baseline* includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of [contemporaneous] State or private actions[.]" 50 C.F.R. § 402.02.

[376] *Id*. § 402.14(c)(4). "*Cumulative effects*" are "effects of future State or private activities . . . that are reasonably certain to occur within the action area of the Federal action[.]" 50 C.F.R. § 402.02.

[377] *Id.* § 404.14(d).

[378] 16 U.S.C. § 1536(a)(2).

[379] 50 C.F.R. §§ 402.14(g)(1)–(4).

[380] 50 C.F.R. § 402.02.

[381] 16 U.S.C. § 1536(b)(3)(A); 50 C.F.R. §§ 402.02, 402.14(h)(3).

[382] 16 U.S.C. § 1536(b)(4)(C); 50 C.F.R. § 402.14(i).

mitigate or remove any adverse effects on endangered or threatened species.[383] These recommendations are based upon the statutory responsibility of agencies to carry out programs for the conservation of endangered species.[384] The ITS establishes a trigger level for permitted incidental take that, when exceeded, invalidates the "safe harbor" provision that protects the action agency from civil and criminal liability for take.[385] The ITS enables the action agency to engage in the required monitoring and reporting to determine if the actual amount of incidental take exceeds the permitted amount, thus triggering re-initiation.[386]

Because the duty to avoid jeopardy continues as long as an action agency has discretionary control over its action, it must also reinitiate (and the Service must request it to reinitiate) consultation in any of three additional circumstances: "(b) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (c) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or (d) If a new species is listed or critical habitat designated that may be affected by the identified action."[387]

Section 7's procedural and substantive duties cannot be separated. Courts require stringent procedural compliance to ensure substantive compliance.[388] This also promotes other vital statutory objectives. First, Section 7(a)(2) is the ESA's only mechanism to ensure against the destruction or adverse modification of critical habitat.[389] Second, unlike Section 9, which authorizes penalties only after unlawful take has happened, Section 7 is designed to prevent and mitigate harm to protected species and critical habitat. The consultation process "ensures that environmental concerns will be properly factored into the decision-making process as intended by Congress."[390] Section 7 thus embodies the "institutionalization of . . . caution" that Congress intended in enacting the ESA.[391]

Here, however, the draft EIS fails to acknowledge these important mandates or explain how BLM will comply with the ESA's substantive and procedural requirements when conducting leasing. BLM has made it clear throughout the draft EIS that the agency intends to authorize extensive oil and gas leasing on the Coastal Plain. This predecisional posture is especially alarming given BLM's substantive obligation to avoid jeopardizing endangered and

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[383] *Fla. Key Deer v. Stickney*, 864 F. Supp. 1222, 1229 (S.D. Fla. 1994) (citing *Romero–Barcelo v. Brown*, 643 F.2d 835, 857 (1st Cir. 1981)).

[384] *Id*. (quoting 16 U.S.C. § 1536(a)(1)).

[385] 50 C.F.R. § 402.14(i)(5). *See Or. Natural Resources Council v. Allen*, 476 F.3d 1031, 1039–40 (9th Cir. 2007).

[386] 50 C.F.R. §§ 402.14(i)(4), 402.16(a).

[387] 50 C.F.R. §§ 402.16(b)–(d).

[388] *Conner v. Burford*, 848 F.2d 1441, 1458 (9th Cir. 1988); *Thomas v. Peterson*, 753 F.2d 754, 764 (9th Cir. 1985).

[389] 16 U.S.C. § 1532(5)(A).

[390] *NRDC v. Houston*, 146 F.3d 1118, 1128–29 (9th Cir. 1998).

[391] *TVA v. Hill*, 437 U.S. at 178.

threatened species and destroying or adversely modifying their critical habitats. The range of alternatives in the EIS does not include an alternative that makes less than 1 million acres available for leasing. Additionally, there is no alternative that caps surface development at less than 2,000 acres, and for all alternatives, the lease stipulations and required operating procedures are very similar and waivable, can be granted exceptions, or BLM can provide modifications. BLM repeats that it will not even consider adoption of the No Action Alternative. Such a range of alternatives raises serious questions as to whether BLM can make leasing decisions consistent with its substantive ESA obligations.

The draft EIS also fails to adequately describe how BLM will comply with Section 7's procedural requirements. The EIS merely states that "BLM consults with the US Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) regarding the effects of its actions on threatened and endangered species and designated critical habitat."[392]

It is unclear when Section 7 consultation will occur and what level of activities BLM intends to consult on for purposes of this EIS with either FWS (for polar bears and spectacled eider) or NMFS (for whales and seals). As an initial matter, the draft EIS does not contain a preferred alternative, which is typically the alternative used for purpose of Section 7 consultation. Though BLM itself recognizes that there is little to no difference in impacts to polar bears among its action alternatives,[393] the agency should clarify which of these action alternatives are being defined as the "agency action" for purposes of consultation with FWS and NMFS. BLM should also confirm that FWS and NMFS will issue biological opinions prior to any Record of Decision being issued to authorize a lease sale on the Coastal Plain.

Additionally, the EIS does not expressly state which ESA-listed species BLM intends to consult with NMFS and FWS on. For instance, BLM acknowledges that spectacled eiders are protected under the ESA and may be present in the program area in low numbers,[394] but these ESA-protected birds are never again mentioned in the impacts analysis. BLM is obligated to satisfy its consultation obligations on any action that *may* affect any listed species or its critical habitat.[395] The threshold for triggering formal consultation is very low, and "the burden is on the Federal agency" to show that the action is not likely to affect adversely species or critical habitat and "[a]ny possible effect" triggers formal consultation requirements.[396] Only if and when BLM obtains a written NLAA determination from a Service that the leasing program may affect, but is not likely to adversely affect, a particular listed species may BLM forego formal consultation on the effects of its action on such species. Otherwise, BLM must formally consult on *all* species that may be adversely affected by the agency's authorization of an oil and gas leasing program.

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[392] DEIS vol. 2 at D-2.

[393] *See, e.g.*, "All the action alternatives would affect large areas of the designated terrestrial-denning unit of critical habitat for polar bears…" 3-133

[394] DEIS vol. 1 at 3-86.

[395] 50 C.F.R. § 402.14.

[396] *See* Interagency Cooperation—Endangered Species Act of 1973, as Amended; Final Rule, 51 Fed. Reg. 19949 (June 3, 1986)

BLM also recognizes that several species of marine mammals present in or adjacent to the program area are protected under the ESA: polar bear, bowhead whales, and bearded and ringed seals.[397] BLM does not, however, acknowledge its obligations to consult under the ESA for these species, and instead repeatedly points to the MMPA as the sole source for mitigation measures and procedural protections for these ESA-listed species. BLM must engage in formal consultation for all these species and BLM must explain what activities will be considered as part of that consultation process.

BLM's analysis assumes that issuance of oil and gas leases will have no direct impact on the environment, but BLM states it will consider "direct and indirect impacts" of leasing in this EIS.[398] These vague and confusing statements repeated throughout the document make it impossible to predict what oil and gas activities will be subject to Section 7 consultation prior to BLM conducting lease sales or issuing leases. The ESA makes it clear that BLM is obligated to consult on all reasonably foreseeable future effects from its leasing program on listed species. ESA regulations require that the consultation process consider "the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action . . . ." as well as the action's "cumulative effects."[399] Cumulative effects "are those effects of future State or private activities . . . that are reasonably certain to occur within the action area of the Federal action subject to consultation."[400] In interpreting these regulations, courts require agencies to consider all related impacts of agency actions that may affect listed species.[401] To comply with its Section 7 consultation requirements, BLM must consult not only on the leasing program, but on the impacts of exploration, production and development to federally protected species.

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[397] DEIS vol. 1 at 3-129, 3-130.

[398] *See, e.g.*, DEIS vol. 1 at 3-133. "Issuance of oil and gas leases under the directives of Section 20001(c)(1) of PL 115-97 would have no direct impacts on the environment because by itself a lease does not authorize any on the ground oil and gas activities; however, a lease does grant the lessee certain rights to drill for and extract oil and gas subject to further environmental review and reasonable regulation, including applicable laws, terms, conditions, and stipulations of the lease."

[399] 50 C.F.R. § 402.02.

[400] *Id.*

[401] *See, e.g.*, *Defenders of Wildlife v. Babbitt*, 130 F. Supp. 2d 121, 128–30 (D.D.C. 2001) (requiring consultation analysis to include impacts of all activities within the action area that affect listed species); *Conner v. Burford*, 848 F.2d 1441, 1453–54 (9th Cir.1988) (requiring consultation to consider not only oil and gas leases but also impacts from future exploration and development); *Nat'l Wildlife Fed'n v. Coleman*, 529 F.2d 359, 373 (5th Cir. 1976) (requiring analysis of residential and commercial development that was expected as a result of the construction of a highway as an indirect effect of highway construction) (internal quotations omitted); *see also San Luis & Delta-Mendota Water Auth. v. Locke*, 776 F.3d 971, 1009 (9th Cir. 2014) (referencing the facts at issue in *Nat'l Wildlife Fed'n*, 529 F.2d at 373, as a clear, oft-cited example of an "indirect effect").

In conclusion, the ESA requires federal agencies to give first priority to the declared national policy of conserving endangered and threatened species—i.e., by using all methods and procedures necessary to bring such species to the point at which ESA protections are no longer necessary.[402] BLM cannot lawfully authorize an oil and gas leasing program in the Arctic Refuge that is likely to jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat. Nor can it engage—or permit others to engage—in activities that will result in unauthorized incidental take of listed species. These requirements are put into practice through the Section 7 consultation process. The draft EIS fails to explain how BLM will comply with these important substantive and procedural legal requirements, in violation of NEPA's implementing regulations. [403] At this time, it does not appear that BLM has completed formal consultations under the ESA. Before the agency can make its final decision as memorialized in the Record of Decision, it must complete consultations under Section 7 and obtain biological opinions (or written NLAA concurrences) from NMFS and FWS. It must also fully explain in the Final EIS how it has ensured that its considered alternatives and its ultimate choice of alternatives, as reflected in the ROD, will or will not achieve the requirements of the ESA.

2. BLM Fails to Analyze How its Oil and Gas Program and Lease Sales Will Comply with the Marine Mammal Protection Act.

The draft EIS also fails to discuss how BLM will ensure compliance with the Marine Mammal Protection Act of 1972 (MMPA).[404] In their scoping letter, Groups identified the need for BLM to ensure that the leasing program meets the agency's obligations under the MMPA as a key issue to address.[405] Similar to the ESA, jurisdiction of the MMPA is shared by NMFS and the FWS (generically, "the Service"). For marine mammal resources relevant to the Coastal Plain, FWS has jurisdiction over polar bears and walrus while NMFS has jurisdiction over seals, porpoises, and whales.

Congress enacted the MMPA in 1972 based on its finding that "marine mammals have proven themselves to be resources of great international significance, esthetic and recreational as well as economic[.]"[406] The MMPA's stated purpose is "that [marine mammals] should be protected and encouraged to develop to the greatest extent feasible commensurate with sound policies of resource management and that the primary objective of their management should be to maintain the health and stability of the marine ecosystem."[407] To carry out its protective and conservation purposes, the MMPA imposes a moratorium on the taking of marine mammals.[408] Within the context of the MMPA, "take" is broadly defined as "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal."[409] Harassment is further defined

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[402] 16 U.S.C. § 1362(3).
[403] 40 C.F.R. § 1502.2(d).
[404] 16 U.S.C. §§ 1361–1389.
[405] Scoping Comment Letter at 17–18.
[406] *Id*. § 1361(6).
[407] *Id*.
[408] *Id*. § 1371(a).
[409] *Id*. § 1362(13).

as any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal (Level A harassment) or has the potential to disturb a marine mammal (Level B harassment).[410] Prohibited harassment includes any act that may disrupt behavioral patterns such as migration, breeding, and feeding.[411]

The MMPA contains several narrow exceptions to the moratorium on take. The MMPA authorizes the Service to allow upon request the incidental, but not intentional, taking of marine mammals that occurs during otherwise lawful activities.[412] To allow incidental take, the agency must find that the authorized activity will affect only "small numbers of marine mammals of a species or population stock," will have only a "negligible impact on such species or stock," will not have an "unmitigable adverse impact" on subsistence uses of such species or stock, and must prescribe means of "effecting the least practicable impact" on the species or stock to be taken.[413]

The Service may allow incidental take through an Incidental Take Regulation (ITR) or an Incidental Harassment Authorization (IHA). An ITR is a formal regulation promulgated by the Service, subject to a full administrative rulemaking process and allows the Service, upon request, to promulgate ITRs for a period up to five years. A Letter of Authorization is required to conduct activities pursuant to an ITR, including activities that may seriously injure or kill a marine mammal or result in harassment[414] An IHA is effective up to 1 year and can be used to authorize harassment only (i.e., injury or disturbance). The MMPA achieves its purpose of protecting marine mammals from unpermitted incidental take through this process of ITRs and IHAs. The EIS raises—but does not answer—many questions as to how BLM and future lessees will be able to comply with these important procedural and substantive requirements.

In describing the MMPA in Appendix D, BLM mischaracterizes the statutory program itself. The EIS states that "USFWS may issue a letter of authorization for incidental take, for up to 1 year, of small numbers of marine mammals, where the take would be limited to harassment (Incidental Harassment Authorization)."[415] This statement is incorrect. As described above, letters of authorization are issued pursuant to ITRs, which are not limited to harassment but may authorize injurious or lethal take. On the other hand, IHAs are individual one-year harassment-only authorizations. Furthermore, nowhere in Appendix D's description of MMPA requirements does BLM mention the process or requirements for ITRs. However, BLM assumes, without

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[410] *Id*. § 1362(18)(A).

[411] *Id.*

[412] *Id*. § 1371(a)(5).

[413] An activity: (i) must be "specified" and limited to a "specific geographical region," (ii) must result in the incidental take of only "small numbers" of marine mammals of a species or stock, (iii) can have no more than a "negligible impact" on species and stocks, and (iv) cannot have "an unmitigatable adverse impact on the availability of such species or stock for taking for subsistence uses." *See id*. §§ 1371(a)(5)(A)(i), (ii) (incidental take regulation); 1371(a)(5)(D)(i),(ii) (incidental harassment authorization).

[414] 50 C.F.R. § 18.27(f)(1).

[415] DEIS vol. 2 at D-4.

explanation, that ITRs will be necessary to authorize take of threatened polar bears.[416] BLM must not conflate these two very different and very important authorizations in its EIS.

Even more troubling is the confusion contained in the BLM's discussion of MMPA requirements in chapter 3. First, BLM seems to assume that polar bears—but no other marine mammal —are subject to MMPA protections. There is absolutely no mention of ITRs or IHAs in its analysis for whales, bearded seals, or ringed seals. This oversight is particularly troubling given that the EIS expressly recognizes that on-ice seismic activity "could be lethal to a small number of seals."[417] Such lethal take may only be authorized under the MMPA via issuance of ITR by NMFS. BLM fails to describe this requirement in either Appendix D or Chapter 3. Thus, BLM failed address how take of all marine mammals under its proposed oil and gas leasing program will comply with the MMPA.

Turning to polar bears, though BLM acknowledges the MMPA protections for this species, its analysis is either confusing or outright incorrect. FWS has issued incidental take regulations for the taking of polar bears by oil and gas activities in the Beaufort Sea and along the coast, but these regulations expressly exclude and do not take into consideration potential oil and gas activities in the Arctic Refuge.[418] BLM repeatedly relies on the idea that ITRs will prevent harm to polar bears from leasing impacts, in some cases relying upon ITRs as the *sole* source of mitigation of impacts to polar bears.[419] However, BLM does not expressly state whether the agency believes an ITR will be required for oil and gas leasing on the Coastal Plain. Groups are not aware at this time of any application for an ITR under consideration by the FWS for purposes of Coastal Plain lease sales. (Groups understand that there is an ITR under consideration for 3-dimensional seismic surveys, but not leasing.[420]) These characterizations of the ITR process and the protections it provides to polar bears are improper and misleading to the public. BLM must clarify whether it believes ITRs or IHAs will be required for leasing activities. Without clearly articulating when and for what activities ITRs will be issued, BLM cannot assume future mitigation measures will be put in place via these ITRs or fully comply with its NEPA obligation to "state how alternatives considered in it and decisions based on it will or will not achieve the requirements [of] other environmental laws and policies."[421]

Moreover, BLM relies on future ITR protections for polar bears without articulating what specific measures would be necessary or effective or explaining at what stage of oil and gas activities it assumes which ITR protections would be required. Similar to our concerns described

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[416] *See, e.g.*, DEIS vol. 1 at 3-134, 3-135, 3-137, 3-138, 3-146

[417] DEIS vol. 1 at 3-135.

[418] 81 Fed. Reg. 52276 (Aug. 5, 2016).

[419] *See* DEIS vol. 1 at 3-146 "The coastline survey required under Lease Stipulation 9 for this alternative would provide some specific information for planning purposes but would not specifically restrict activities that could disturb polar bears using coastal habitats. This would leave the regulatory requirements of ITRs as the sole mitigation measures in effect in the coastal area."

[420] *See infra* Part V.K.

[421] 40 C.F.R. § 1502.2(d).

in the ESA section above, BLM assumes for purposes of this EIS that leasing itself presents no direct impacts on the environment. Thus it is not clear at what stage—pre-leasing seismic testing, post-lease exploration, development, and/or production—that the potential protections from IHAs or ITRs (that are not yet developed) would come into play. BLM further seems to assume that any mitigation required by ITRs would preclude negative impacts to polar bears, which is unrealistic and contrary to recent studies and research.[422] The EIS must plainly state what specific mitigation measures it believes will be in place at which phase of oil and gas activities to protect marine mammals. BLM cannot not treat the MMPA as a loophole to avoid its obligation to fully consider impacts to marine mammals in this EIS.

3. BLM Must Comply with the Migratory Bird Treaty Act.

BLM must comply with the Migratory Bird Treaty Act (MBTA) in the development of the oil and gas program for the Coastal Plain.[423] More than 200 bird species found on the Arctic Refuge are migratory birds protected under the MBTA.[424] Congress enacted the MBTA in 1918 to implement a 1916 convention with Canada to protect migratory birds.[425] The United States later signed three more bilateral conventions with Mexico, Japan, and Russia to protect migratory birds.[426] After each convention, Congress amended the MBTA to cover the species addressed in the new convention. The MBTA makes it unlawful "at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, [or] possess . . . any migratory bird" unless otherwise permitted by regulation.[427] Any oil and gas activities that take or kill migratory birds on the Coastal Plain without authorization would violate the MBTA.[428] BLM must address how it will ensure compliance with the MBTA for an oil and gas program on the Coastal Plain, in particular with regards to the identification of the tracts to offer for lease. BLM has, to date, failed to ensure compliance with this statute.

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[422] *See infra* Part V.K.

[423] 16 U.S.C. §§ 703–712.

[424] *See* U.S. Fish and Wildlife Service, Arctic National Wildlife Refuge, Bird List, *available at*: https://www.fws.gov/refuge/arctic/birdlist.html.

[425] Convention between United States and Great Britain for the Protection of Migratory Birds, 39 Stat. 1702 (Aug. 16, 1916) (Canada Convention); *see also infra* Part V.G.3.

[426] Convention for the Protection of Migratory Birds and Game Mammals, 50 Stat. 1311 (Feb. 7, 1936) (Mexico Convention); Convention for the Protection of Migratory Birds and Birds in Danger of Extinction, and Their Environment, 25 U.S.T. 3329, T.I.A.S. No. 7990 (Mar. 4, 1972) (Japan Convention); Convention Concerning the Conservation of Migratory Birds and Their Environment, T.I.A.S. No. 9073 (Russia Convention).

[427] 16 U.S.C. § 703.

[428] The recent contrary M-Opinion (M-37050) conflicts with the longstanding Department of the Interior interpretation and multiple circuit court rulings on application and enforcement of the MBTA. *See* Solicitor Opinion M-37041, "Incidental Take Prohibited Under the Migratory Bird Treaty Act" (Jan. 10, 2017).

E. BLM'S LEASING PROGRAM FAILS TO CONSIDER TRANSBOUNDARY EFFECTS AND COMPLY WITH INTERNATIONAL TREATY OBLIGATIONS.

In 1997, the Council on Environmental Quality (CEQ) "determined that agencies must include analysis of reasonably foreseeable transboundary effects of proposed actions in their analysis of proposed actions in the United States."[429] The mandate to consider transboundary effects is also required under NEPA, where agencies are required "to consider reasonably foreseeable transboundary effects resulting from a major federal action taken within the United States."[430] CEQ specifically counseled federal agencies to use the scoping process to identify transboundary effects:

> [F]ederal agencies should use the scoping process to identify those actions that may have transboundary environmental effects and determine at that point their information needs, if any, for such analyses. Agencies should be particularly alert to actions that may affect migratory species, air quality, watersheds, and other components of the natural ecosystem that cross borders, as well as to interrelated social and economic effects."[431]

Consideration of transboundary effects of the proposed oil and gas leasing program in the Arctic Coastal Plain is also required by the 1987 International Agreement on Conservation of the Porcupine Caribou Herd between the U.S. and Canadian national governments. As acknowledged by the DEIS, the Agreement states that "when evaluating the environmental consequences of a proposed activity, the Parties will consider and analyze potential impacts, to the Porcupine Caribou Herd, its habitats and affected users of Porcupine Caribou."[432] However, as discussed below, the DEIS falls far short of meeting the BLM's duty to consider transboundary effects.

1. The DEIS Fails to Consider Transboundary Effects

The DEIS gives shockingly little attention to transboundary impacts. While the DEIS mentions the International Porcupine Caribou Agreement and devotes some attention to the indirect effects of oil and gas leasing on caribou and other migratory and transboundary species in Alaska, it almost entirely ignores such impacts in Canada.

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[429] Council on Env'l Quality Guidance on NEPA Analyses for Transboundary Impacts, http://ceq.hss.doe.gov/nepa/regs/transguide.html.

[430] *Manitoba v. Salazar*, 691 F. Supp. 2d 37 (D.D.C. 2010); *See also Swinomish Tribal Cmty. v. FERC*, 627 F.2d 499, 510-12 (D.C. Cir. 1980) (concluding that the agency took a "hard look" at the Canadian impacts of dam construction in Washington State); *Wilderness Soc'y v. Morton*, 463 F.2d 1261, 1261-63 (D.C. Cir. 1972) (granting intervenor status to Canadian environmental groups seeking to challenge the trans-Alaska pipeline under NEPA).

[431] Council on Env'l Quality Guidance on NEPA Analyses for Transboundary Impacts at 4.

[432] DEIS vol. 1 at 3-160.

The potential transboundary effects of oil and gas leasing associated with the Porcupine Caribou Herd (PCH) is of paramount concern, given that 85 percent of the PCH harvest occurs in Canada.[433] The data upon which the draft EIS's transboundary effects analysis relating to the PCH are based basically consist of the following:

(1) a map in Appendix A showing the range of the PCH and some affected communities in Alaska and Canada (Map 3-27);
(2) a pie chart in Appendix A comparing caribou harvests by Alaskan and Canadian users between 1992 and 1994 (Figure 3-7); and
(3) a one-page table in Appendix M showing the number of caribou harvested by seven Canadian user groups annually between 2010 and 2016 (Table M-21).

Based on this information, the DEIS makes broad observations about indirect transboundary impacts in the section on subsistence uses of caribou. The DEIS provides considerably less detailed information about impacts in Canada than in Alaska, even though 85 percent of the PCH harvest occurs in Canada. For example, Appendix M contains five pages of detailed caribou harvest data for 22 Alaska "caribou study communities" versus one page of summary data for seven Canadian "user groups."[434]

More egregious is the complete lack of information about transboundary impacts on Canadian communities in the Sociocultural Systems and Environmental Justice sections of the DEIS.[435] The DEIS largely focuses on impacts to four Alaskan communities — Kaktovik, Nuiqsut, Arctic Village, and Venetie — and never mentions any affected Canadian communities such as Old Crow, Aklavik, or Fort McPherson. The only potential hint of transboundary impacts of the action alternatives is a single sentence: "Changes related to disruption of subsistence activities and uses could extend outside the North Slope region to other communities that rely on the PCH and CAH herds."[436] Caribou do not perceive borders and BLM must acknowledge the calving grounds of the PCH are sacred to all Gwich'in people, whether Canadian or Alaskan.

The DEIS also omits important information about transboundary effects on the effectiveness of Canada's protection of PCH habitat. In particular, the DEIS fails to recognize that Canada has protected all of the PCH calving and post-calving habitat in the Canadian portion of the Arctic coastal plain, primarily through designation of the Ivvavik National Park (3,926 sq. mi., established in 1984) and Vuntut National Park (1,678 sq. mi., established in 1995), thus providing a total of 3.6 million acres of national park protection for the PCH in Canada.

The DEIS also fails to mention the PCH in the context of numerous declining caribou herds in Canada. Barren-ground caribou have recently been assessed as Threatened by the Canadian national government's Committee on the Status of Endangered Wildlife in Canada.

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[433] *Id.* at 3-168.
[434] DEIS vol. 2 at M-27–M-32. Contrast Table M-20 with Table M-21.
[435] DEIS vol. 1 at 3-178–3-202.
[436] *Id*. at 3-191.

While the DEIS discusses the status of three caribou herds in Alaska, the DEIS makes no mention of the imperiled status of other barren-ground caribou herds in Canada. The DEIS needs to discuss the PCH in its larger North American context to truly reflect transboundary impacts.

BLM has also failed to consider the transboundary impacts of Coastal Plain oil and gas development on migratory birds that migrate between the coastal plain and other countries. For example, shorebirds such as Dunlin that use the East Asian-Australasian Flyway are experiencing increased coastal development along migratory and wintering areas.[437] Development in the project area could exacerbate the pressures faced by Dunlin and other transboundary migratory birds.

2. BLM has Ignored Scoping Comments from Canadian Governments

The DEIS's lack of information and analysis of transboundary effects is particularly inexcusable given the large amount of input from Canadian governments and First Nations during the scoping process. Detailed comment letters came from the Vuntut Gwitchin Government in Old Crow, Northwest Territories Government in Yellowknife, Tr'ondek Hwech'in Government in Dawson City, and Yukon Government in Whitehorse, as well as the national Canadian government in Ottawa. Detailed comments were also submitted by a consortium of fish and wildlife management bodies established by the 1984 Inuvialuit Final Agreement between Canada and the Inuvialuit people, including the Inuvialuit Game Council, Wildlife Management Advisory Councils for North Slope and Northwest Territories, and the Fisheries Joint Management Committee. In addition, hundreds of individuals from Canada submitted scoping comments voicing concern about the transboundary impacts of the proposed oil and gas development in the Arctic Coastal Plain.

The DEIS fails to disclose that the Canadian governmental comments expressed grave concerns and opposition to oil and gas drilling in the Coastal Plain because of the potentially disastrous transboundary impacts on the PCH and the indigenous people that rely on the Herd for material, cultural, and spiritual sustenance. For example, the national government of Canada's scoping comment letter stated:

> Canada is concerned about the potential transboundary impacts of oil and gas exploration and development planned for the Arctic National Wildlife Refuge (ANWR) Coastal Plain, including impacts on shared species that migrate between our countries, as well as impacts on our Indigenous peoples, including their customary and traditional use of Porcupine Caribou. Canada is particularly concerned that oil and gas exploration development (including pre- and post-lease activities such as seismic and drilling exploration and transportation of oil and gas from the Coastal Plain) will negatively affect the long-term reproductive success of the Porcupine Caribou herd. This may occur by direct effects such as behavioral changes and physiological stress, and by affecting the habitat that the herd relies on for calving, post-calving, and migration and insect relief.

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[437] Szabo, J. K., C.-Y. Choi, R. S. Clemens, and B. Hansen. 2016. Conservation without borders–solutions to declines of migratory shorebirds in the East Asian–Australasian Flyway. *Emu* 116:215-221.

Similarly, the Vuntut Gwitchin Government's scoping comments stated:

> The Vuntut Gwitchin view the prospect of oil and gas exploration and development in the Arctic Refuge Coastal Plain with deep alarm. Oil and gas disturbance, noise, smells, pollution, roads, pipelines, and massive infrastructure threaten the intricate wholeness and habitat integrity of the calving and post-calving grounds, migratory movements, and the long-term stability of the Porcupine Caribou herd. A threat to the health of the herd is a threat to our community and our way of life.

The DEIS also ignores the concerns and information provided by the Porcupine Caribou Management Board (PCMB), which was established in 1985 as an advisory board appointed by the national, territorial, and indigenous Canadian governments representing traditional users of the Porcupine Caribou Herd within the Yukon and Northwest Territories. The Chair of the PCMB is also a member of the International Porcupine Caribou Board (discussed below). In its scoping comments, the PCMB stated that it is "extremely concerned about any industrial development" in the historical calving grounds of the Coastal Plain. The PCMB comments included maps showing PCH calving areas in both Alaska and Canada, along with parks and other protected areas in both countries. In contrast, the DEIS map of PCH calving areas cuts off at the international boundary, [438] and none of the DEIS maps show parks and protected areas in both Alaska and Canada. BLM violates the mandate of the International Treaty for the United States and Canada to manage the PCH in a sustainable way. BLM's failure to account for the PCH's entire range during development of the DEIS is inconsistent with this mandate.

3. *BLM's Rushed Process Bypasses Important Canadian Input Required by International Treaty*

An important international mechanism for consideration of transboundary effects is provided in the International Agreement on Conservation of the Porcupine Caribou Herd. The Agreement established an International Porcupine Caribou Board to "make recommendations and provide advice on those aspects of the conservation of the Herd and its habitat that require international co-ordination," including "the identification of sensitive habitat requiring special consideration."[439] The Agreement specifies that the U.S. and Canada will "promptly notify the Board of proposed activities that could significantly affect the conservation of the Porcupine Caribou Herd or its habitat and *provide an opportunity to the Board to make recommendations*."[440] The DEIS (at pages 1-5 and 3-160) briefly acknowledges the existence and objectives of the International Treaty and PCH Board, but it completely fails to address how the proposed oil and gas leasing will comply with the treaty's terms or the board's advice and recommendations.[441]

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[438] DEIS vol. 2 at Appendix A, Map 3-21.

[439] Agreement Between the Government of Canada and the Government of the United States of America on the Conservation of the Porcupine Caribou Herd**,** E100687 - CTS 1987 No. 31 (July 17, 1987) *available at* http://www.treaty-accord.gc.ca/text-texte.aspx?id=100687.

[440] *Id*. (emphasis added).

[441] DEIS vol. 1 at 1-5, 3-160.

In the BLM's rush to meet its unrealistic timeline to lease the Coastal Plain, the BLM has failed to provide the Board with a reasonable opportunity to make recommendations to protect the Herd from the harmful effects of oil and gas development. The U.S. government only recently filled its vacancies on the Board and the Board has just held one meeting so far, in Kaktovik in August 2018. Yet, the BLM has moved ahead with the DEIS without giving the Board an opportunity to make recommendations that could avoid or significantly mitigate transboundary effects on the Herd and users of the Herd. Once the Board makes its recommendations, the BLM will need to revise the DEIS to evaluate a new alternative based on the Board's recommendations.

Similarly, the BLM was not willing to wait for the results of an important new scientific study of the Porcupine Caribou Herd prepared by Canadian wildlife biologists for various Canadian governmental entities and submitted to BLM.[442] This study provided relevant new information that helps to fill many gaps about cross-boundary impacts in the DEIS. This includes a science-based risk assessment of PCH vulnerability to proposed Coastal Plain development that quantifies expected population-level consequences for the PCH and implications for Canadian subsistence hunters under baseline conditions, the DEIS action alternatives, and full Coastal Plain development. BLM needs to consider this new information in a revised DEIS, as well as build upon it to provide a more robust analysis of impacts to caribou and subsistence uses in both the United States and Canada.[443]

4. BLM Denied Canadian Requests for Public Meetings

The Canadian governments requested that the BLM conduct public hearings in Canadian communities such as Whitehorse, Old Crow, Inuvik, Fort McPherson, and Aklavik. Likewise, the PCMB scoping comment letter states: "The PCMB requests, on behalf of [national, territorial, and First Nation governments], that meetings be held in Porcupine Caribou user communities in Canada to consider the impacts of development in the core calving area of this shared herd, and how subsistence harvesters may be adversely affected."

If the BLM had honored the Canadian governments' request to hold public meetings in affected communities, the BLM would have gathered a wealth of information about transboundary effects for consideration in the DEIS. Unfortunately, the BLM opted to ignore the opportunity to obtain this potentially valuable community-level information during the scoping stage. The BLM has also failed to hold any public meetings in Canada during the public comment period on the DEIS.

The BLM cannot continue to disregard Canadian input about transboundary impacts. To help correct this unacceptable problem, the BLM should re-open the public comment period on the DEIS and work with the Canadian governments to organize public meetings in all affected Canadian communities. Additional meetings in Canada should be held when the BLM revises the

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[442] *See* Russell and Gunn (2019).

[443] For more information on the Canadian study and BLM's failure to adequately analyze impacts to caribou, *see* Part V. I. (caribou impacts section).

DEIS to consider the Yukon government's scientific study and the International Porcupine Caribou Board's recommendations.

5. *The DEIS Fails to Consider International Agreements on the Conservation of Polar Bears*

In assessing the effects of an oil and gas program on the Coastal Plain, BLM is required to consider the transboundary impacts on polar bears in the context of our international obligations under the 1973 Agreement on the Conservation of Polar Bears and the 1988 Inuvialuit-Inupiat Polar Bear Management Agreement in the Southern Beaufort Sea.[444] BLM has failed to do so.

The United States, along with Canada, Denmark (on behalf of Greenland), Norway and the Russian Federation, is a Party to the 1973 Agreement on the Conservation of Polar Bears. The Agreement requires these Polar Bear Range States to take appropriate action to conserve polar bears and protect their habitat.[445] Specifically, this multilateral agreement requires that each Party "shall take appropriate action to protect the ecosystems of which polar bears are a part," with special attention to denning areas, feeding sites, and migration corridors, and manage polar bears based on best available science through coordinated research. The United States signed the agreement on November 15, 1973, in Oslo, Norway and ratified it on September 30, 1976; it entered into force in this country on November 1, 1976.[446] The Polar Bear Range States approved a collaborative Circumpolar Action Plan (CAP) in 2015, which emphasizes reduction of threats (especially climate change and human caused mortality), cooperation among member parties, monitoring and adaptive management.[447] The 1973 Agreement also relies on the efforts of each Party to implement a conservation plan for polar bears within their jurisdiction. The FWS Polar Bear Conservation Plan serves as the United States' contribution to the CAP.

The Inuvialuit Game Council and the North Slope Borough Fish and Game Management Committee signed the Inuvialuit-Inupiat Polar Bear Management Agreement in the Southern Beaufort Sea (I-I Agreement) in 1988 and reaffirmed it in 2000.[448] Polar bears harvested from the communities of Barrow, Nuiqsut, Kaktovik, Wainwright and Atqasuk are considered part of the SBS population and are thus subject to the terms of this voluntary Native-to-Native agreement between the Inupiat from Alaska and the Inuvialuit in Canada. The I-I Agreement

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[444] Council on Environmental Quality Guidance on NEPA Analyses for Transboundary Impacts, http://ceq.hss.doe.gov/nepa/regs/transguide.html.

[445] Agreement on the Conservation of Polar Bears (Nov. 15, 1973), *available at* http://pbsg.npolar.no/en/agreements/agreement1973.html.

[446] *Id.*

[447] Polar Bear Range States, Circumpolar Action Plan: Conservation Strategy for Polar Bear (2015) (a product of the representatives of the parties to the 1973 Agreement for the Conservation of Polar Bears (Norway, Canada, Greenland, the Russian Federation and the United States)).

[448] Inuvialuit-Inupiat Polar Bear Management Agreement in the Southern Beaufort Sea, Mar. 4, 2000.

provides for annual quotas and recommendations concerning protection of denning female polar bears, family groups and methods of harvest. Quotas are based on estimates of population size and age-specific estimates of survival and recruitment. The I-I Agreement established a Joint Commission to implement it, and a Technical Advisory Committee, consisting of biologists from agencies in the U.S. and Canada involved in polar bear research and management, to collect and evaluate scientific data and make recommendations to the Joint Commission.[449] BLM has failed to consider how an oil and gas program in the Coastal Plain and its impacts on SBS polar bears will affect the quotas and management protocols established through the I-I Agreement.

The Coastal Plain of the Arctic Refuge provides very important habitat for the Southern Beaufort Sea population (SBS) of polar bears, whose range includes Canada. The Coastal Plain has the highest density of on-shore polar bear dens found anywhere in America's Arctic, and more and more bears are using onshore habitat as sea ice diminishes due to climate change. Multiple scoping comments from Canadian territorial and national governments and wildlife agencies stress the importance of SBS bears to Inuvialuit culture, and in turn the importance of the Coastal Plain to SBS bears.[450] According to multiple Canadian wildlife agencies, "[p]olar bears are highly valued in Inuvialuit mythology, spirituality, storytelling, art, song and other forms of cultural expression, and the well-being of this population is extremely important because of the ongoing relationship Inuvialuit have with these animals."[451] The EIS fails to analyze how the proposed oil and gas leasing program will affect polar bears and subsistence users in Canada. Additionally, the EIS fails to address how BLM will ensure adequate coordination with Canada to protect polar bears that will be affected by oil and gas leasing in the Arctic Refuge Coastal Plain.

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[449] *Id*.

[450] *See, e.g.,* Government of Canada, Scoping Comment on the Notice of Intent to Prepare an Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program, Alaska (June 18, 2018); Government of the Northwest Territories, Scoping Comment on the Notice of Intent to Prepare an Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program, Alaska (June 7, 2018); Government of Yukon, Scoping Comment on the Notice of Intent to Prepare an Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program, Alaska (June 18, 2018); Inuvialuit Game Council (IGC), Wildlife Management Advisory Council (North Slope) (WMAC(NS)), Wildlife Management Advisory Council (Northwest Territories) (WMAC(NWT)) and the Fisheries Joint Management Committee (FJMC), Scoping Comment on the Notice of Intent to Prepare an Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program, Alaska (June 18, 2018) (Canadian Wildlife Agencies' Comments); Government of the Northwest Territories, Scoping Comment on the Notice of Intent to Prepare an Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program, Alaska (June 7, 2018).

[451] Canadian Wildlife Agencies' Comments at 7.

6. *The DEIS Fails to Analyze the Transboundary Impacts of Oil and Gas Development on Qualification for World Heritage Site Designation.*

Under the 1972 World Heritage Convention, an international treaty, the United Nations Educational, Scientific and Cultural Organization (UNESCO) evaluates and designates natural and cultural heritage sites as World Heritage Sites that have "outstanding universal value" based on ten criteria.[452] These sites are nominated by a country or by multiple countries. We requested at scoping that BLM analyze how oil development in the Coastal Plain would adversely impact the potential for the Arctic Refuge to be recognized as a binational World Heritage Site along with adjacent Canadian lands that currently are on the "Tentative List" for World Heritage Site designation.

Eligible sites must meet at least one of the ten World Heritage List criteria, so it is very significant that the binational region including the Arctic Refuge appears to meet at least six of the ten criteria. Indeed, the Arctic Refuge was previously on the United States' Tentative List for nomination.[453] The region has outstanding cultural universal value for Alaska Natives and First Nations peoples, especially the Gwich'in, and outstanding natural universal value for its scenic, geologic, and ecologic characteristics. Specifically, the Refuge likely satisfies criteria iv-v and vii-x:

> Cultural –
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> (iv) to be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history;
> (v) to be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change;
>
> Natural –
>
> (vii) to contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;
> (viii) to be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features;
> (ix) to be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals;
> (x) to contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species

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[452] UNESCO, Operational Guidelines for the Implementation of the World Heritage Convention (July 12, 2017), available at: https://whc.unesco.org/en/guidelines/.

[453] See http://whc.unesco.org/archive/websites/arctic2008/usa.html

of outstanding universal value from the point of view of science or conservation.

Becoming a World Heritage Site has important value for increased tourism and wildlife protection. BLM needs to analyze the impacts to the U.S., including to Alaskan tourism and to the Porcupine Caribou Herd, of the Arctic National Wildlife Refuge no longer meeting the criteria to become a World Heritage Site due to oil development on the Coastal Plain. BLM also must analyze whether such development will have transboundary impacts on Canada's nomination of the adjacent Ivvavik/Vuntut/Herschel Island (Qikiqtaruk) as a World Heritage Site. The DEIS, however, does not even mention the Arctic Refuge's qualification for World Heritage Site designation or the fact that Canada has nominated the adjacent site (both important components of the affected environment), much less perform any analysis of the foreseeable domestic and transboundary impacts that oil and gas development will have on the areas' potential to become a World Heritage Site. BLM must perform such an analysis.

IV. BLM'S ANALYSIS OF IMPACTS FROM ALL PHASES OF OIL AND GAS DEVELOPMENT IS DEFICIENT

A. THE REASONABLY FORESEEABLE DEVELOPMENT SCENARIO IS FAULTY

BLM's reasonably foreseeable development (RFD) scenario in Appendix B purportedly provides the basis for its impacts analysis and comparison of alternatives. The RFD suffers from a number of significant flaws that render it and the resulting impacts analysis deficient in ways that may seriously misrepresent the potential impacts of the leasing program. The RFD must be revised and the impacts analysis redone in a revised EIS.

First, the RFD ignores best available scientific information and data from the U.S. Geological Survey (USGS). It is well recognized that because there has been very little oil and gas exploration within the Coastal Plain, it is difficult to identify the highest potential areas and likely total oil production. The limited information available for the approximately 2,600 square miles of Coastal Plain is: 1,400 miles of 2D seismic collected by a petroleum industry consortium in 1984–86; one well drilled in 1985–86 with data that are confidential; data from a number of other wells to the west and north; and geological and geophysical field work over a number of years. In 1998, USGS analyzed the available data and produced a "Petroleum Assessment" paper,[454] the most recent comprehensive analysis. BLM used the findings of this paper in developing its RFD. However, BLM ignored more recent USGS work to reprocess the 2D seismic data and conduct fieldwork. That information is not referenced in the RFD or the DEIS and must be included. Moreover, USGS is not a cooperating agency in the leasing EIS and, to our knowledge, did not participate in developing the RFD or DEIS — despite USGS' critical knowledge of the best available information that must inform the RFD.[455]

Second, the RFD's reliance on an estimated oil production amount of 3.4 billion barrels of oil (BBO), for example to determine oil spill risk, is flawed. As described below, the basis for that figure is opaque, likely includes oil from non-federal land, reflects production during only a

[454] USGS 1998, *available at* https://pubs.usgs.gov/fs/fs-0028-01/fs-0028-01.htm.
[455] *See supra* Part III.B.3.

fraction of the time period BLM assumes production will occur, and is towards the bottom end of the range of production BLM describes elsewhere in the DEIS.

The 3.4 BBO figure uses a value for production that includes Alaska Native lands and state waters. USGS's 1998 paper provided two estimates of technically recoverable oil: one including Native lands near Kaktovik and the three miles of state waters north of the Coastal Plain, and one not including those lands and waters.[456] The two corresponding results of USGS's modelling were:

1. Technically recoverable oil likely is between 5.7 and 16.0 billion barrels of oil (BBO) in the assessment area including Native lands and state waters. There is a 95 percent probability of over 5.7 billion barrels of oil and a 5 percent probability of over 16.0 BBO.

2. Technically recoverable oil likely is between 4.3 and 11.8 BBO in the assessment area not including Native lands and state waters. There is a 95 percent probability of over 4.3 BBO and a 5 percent probability of over 11.8 BBO. This second scenario more closely aligns with the definition of the Coastal Plain in the Tax Act and ANILCA § 1002.

In May 2018, following passage of the 2017 Tax Act, the Energy Information Administration (EIA) issued a paper entitled "Analysis of Projected Crude Oil Production in the Arctic National Wildlife Refuge."[457] This analysis utilized various factors to "determine the economic viability"[458] of Alaskan oil production based on the technically recoverable oil estimates under the first scenario (including Native lands and state waters) from USGS's 1998 paper as well as a number of assumptions.[459] Using these assumptions, the limited data used by USGS, and its internal models, EIA projected mean oil production from the Coastal Plain for the period 2031–2050 at 3.4 BBO.[460] This figure is essentially impossible for the public to verify as it was developed using EIA's internal models. Moreover, EIA's estimate only projects out to 2050 and not the much longer 85-year development scenario used by BLM. It is also in the bottom quartile of the range of production, 1.5 to 10 BBO, that BLM uses elsewhere in the DEIS,[461] which most likely derives from Table 1 of the EIA paper showing mean Technically Recoverable Crude Oil Resources ranging from 1.4 to 10.4 BBO.[462] BLM needs to verify the 3.4 BBO figure and the 1.4 and 10.4 BBO figures by analyzing and disclosing the details of EIA's models, including how and why it uses USGS' estimated production values that include oil produced from Native lands and state waters.

Because of the wide range of oil production values BLM uses, i.e., from 1.5 to 10 BBO,[463] BLM also should utilize a range of oil production values in its impact analyses to take

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[456] *See* Figure 2 in USGS 1998.
[457] EIA 2018, *available at* https://www.eia.gov/outlooks/aeo/pdf/ANWR.pdf.
[458] EIA 2018 at 4.
[459] *Id.*
[460] DEIS vol. 2 Appendix B at B-1.
[461] DEIS vol. 2 Appendix B at B-18.
[462] EIA 2018 at 5.
[463] *Id.* at B-18.

into account the uncertainty of the estimates. Moreover, BLM should consider developing a range of alternative development scenarios based on different predictions of the available petroleum resource.

Third, questionable assumptions in the RFD likely result in BLM underestimating development impacts.

- BLM bases its RFD on factors that the public cannot verify or test — things like "its own knowledge of the almost entirely unexplored petroleum endowment of the Coastal Plain" and its "professional judgment."[464] It must do a better job explaining the basis for its assumptions. For example, it cites the "history of development in the National Petroleum Reserve—Alaska" as one of the bases for the scenario.[465] BLM should explain more fully why it is reasonable to assume that development in the Coastal Plain will approximate development in a geographically and geologically very different region of Alaska. For example, there are no data showing the viability of Nanushuk formation oil in the Refuge, even though the Nanushuk formation is the basis for development of the NPR-A's Willow project.

- BLM does not describe how its development scenario infrastructure predictions relate to the potential oil it estimates could be produced from the Coastal Plain. This is an important omission. BLM states that the range of potential oil production is from 1.5 to 10 BBO.[466] Presumably the infrastructure required to produce these very different amounts of oil, and the amount of likely spilled oil, differs dramatically. BLM should explain how the estimates of the amount of the technically recoverable oil resource in the Coastal Plain connects with the scenario it uses to assess impacts.

- Table 1 from the EIA report shows that there likely would be 3 anchor fields if the field sizes were at least 400 million barrels of oil, and that there would be 8 anchor fields if the field sizes were merely 10 percent less (i.e., at least 360 million barrels of oil).[467] Thus, if industry chooses to develop slightly smaller fields due to any number of factors (e.g., if the projected price of oil was slightly higher or if the oil discovered is of higher quality than expected), there would be far more development across the Coastal Plain than assumed in the RFD scenarios and the DEIS alternatives. As a result, BLM's assertion that, "[t]o minimize the chance that the . . . impact analysis will understate potential impacts, [its RFD scenarios] represent optimistic high-production, successful discovery and development scenarios in a situation of favorable market prices"[468] is not supported. The RFD must include scenarios that accurately reflect different potential ways of developing oil fields, such as through smaller and more numerous fields that could have very different levels and types of impacts. Relatedly, BLM should also use a

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[464] *Id.* at B-7.
[465] *Id.*
[466] DEIS vol. 2 Appendix B at B-18.
[467] EIA 2018 at 5.
[468] DEIS vol. 2 Appendix B at B-2.

development scenario based on a petroleum estimate that represents potential maximum impacts, which is particularly appropriate for a programmatic decision with the degree of uncertainty that BLM is facing.

- BLM appears to assume that no gas will be developed in the Coastal Plain because there does not yet exist a transmission pipeline to bring natural gas to market from the North Slope.[469] However, plans for such a pipeline are presently being developed through a Federal Energy Regulatory Commission process. In light of the long time horizon for the development scenario and the current planning process for delivering North Slope gas to market, BLM should consider assessing fully the potential effects of natural gas production in its development scenario.

- BLM states that production wells would be fractured to stimulate initial production, but assumes that there will be no oil or gas developed on the Coastal Plain through hydraulic fracturing of shale. This type of development would be much denser and would require different production processes than conventional oil and gas development including the need to utilize and manage large quantities of sand, water, and hydraulic fracturing chemicals. BLM should assess fully the potential effects of fracturing during initial production and fir shale oil or gas development in a revised draft EIS.

- BLM does not vary the amount of oil that would be produced among the different alternatives it assesses.[470] It is reasonable to assume that varying the areas available for leasing would vary the amount of oil that could be discovered and developed in the Coastal Plain. BLM should consider utilizing a range of oil production values in alternative scenarios. Relatedly, if BLM is assuming that one area or play is likely to be developed first — like the Topset play —BLM should pay particular attention to the effects of this and fully evaluate the likely development and associated impacts now, as it is more likely to happen.[471]

Fourth, the RFD unreasonably assumes that development may occur in low potential areas. The Tax Act requires BLM to hold two lease sales that offer at least 400,000 acres each in "areas that have the highest potential for the discovery of hydrocarbons." As described above, the Tax Act does not require low hydrocarbon potential areas to be made available, and BLM should eliminate them. Relatedly, the EIS assumes that there will be multiple lease sales held while the Tax Act only mandates two.[472] It is unclear if and how BLM's RFD is based on more than two lease sales, but BLM should clarify this.

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[469] DEIS vol. 2 Appendix B at B-2.
[470] DEIS vol. 1 at 3-38, vol. 2 Appendix. B at B-18.
[471] DEIS vol. 2 Appendix B at B-5.
[472] DEIS vol. 2 Appendix B at B-8.

B. THE REASONABLY FORESEEABLE DEVELOPMENT SCENARIO SHOULD INCLUDE A VISUALIZATION.

The DEIS does not contain a map drawn to scale showing the realistic and sprawling nature of oil development under the different alternatives. Such a map – which could use symbols to show well pads, pipelines, gravel and ice roads and gravel mines, Central Processing Facility and other building infrastructure – would allow the public to visualize and comment on the extensive nature of the development. Oil development infrastructure is likely to be more dense in the portion of the Coastal Plain with high hydrocarbon potential and less dense in areas with lower hydrocarbon potential, for example.

The public has a right to full disclosure of the impacts that would result from each of the alternatives. Such a map would provide the public with a more realistic understanding of the nature of the development, especially because it would counter the misimpression that only 2,000 acres of the Coastal Plain will be impacted. BLM should include a map in a revised draft EIS showing the build-out of all likely oil development on the Coastal Plain following the lease sales.

C. THE DEIS FAILS TO ADEQUATELY ANALYZE IMPACTS ASSOCIATED WITH INFRASTRUCTURE.

1. Planned vs. Unplanned Development

The DEIS does not discuss any means to ensure that oil and gas infrastructure development is consolidated and avoids duplicative or unnecessary infrastructure such as excessive gravel road mileage through lack of coordination among fields, multiple CPFs owned by different companies, etc. When unnecessary infrastructure is built through lack of planning and oversight by BLM, the infrastructure footprint is not minimized and environmental impacts are greater than they would otherwise be. The DEIS states that "operators would enter agreements to share road and pipeline infrastructure, where feasible,"[473] but offers no mechanism to ensure that sharing occurs, e.g., through required coordination of development plans by multiple operators. BLM should ensure there is an administrative means that minimizes the overall footprint of the infrastructure beyond relying only on the 2,000 acre limit.

2. Pipeline Infrastructure

Because multi-phase (i.e., oil, gas and produced water) pipelines are not well-regulated either by the federal government or by the state, there is a need for a new ROP addressing pipeline safety for these lines. Releases from multi-phase lines in remote, sensitive parts of the Arctic Refuge would be particularly damaging to the environment as compared to spills that have been analyzed near Prudhoe Bay infrastructure. BLM should include an ROP that requires annual smart-pigging (i.e., inline inspection) of multi-phase pipelines to detect wall thinning and reduce the likelihood of releases. Moreover, BLM should ensure that a ROP for pipelines

[473] DEIS vol. 2 Appendix B at B-8.

includes specifics on the performance capabilities of leak detection systems and the required locations of shut-off valves to prevent sizeable releases into surface waters.

Additionally, BLM should include an ROP that requires staging of emergency response equipment at key locations on the Coastal Plain to allow responders to rapidly address oil pipeline spills, including for pipelines that do not have roads that parallel them.

As discussed in the section above on Planned vs. Unplanned Development, BLM does not appear to have a mechanism to ensure that pipeline mileage is minimized through consolidated infrastructure. This is especially important if a CPF is located west of the Coastal Plain as there may be multi-phase pipeline segments that are many miles long. Again, BLM should ensure there is an administrative means that minimizes the overall footprint of, in this case, multi-phase pipeline infrastructure.

3. Earthquakes

The DEIS states that "the Coastal Plain is in an area of relatively low seismic risk. This risk may be revised in the future, based on August 2018 seismic activity…"[474] Since the August 12, 2018 magnitude 6.4 earthquake that occurred 52 miles southwest of Kaktovik, "the largest earthquake ever recorded north of the Brooks Range in Alaska,"[475] there have been numerous earthquakes in the region above magnitude 4.0. BLM needs to work with USGS' seismic experts to review aftershock and other more recent data compiled since August 2018 and reassess the likelihood of seismic risk in the region. That reassessment should occur now, to inform this EIS. BLM then must ensure, through ROPs, that all oil and gas infrastructure is designed and constructed to address that risk.

4. Oil and Gas Releases (Spills, Blowouts, Venting and Flaring)

The DEIS states that "[i]n the NPR-A the average crude oil spill rate from 1985 to 2010, for large (500 barrels or greater) spills is 0.65 spills per BBO produced, with an average spill size of 1,229 barrels. During that time the North Slope produced a total of 12.40 BBO. The historic small (less than 500 barrels) crude oil spill rate from 1989 to 2009 for the Alaska North Slope is 187 spills per billion barrels produced, with an average spill size of 2.8 barrels (117.6 gallons). During this time 9.4 BBO were produced (BLM 2012)."[476] This analysis is inadequate as the spill data have not been updated by BLM for roughly ten years. We request that BLM use the most recent North Slope spill data available from the Alaska Department of Environmental Conservation (DEC) for its spill analysis.

Moreover, the table presenting the relative rate of occurrence for spills is taken from a 2004 EIS.[477] There is no indication that BLM has updated this information or otherwise

[474] DEIS vol. 1 at 3-29.
[475] DEIS vol. 1 at 3-30.
[476] DEIS vol. 1 at 3-38.
[477] DEIS vol. 1 at 3-64.

confirmed whether it is still correct. The source of that information — the 2004 Alpine Satellite Development Plan EIS — indicates that the information is not only out of date, but questionable to begin with. In describing the presentation of this information in the Alpine EIS, BLM stated that it is a subjective evaluation, not necessarily a statistically-based quantitative assessment.[478] BLM must ensure that its spills information and analysis is based on up-to-date information and scientifically sound.

Another source of spill data and analysis that BLM should utilize is a State of Alaska report completed in November 2010.[479] The authors reviewed over 6,000 North Slope spills from 1995–2009 and the report showed that there were 44 loss-of-integrity spills each year[480] with 4.8 of those each year greater than 1,000 gallons,[481] meaning that there is a spill of 1,000 gallons or more nearly every two months.

BLM also did not analyze in the draft EIS the biggest, most damaging spills. BP's March 2006 spill of over 200,000 gallons was the largest crude oil spill to occur in the North Slope oil fields and it brought national attention to the chronic nature of such spills. Another pipeline spill in August 2006 resulted in shutdown of BP's production in Prudhoe Bay and brought to light major concerns about systemic neglect of key infrastructure. BLM needs to analyze likely impacts from the worst-case spills.

Additionally, as discussed above, the estimated quantity of crude oil spilled is correlated with the amount of oil produced. BLM needs to utilize the 1.5-10 BBO[482] range of likely oil production and calculate the likely range of crude oil that will be spilled. BLM also states that the spill rate may decrease over time as industry practice changes.[483] This is an unsupported conclusion. Spills have occurred and continue to occur across the North Slope. BLM must explain its basis for this conclusion with specificity.

Another missing component in BLM's analyses that it must include in the EIS are produced/process water and hazardous materials spills. These releases can damage the tundra and surface waters and are required to be reported to Alaska DEC. BLM should utilize DEC's produced/process water and hazardous materials spill reports to compile additional spill analysis and analyze these likely spills and impacts.

There have been several blowouts — also known as uncontrolled releases from wells — in recent years on the North Slope. BP had two blowouts from existing production wells in April 2017 and December 2018, and Repsol had a blowout in February 2012 from an exploration well.

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[478] Alpine Satellite Development Plan Final EIS sec. 4 at 379, 381 (Table 4.3.2-2).

[479] Nuka Research & Planning Group, LLC, North Slope Spills Analysis: Final Report on North Slope Spills Analysis and Expert Panel Recommendations on Mitigation Measures, for the Alaska Department of Environmental Conservation, 244 pp., retrieved November 1, 2017 from dec.alaska.gov/media/7570/nssa-final-report.pdf. (November 2010).

[480] *Id.*, p. 21.

[481] *Id.*, p. 23.

[482] DEIS at B-18.

[483] DEIS vol. 1 at 3-39.

All of these blowouts had some oil released and posed worker safety hazards. Table 3-15 shows the risk of blowouts with oil spills of any size to be Very Low. Given these three recent onshore incidents on the North Slope, the risk of a blowout with full-scale development on the Coastal Plain does not appear to be Very Low as stated in the DEIS. Working with the Alaska Oil and Gas Conservation Commission, BLM should reassess this risk in revising the EIS.

BLM should take into account the fact that the Coastal Plain would be a frontier development area with many more unknowns than fields to the west, so blowout data for those fields may underrepresent the risk of drilling in the Coastal Plain, especially at a time when there is known permafrost thawing. BLM also should assess the risks and consequences of spills in or reaching nearshore waters in the Beaufort Sea or occurring in rivers during times when there is running water not covered by ice. This is lacking from the EIS.

The release of vented and flared gas from oil and gas operations contributes to greenhouse gas emissions, with vented gas contributing as methane and flared gas causing localized impacts from particulates deposited on snow and ice as black carbon. The Alaska Oil and Gas Conservation Commission collects data on vented and flared gas releases greater than one hour. BLM should analyze these data — similar to how BLM analyzed spill data for the North Slope — and quantify the rate and total projected quantity of these releases. Additionally, BLM should reduce the releases of vented and flared gas to the maximum extent through stringent requirements to reduce venting and flaring.

5. Gravel

As explained below, there are also significant impacts from gravel mining that are not properly accounted for in BLM's RFD. BLM must account for all impacts from gravel mining in its analysis.

6. Worker Safety

The EIS needs to analyze the likelihood of worker injuries and deaths related to oil and gas development on the Coastal Plain. For example, this past December a worker on the North Slope died from an "equipment accident."[484]

D. BLM'S CONSIDERATION OF, AND RELIANCE ON, RECLAMATION IS INADEQUATE.

BLM's consideration of reclamation and the related impacts to tundra and vegetation in the EIS is completely lacking. BLM indicates that it will rely on reclamation to allow further expansion of impacts beyond just the 2,000-acre limitation in the Tax Act. It also states in required operating procedure 35 that it will "[e]nsure ongoing and long-term reclamation of land

[484] https://www.adn.com/alaska-news/2018/12/13/police-equipment-accident-killed-36-year-old-north-slope-oil-field-worker/

to its previous condition and use" through unspecified reclamation requirements.[485] BLM claims that, before final abandonment, "land used for oil and gas infrastructure — including well pads, production facilities, access roads, and airstrips — will be restored to ensure eventual restoration of ecosystem function and meet minimal standards to restore general wilderness characteristics."[486] Leaseholders would need to develop and implement an abandonment and reclamation plan, which would describe "short-term stability, visual, hydrological, productivity objectives and steps to be taken to ensure eventual ecosystem restoration to the land's previous hydrological, vegetation, and habitat condition."[487] BLM also has the authority to grant exceptions to this requirement to satisfy unspecified "environmental or public purposes."[488]

As a threshold matter, BLM's view that it can allow more than 2,000 acres of direct development impacts is flatly inconsistent with the language of the Tax Act. That law permits the Secretary to authorize that "up to 2,000 surface acres of Federal land on the Coastal Plain . . . be covered by production and support facilities . . . during the term of the leases."[489] The metric the Tax Act uses does not mean "at one time." Rather, it provides a single limit for all acreage covered by facilities throughout the life of the leasing program. Even if it was possible to achieve perfectly effective remediation, which it is not, it would still not create license to exceed 2,000 cumulative acres.

Moreover, BLM's reliance on reclamation is deficient on multiple other grounds as well. First, BLM itself acknowledges that it is not realistic or even feasible to restore these areas to their original condition or anything close to it. BLM states in the EIS that "[r]eclamation has not been proven for gravel removal in the arctic environment once operations have ceased."[490] BLM's own acknowledgement that reclamation has not been proven in arctic environments raises substantial questions about BLM's legally questionable reliance on these unproven, vague reclamation measures as a mechanism for further expanding the footprint of development beyond the 2,000 acre cap. Gravel roads, gravel mines, and other infrastructure in Arctic environments will cause long-term impacts to the landscape that cannot be easily recovered or restored and will never recover to their original, wilderness state.[491] Studies have indicated that natural recovery of tundra vegetation may occur on a timeframe that could take millennia or may never occur.[492] There is not a single tundra rehabilitation site that has returned to its original state in thirty-plus

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[485] DEIS vol. 1 at 2-32.
[486] DEIS vol. 1 at 2-32.
[487] DEIS vol. 1 at 2-32.
[488] DEIS vol. 1 at 2-32.
[489] *See* Pub. L. 115-97, Title II, sec. 20001(c)(3).
[490] DEIS vol. 1 at 3-57.
[491] *See, e.g.*, National Research Council of the National Academies, Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope, Committee on Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope 158 (2003).
[492] BENJAMIN SULLENDER, AUDUBON ALASKA, ECOLOGICAL IMPACTS OF ROAD AND AIRCRAFT-BASED ACCESS TO OIL INFRASTRUCTURE 16–17 (2017), https://ak.audubon.org/sites/g/files/amh551/f/road_aircraft_access_report_final.pdf.

years of tundra rehabilitation. Even with intensive rehabilitation efforts, the recovery process takes at least decades.[493] For areas where there has been thermal slumping or subsidence, rehabilitation is very expensive and likely impossible.[494] BLM should not rely on unproven rehabilitation standards to allow for even greater damage than that allowed by Congress in the Tax Act, or use standards that are known to be unachievable and will thus require exemptions to the reclamation requirements.

BLM should also remove the provision that allows it to grant exceptions to any reclamation requirements. The circumstances under which BLM could potentially waive this requirement are unclear in the EIS and appear to completely negate the meaningfulness of any reclamation requirements. There is no circumstance under which BLM should be able to grant exceptions to these reclamation requirements.

BLM's analysis fails to adequately account for the long-term changes that are likely to occur from infrastructure and the challenges related to reclamation that relate to that. It is unrealistic to expect that reclamation will return land to its previous condition and ecosystem function. The ground under a gravel pad or road is compressed over time, lowering the surface elevation. When gravel is removed to meet land lease agreements and USACE regulations, sometimes gravel is left behind to avoid creating a square lake. The only way to maintain an elevation similar to that of the surrounding tundra grade is to leave a certain amount of gravel at the site. Because of the drastic change in soil conditions, and often in hydrology, natural colonization by species similar to those in the surrounding relatively undisturbed tundra is less likely. If grass seed is sown, even species that are expected to decline over time, the resulting plant community does not aesthetically or functionally resemble the surrounding plant community. If a site subsides after gravel is removed and the site becomes covered in more water than was present prior to development, there is little that can be done to reverse this condition. The Coastal Plain tends to have high volumes of ground ice, making it more likely that a site will subside once gravel is removed. BLM needs to account for these long-term impacts and changes in its impact analysis and consideration of reclamation. BLM should require that permafrost core samples be taken at a site at sufficient intervals to calculate the volume of massive and pore ice in the underlying permafrost. Seeding with grass is unacceptable; entities should use locally collected seeds of forbs and sedges or sprig with willows. BLM also needs to account for and provide a long-term plan that addresses where gravel would be placed after field closure, particularly in light of concerns about contamination.

BLM's analysis in the draft EIS also inadequately accounts for potential changes to physiography. The draft EIS states, "This potential long-term impact would begin during the construction phase and would last throughout the development phase until the gravel is removed and the site has been restored to pre-program conditions."[495] As stated above, 1) because of ground compression, removal of all gravel fill may result in a ground surface elevation that is below that of the surrounding tundra, which could in turn fill with water and form lakes that were not present prior to development; and 2) it is unlikely if not impossible that reclamation will

[493] *Id.* at 17.
[494] *Id.*
[495] DEIS vol. 1 at 3-26.

result in pre-program conditions within a human-relevant time frame. Restoration implies that a site will return to its pre-program conditions. Based on over 30 years of tundra rehabilitation activities, it is unrealistic to expect a site on the North Slope to return to pre-program conditions in a human-significant time frame. In addition, road dust, especially within 100 feet of a road, can settle onto surrounding permafrost, altering albedo, evapotranspiration, and vegetation communities. In areas heavily covered in dust, permafrost ice wedges can melt, resulting in degraded polygons (those in which the ice wedges have melted leaving the centers of the polygons higher than the surrounding grade). This is an irreversible long-term impact. BLM should acknowledge all of these long term impacts as part of its analysis and consideration of impacts.

BLM needs to include clear standards that companies will need to meet to ensure areas are fully restored. The cursory statements BLM included in ROP 35 are unobtainable and too vague to give any indication of where and how areas will be restored, over what timeframe, and to what standards. These standards need to be specific, measurable, achievable, reasonable, and time-bound. (Regardless, ROP 35 should be extended to require a bond to cover abandonment.) To justify relying on reclamation as lessening environmental impacts in a NEPA document, BLM needs to incorporate standards into the lease terms to ensure there are clear, achievable obligations for companies to undertake restoration of any impacted areas. BLM should incorporate far more detailed criteria related to restoration standards, including information on the timing of implementation, monitoring methods that will be used to determine success, how any contamination issues will need to be addressed, how companies will restore adjacent areas that have been impacted by dust or other contaminants, and more. BLM's statement that areas would be restored to ensure "eventual" restoration and meet "minimal standards" to restore wilderness provides little assurance that these areas will ever be restored to a level that returns them to anything close to their original condition or functions, or that ensures companies will actually be required to meet any objective, clear standards.

Finally, given the high cost of tundra rehabilitation, there are substantial concerns related to whether adequate funds will be available to undertake reclamation, particularly given the potential for companies to transfer ownership over time. In addition to incorporating more stringent standards and clear obligations for reclamation in the leases, BLM should include formal criteria governing the financial assurances necessary to ensure sufficient funding for restoration and reclamation. BLM should mandate bonding at the time it issues the leases.

BLM mentions the bonding requirements at 43 C.F.R § 3104 in the DEIS as applying to oil and gas activities on the Coastal Plain.[496] Its discussion of the subject is vague and inadequate. First, it is unclear why the DEIS references Mineral Leasing Act (MLA) regulations. Generally, the MLA does not apply to the Arctic Refuge. The Tax Act noted that BLM should manage the oil and gas program similar to how it manages leasing in the NPR-A under the NPRPA and its regulations, which include bonding requirements. BLM should clearly explain what bonding requirements apply in the Coastal Plain and why.

[496] DEIS vol. 1 at 3-248.

Second, the ecological value of the Coastal Plain, coupled with the intensity of potential surface impacts of oil and gas development, demands significantly greater reclamation assurance than that provided by current regulations, under either the MLA or the NPRPA. The program area is particularly sensitive when compared to many other public land areas open for oil and gas leasing, and the surface impacts of oil and gas development on the Coastal Plain are likely to lead to incredibly costly reclamation. Recognizing this, BLM has imposed greater bonding requirements on North Slope oil and gas leases than required elsewhere in the country.[497] Reclamation of the particularly sensitive Coastal Plain necessitates significant bonding requirements. Typical bond amounts are insufficient to provide for adequate restoration in most instances and will be especially inadequate for reclamation efforts on the Coastal Plain, where the ability to reclaim is not proven. Appropriate bonding is particularly important here, where BLM is relying so heavily on reclamation as a tool for attempting to minimizing impacts to the Coastal Plain over the long-term. Absent adequate financial assurances, there is no guarantee companies will ever reclaim these areas.

BLM's brief mention of bonding requirements in the DEIS is insufficient to satisfy the demands of NEPA or ensure adequate financial assurances for reclamation—on which the DEIS relies heavily. BLM must clarify how the generic reclamation bonding requirements will apply to the Coastal Plain leasing program. For instance, the DEIS fails to explain whether new bonds must be filed by operators who have already satisfied the national blanket bond requirement or whether existing bonds are sufficient. The DEIS also fails to address how the various amounts secured by the current bonding regimes will be adequate to cover the likely cost of necessary reclamation measures on the Coastal Plain specifically. Crucially, the DEIS also fails to specify when in the leasing process the bonding requirements go into effect. It states that operators must be covered by a bond "before surface disturbing activity,"[498] but does not elaborate. BLM should clarify that the bond must be furnished "prior to the issuance of an oil and gas lease," as required of lessees in the NPR-A.[499]

BLM also needs to modify ROP 35. ROP 35's objective is to "[e]nsure ongoing and long-term reclamation of land to its previous condition and use."[500] To effectuate this, bonding requirements consistent with the discussion above must be added to ROP 35. BLM should estimate actual, likely reclamation costs of reasonably foreseeable development projects and consider alternatives that impose corresponding bonding amounts. Additionally, BLM should require that bonds be adjusted for inflation at regular intervals to ensure that they remain sufficient to cover any necessary reclamation activities after operations eventually conclude.

BLM also needs to modify ROP 24d. It currently has no gravel mine reclamation specifications. Gravel mine reclamation and associated land rehabilitation can be particularly difficult. Many mines on the North Slope are reclaimed by turning the former pit into deep water fish habitat. Not only does this result in a rather unnatural-looking square lake, but offers little in the way of replacing the habitat loss displaced by the mine. Gravel mines are one of the few

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[497] *See* 43 C.F.R. § 3134.1 (NPR-A bonding requirements).
[498] DEIS vol. 1 at 3-248.
[499] 43 C.F.R. § 3134.1(a).
[500] DEIS vol. 1 Table 2-2 at 2-32.

available sources of tundra sod. Because of the way oil and gas companies organize their budgeting and financing of projects, there often is no set-aside to pay for harvesting, storage, and re-use of the surface vegetative mat (tundra sod). This valuable resource is most often pushed into a pile for future use as "organic overburden." When used in tundra rehabilitation, this organic overburden tends to be dried out and devoid of live vegetation. Instead of promoting revegetation of a site, it often inhibits new growth, either from seed or natural colonization. Additionally, salt crusts of sodium sulfates, calcium chloride, calcium sulfate, or a combination of two or three of these salts frequently form on the surface of desiccated organic overburden, inhibiting revegetation.[501] Tundra sod must be cut and preserved using the most current techniques and should be reused on tundra rehabilitation sites.

E. IMPACTS OF INFRASTRUCTURE ON PRIVATE CORPORATION LANDS AND NATIVE ALLOTMENTS

As explained below, the EIS must include an analysis of the impacts of development of oil and gas and support facilities on Corporation and private land. BLM's failure to do so results in a flawed impacts analysis.

F. THE DRAFT EIS FAILS TO ANALYZE THE DIRECT, INDIRECT, AND CUMULATIVE IMPACTS OF HYDRAULIC FRACTURING.

BLM must fully disclose the direct, indirect and cumulative impacts of hydraulic fracturing ("fracking") and other well stimulation techniques that could be used under leases in the Arctic Refuge. Its failure to do so violates NEPA.

Available information indicates that fracking is increasingly being used in Alaska, both onshore and offshore.[502] And the Draft EIS acknowledges that oil companies will frack wells to stimulate initial production. But the Draft EIS wholly fails to analyze the increased risks inherent in these practices. Fracking and other well stimulation techniques can cause environmental damage beyond that of conventional oil and gas development because of the dangerous chemicals used in the practice, additional waste generation and management needs, the heightened risk of earthquakes, the need for large quantities of water, and increased truck traffic, among other harms.

A peer-reviewed study that examined fracking fluid products determined that more than 75% of the chemicals could affect the skin, eyes, and other sensory organs, and the respiratory and gastrointestinal systems; approximately 40 to 50% could affect the brain/nervous system,

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[501] LORENE LYNN, HRD, INC. & BP ENVIRONMENTAL STUDIES GROUP, DRAFT REHABILITATION REPORT FOR WEST BEACH STATE #1/1A, 2, & 3, PRUDHOE BAY OILFIELD, ALASKA, USACE POA-2011-1086, USACE NWP 27, NSB 12-096 (Mar. 15, 2016) (included with attachments).

[502] See Fracfocus.org (search for Alaska).

immune system, cardiovascular system, and the kidneys; 37% could affect the endocrine system; and 25% could cause cancer and mutations.[503]

Another recent study found that oil companies use dozens of extremely hazardous chemicals to acidize wells. Specifically, the study found that almost 200 different chemicals have been used and that at least 28 of these substances are F-graded hazardous chemicals — carcinogens, mutagens, reproductive toxins, developmental toxins, endocrine disruptors or high acute toxicity chemicals.[504] The study notes that acidizing chemicals can make up as much as 18% of the fluid used in these procedures.[505] Further, each acidization can use as much as hundreds of thousands of pounds of some chemicals.[506]

In addition to posing a significant health and safety risk to humans including workers, fracking chemicals can kill or harm a wide variety of wildlife. Scientific research has indicated that 40% of the chemicals used in fracking can harm aquatic animals and other wildlife.[507] For example, in Kentucky, when an oil company dumped fracking waste fluids into the fork of a stream, contaminating it with hydrochloric acid and other chemicals, "the discharges killed virtually all aquatic wildlife in a significant portion of the fork, including fish and invertebrates."[508] According to scientists, the abrupt and persistent changes in post-fracking water quality resulted in toxic conditions.[509] Several spills of fracking fluid from pipelines in Pennsylvania also resulted in significant fish kills.[510] Recent studies using fluids produced by fracking to examine their impact on aquatic animals found that the fluids have significant negative effects on rainbow trout, even at greater than 100-fold dilutions.[511] A similar study

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[503] Colborn, Theo, et al. 2011. Natural Gas Operations for a Public Health Perspective, Human and Ecological Risk Assessment 17:1039; Elliot, E.G. et al. 2016. A systematic evaluation of chemicals in hydraulic –fracturing fluids and wastewater for reproductive and developmental toxicity. Journal of Exposure Science and Environmental Epidemiology 1–10.

[504] Khadeeja Abdullah, Timothy Malloy, Michael K. Stenstrom & I. H. (Mel) Suffet. 2016. Toxicity of acidization fluids used in California oil exploration, Toxicological & Environmental Chemistry.

[505] *Id.*

[506] *Id.*

[507] Colborn, T. et al. 2011. Natural gas operations from a public health perspective. Human and Ecological Risk Assessment 17: 1039-1056 at 1046.

[508] U.S. Fish and Wildlife Service, Office of Law Enforcement. 2009; Case at a Glance: U.S. v. Nami Resources Company, LLC, *available at* www.fws.gov/home/feature/2009/pdf/NamiInvestigation.pdf.

[509] Papoulias, D.M. and A.L. Velasco. 2013. Histopathological Analysis of Fish from Acorn Fork Creek, Kentucky, Exposed to Hydraulic Fracturing Fluid Releases. Southeastern Naturalist 12 (Special Issue 4):92–111

[510] MIT Energy Initiative. 2011. The future of Natural Gas, An Interdisciplinary MIT study, *available at* http://energy.mit.edu/publication/future-natural-gas/.

[511] Yuhe He, et al. 2017. Effects on Biotransformation, Oxidative Stress, and Endocrine Disruption in Rainbow Trout (Oncorhynchus mykiss) Exposed to Hydraulic Fracturing Flowback and Produced Water. Environ. Sci. Technol. 2017, 51, 940−947. DOI:

analyzed the impacts of fracking fluids on water fleas, and found exposure to fracking fluids caused a significant decline in reproduction and increased mortality.[512] And another study found acute toxicity of zebrafish embryos from fracking fluid.[513]

Further, studies have drawn a strong connection between the recent rise in fracking wastewater injection and increased earthquake rates.[514] For example, the USGS has recognized that wastewater disposal from fracking is a "contributing factor" to the six-fold increase in the number of earthquakes in Oklahoma.[515] Another recent study also found that wastewater injection is responsible for the dramatic rise in the number of earthquakes in Colorado and New Mexico since 2001.[516] Wastewater injection has been scientifically linked to earthquakes of

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10.1021/acs.est.6b04695; Tamzin A. Blewett, et al. 2017.The effect of hydraulic flowback and produced water on gill morphology, oxidative stress and antioxidant response in rainbow trout (Oncorhynchus mykiss), Nature: Scientific Reports. 7:46582. DOI: 10.1038/srep46582.

[512] Tamzin A. Blewett, et al. 2017. Sublethal and Reproductive Effects of Acute and Chronic Exposure to Flowback and Produced Water from Hydraulic Fracturing on the Water Flea Daphnia magna, Environ. Sci. Technol. 2017, 51, 3032−3039. DOI: 10.1021/acs.est.6b05179.

[513] Yuhe He, et al. 2017. Chemical and toxicological characterizations of hydraulic fracturing flowback and produced water. Water Research 114 (2017) 78-87.

[514] N. J. van der Elst *et al.*, *Enhanced Remote Earthquake Triggering at Fluid-Injection Sites in the Midwestern United States*, 341 SCI. 164, 164-65 (2013); U.S. Geological Survey (USGS), Induced Earthquakes Raise Chances of Damaging Shaking in 2016 (Mar. 28, 2016), *available at* https://www2.usgs.gov/blogs/features/usgs_top_story/induced-earthquakes-raise-chances-of-damaging-shaking-in-2016/.

[515] Sumy, D. F., *et al. 2014.* Observations of static Coulomb stress triggering of the November 2011 *M*5.7 Oklahoma earthquake sequence, J. Geophys. Res. Solid Earth, 119*:*1904–*1923; USGS, 2014. Record Number of Oklahoma Tremors Raises Possibility of Damaging Earthquakes, available at* http://www.usgs.gov/newsroom/article.asp?ID=3880.

[516] Rubinstein, J.L., et al. 2014. The 2001 – Present Induced Earthquake Sequence in the Raton Basin of Northern New Mexico and Southern Colorado. Bulletin of the Seismological Society of America.

magnitude three and greater in several states: Arkansas,[517] Colorado,[518] Ohio,[519] Oklahoma,[520] Texas,[521] and New Mexico.[522] And a recent study attributed wastewater injection from fracking operations to earthquakes in California.[523]

And it is not just wastewater injection that can lead to earthquakes—the practice of fracking itself has been found to contribute to seismic events.[524] Even if the earthquakes that fracking directly generates are small, fracking could be contributing to increased stress in faults that leaves those faults more susceptible to otherwise naturally triggered earthquakes of greater magnitudes.[525] Alaska is seismically active, and the impacts on this seismicity on the project area need to be projected and disclosed, along with potential leaks and spills that could contaminate water and soil.

The water withdrawal from lakes for the use in fracking must be evaluated. Between 2000 and 2014, the average water used for fracking a horizontal well increased from 177,000 gallons to 4 million gallons.[526] The substantial water withdrawals needed for fracking could

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[517] Soraghan, M. 2013. USGS, Okla. warn of more drilling-related earthquakes in State, E&E News, *available at* https://www.eenews.net/energywire/stories/1059989400/search?keyword=USGS%2C+okla.+drilling-related+earthquakes); Soraghan, M. 2017. Okla. officials say state had 623 quakes in 2016 E&E News, *available at* https://www.eenews.net/energywire/stories/1060048830/search?keyword=USGS%2C+okla.+drilling-related+earthquakes.

[518] *Id.*

[519] Ohio Dept. of Nat. Resources, 2012. Executive Summary: Preliminary Report on the Northstar 1 Class II Injection Well and the Seismic Events in the Youngstown, Ohio Area; Fountain, Henry, Disposal halted at well after new quake in Ohio, New York Times, Jan. 1, 2012.

[520] Holland, Austin, 2011. Examination of possibly induced seismicity from hydraulic fracturing in the Eola Field, Garvin County, Oklahoma, Oklahoma Geological Survey Open-File Report OF1-2011.

[521] Frohlich, Cliff. 2012. Two-year survey comparing earthquake activity and injection-well locations in the Barnett Shale, Texas. Proceedings of the National Academy of Sciences 109: 35.

[522] Rubinstein, J. L, et al. 2014.

[523] Goebel, T. H. W. et al. 2016. Wastewater disposal and earthquake swarm activity at the southern end of the Central Valley, California, Geophysical Research Letters. 43: 1092–1099.

[524] Van der Elst et al. 2013; BC Oil & Gas Commission. 2015. Industry Bulletin: 2015-32, *available at* https://www.bcogc.ca/node/12951/download

[525] Van der Elst et al. 2013;

[526] Gallegos, T. J., B. A. Varela, S. S. Haines, and M. A. Engle. 2015. Hydraulic fracturing water use variability in the United States and potential environmental implications, Water Resour. Res. 51: 5839–5845.

cause fish mortality and low water levels in the project area, which could also harm birds like the yellow-billed loon and spectacled eiders.

Fracking also increases the truck traffic associated with drilling because of the additional supplies needed. For example, a U.S. Government Accountability Office study found that up to 1,365 truckloads can be required for the drilling and fracturing of a single well.[527] This traffic will further exacerbate the numerous harms from truck traffic associated with the proposed action.

V. BLM'S ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON THE COASTAL PLAIN IS INADEQUATE.

Overall, and nearly universally, BLM's analysis of the impacts of an oil and gas program on the exceptional resources of the Coastal Plain is inadequate. BLM's analyses suffer time and again from a lack of baseline information that the agency has not taken the time and steps to obtain, the agency's reliance on documents looking at the impacts of oil and gas in other parts of the Arctic that are sufficiently different from the Coastal Plain such that the comparison is faulty, and results in an impacts analysis that over and over understates, misstates, or entirely fails to accurately or adequately describe the impacts of an oil and gas program. BLM's analysis is so deficient that the agency must take substantial steps to gather information and adjust its approach, and must issue a revised draft EIS for public review and comment. We address distinct resources issues below to individually highlight the failings of BLM's draft EIS.

A. THE DEIS FAILS TO PROVIDE A MEANINGFUL DISCLOSURE OF ARCTIC REFUGE LEASING'S IMPACTS ON GREENHOUSE GAS POLLUTION AND CLIMATE CHANGE.

BLM's analysis of the greenhouse gas emissions and associated climate change impacts of leasing in the Arctic Refuge is flawed in several fundamental respects and therefore does not comply with NEPA. First, BLM fails to account for foreign oil consumption, which leads it to assert that the leasing action alternatives will result in only slightly higher greenhouse gas emissions than the No Action Alternative. Second, economic analyses show that near-total substitution for oil and gas production does not occur in the real world and is not a reasonable assumption. To the contrary, numerous studies show that every barrel of oil, and unit of gas, left undeveloped results in significant reductions in global oil and gas consumption with associated decreases in greenhouse gas pollution. Third, the DEIS fails to adequately analyze the impacts of methane emissions. Fourth, BLM's DEIS does not analyze the black carbon emissions from Arctic Refuge drilling and their impacts. The DEIS also fails to evaluate the cumulative impacts of the proposed leasing. It relies on outdated information, improperly attempts to tier to other documents, contains unsupported conclusory assertions, and fails to consider the impact of the proposal on attaining the United States' greenhouse gas commitments or with staying within carbon budgets necessary for avoiding the worst impacts of climate change. Finally, the DEIS

[527] U.S. Government Accountability Office, Oil and Gas: Information on Shale Resources, Development, and Environmental and Public Health Risks, GAO-12-732, at 33 (2012).

misrepresents the economic impacts of the alternatives by failing to provide information to gauge the negative economic impacts associated with climate change.

1. NEPA requires BLM to thoroughly and accurately analyze the potential consequences of Arctic Refuge leasing for the climate.

It is well established that when an agency considers a decision that will result in greenhouse gas emissions, NEPA requires the agency to analyze and disclose the effects of these emissions, including emissions from fossil fuels that will be burned because they will be produced or delivered to market as a result of the agency's decision.[528] Several courts have rejected agency findings of perfect or near-perfect fossil fuel substitution. For example, in *WildEarth Guardians v. Bureau of Land Mgmt.*, the Tenth Circuit rejected BLM's argument that it could ignore the climate effects of extracting coal in Wyoming's Powder River Basin because if BLM had not issued the leases in question, demand would be met with coal from another source.[529] BLM's conclusion that replacement coal was available at a comparable price lacked support in the administrative record.[530] Moreover, the court found BLM's perfect substitution assumption "irrational" in part because it was "contrary to basic supply and demand principles."[531]

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[528] *See, e.g.*, *Sierra Club v. Fed. Energy Regulatory Comm'n*, 867 F.3d 1357, 1374 (D.C. Cir. 2017) (explaining that agency must "either quantify and consider the project's downstream carbon emissions" or provide a detailed explanation of "why it *cannot* do so" (emphasis added)); *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1217 (9th Cir. 2008) (requiring NHTSA to consider effect of greenhouse gas emissions under automotive fuel efficiency rule); *Mid States Coal. for Progress v. Surface Transp. Bd.*, 345 F.3d 520, 549-50 (8th Cir. 2003) (requiring agency to disclose effects of burning coal transported on proposed rail line); *Montana Envt'l Info. Ctr. v. U.S. Office of Surface Mining*, 274 F. Supp. 3d 1074 (D. Mont. 2017) (requiring agency to assess effects of greenhouse gas emissions from mine expansion).

[529] 870 F.3d 1222, 1234 (10th Cir. 2017).

[530] *Id.* at 1235 ("The blanket assertion that coal would be substituted from other sources, unsupported by hard data, does not provide "information sufficient to permit a reasoned choice" between the preferred alternative and no action alternative.").

[531] *Id.* at 1236; *See also Mid States Coalition for Progress v. Surface Transportation Board*, 345 F.3d 520, 549 (8th Cir. 2003) (noting that the agency's argument that "the demand for coal will be unaffected by an increase in availability and a decrease in price" was "illogical at best.")*; Montana Environmental Information Center v. U.S. Office of Surface Mining*, 274 F.Supp.3d 1074, 1098 (D. Mont. Aug. 14, 2017) (rejecting an agency's contention that any coal not produced from a mine expansion would be replaced by coal produced elsewhere, calling it "illogical" and concluding that it "places the [agency's] thumb on the scale by inflating the benefits of the action while minimizing its impacts"); *High Country Conservation Advocates v. U.S. Forest Service*, 52 F. Supp. 3d 1174, 1197-98 (D. Colo. 2014) (same with respect to coal mining approval).

Although a cost-benefit analysis is not necessarily the ideal or exclusive method for assessing contributions to an adverse effect as enormous and potentially catastrophic as climate change, a tool to determine the costs of carbon pollution has been developed by the Interagency Working Group on Social Cost of Greenhouse Gases.[532] The Interagency Working Group has produced estimates for the social cost of carbon in order to "allow agencies to incorporate the social benefits of reducing carbon dioxide (CO_2) emissions into cost-benefit analyses of regulatory actions."[533] The working group presented values for social costs from 2010 to 2050, assuming discount rates of 5 percent, 3 percent, 2.5 percent and the 95th percentile of the 3 percent discount rate.[534] These values range from $10 to $212 (in 2007 dollars per metric ton of carbon dioxide),[535] and can help in analyzing the costs imposed by the net greenhouse gas emissions that might eventually result from development, especially where BLM monetizes the purported economic benefits of the project.[536] However, studies have demonstrated that the numeric value assigned to the social cost of carbon vastly underestimates the true cost.[537] The social cost of carbon is therefore a minimum value.

All of these sources point to BLM's duty under NEPA to perform a thorough and accurate accounting of Refuge leasing's greenhouse gas emissions and their environmental effects. The DEIS does not fulfill BLM's obligations, as explained below.

2. *The DEIS fails to account for foreign oil consumption and suffers from other flaws.*

BLM's analysis of greenhouse gas emissions relies on a misuse of the MarketSim model that drastically underestimates the greenhouse gas (GHG) pollution that will result from oil and gas leasing in the Arctic Refuge. One of the flaws in BLM's use of the model is its assumption that Arctic Refuge drilling will only affect the U.S. market for oil, rather than the global market.

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[532] Environmental Protection Agency (EPA), EPA Fact Sheet, SOCIAL COST OF CARBON (2015). On March 28, 2017, President Trump directed the Office of Information and Regulatory Affairs to revisit the metric, but he did not rule out its use in the future. *See* Exec. Order No. 13,783, § 5(b), 82 Fed. Reg. at 16,095-96; *see also* H. Hess, *OIRA Works Quietly on Updating Social Cost of Carbon*, GREENWIRE (June 15, 2017).

[533] Interagency Working Group on Social Cost of Greenhouse Gases, Technical Support Document: - Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis - Under Executive Order 12866 at 3 (Aug. 2016).

[534] *Id.* at 3, Tbl. ES-1.

[535] *Id.*

[536] DEIS vol. 1 at 3-236.

[537] F. Ackerman & E. Stanton, *Climate Risks and Carbon Prices: Revising the Social Cost of Carbon*, 6 ECONOMICS 2012-10 at i, 2, 14 (2012) (the social cost of carbon could be almost $900/t$CO_2$ in 2010, rising to $1,500/t$CO_2$ in 2050). Relatedly, studies suggest that governmental policy decisions with implications for climate change deserve a very small or even negative discount rate. *See* M. Fleurbaey & S. Zuber, *Climate Policies Deserve a Negative Discount Rate*, 13 CHI. J. INT'L LAW 565, 585-86 (2013).

The draft EIS purports to assess the GHG pollution that will result from extracting and burning Arctic Refuge oil in a section called "Indirect GHG Emissions from Future Development."[538] The draft EIS states that the analysis is based on the MarketSim model that the Bureau of Ocean Energy Management (BOEM) has developed.[539] According to BLM, BOEM applied MarketSim methodology to the Arctic Refuge to calculate the change in demand for oil, and therefore the increase in GHG pollution, from Arctic Refuge drilling. BOEM's calculations of the change in U.S. demand lead to either a 3.4- or a 3.9-percent increase in U.S. oil consumption if Arctic Refuge drilling goes forward.[540]

Unfortunately, BLM has deprived the public of the opportunity to meaningfully comment on the GHG analysis by hiding the calculations that led to these numbers in a white paper that is not part of the draft EIS and is not publicly available.[541] What BLM does make clear, however, is that the calculations are based on changes in U.S. demand for oil, despite the fact that "petroleum is obviously a global commodity."[542] The choice to exclude foreign markets greatly skews the results of the analysis to make the GHG consequences of Arctic Refuge drilling appear much less significant than they are. BLM claims that the MarketSim model on which it relies only models changes in US demand: "[t]he MarketSim model considers only the US supply and demand for petroleum; thus, the accuracy of the change (increase) in petroleum demand estimated from MarketSim projections is limited, given its scope is just the US market."[543] This is not true. "MarketSim models oil as a global market with supply and demand specified separately for the U.S. and the rest of the world."[544] BOEM in fact used MarketSim's global market capabilities when it calculated the GHG pollution from the 2017–2022 Five Year Plan for offshore oil and gas in 2016.[545] When BOEM modeled the true global market effect, rather than a falsely-created U.S. market effect, it found that, for each barrel of U.S. oil left undeveloped, global oil consumption would go down by about half a barrel. In the context of the 2017-2022 Five Year Plan, BOEM estimated that this reduction in foreign oil consumption is highly significant, amounting to roughly 50 percent of BOEM's estimated oil OCS production in those scenarios. According to BLM, the proposed Arctic Refuge drilling is expected to result in the

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[538] DEIS vol. 1 at 3-7–3-9.

[539] DEIS vol. 1 at 3-7.

[540] DEIS vol. 1 at 3-7.

[541] *See* DEIS vol. 1 at 3-7, citing for its calculations BOEM 2018a, "Market Substitutions and Greenhouse Gas Downstream Emissions Estimates for BLM's Coastal Plain Project. Bureau of Ocean Energy Management, white paper. Sterling, VA."

[542] DEIS vol. 1 at 3-7.

[543] *Id*.

[544] Industrial Economics, Inc. 2015. Consumer Surplus and Energy Substitutes for OCS Oil and Gas Production: The 2015 Revised Market Simulation Model (MarketSim). U.S. Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2015-054, https://www.boem.gov/Market-Simulation-Model/.

[545] E. Wolvovsky & W. Anderson, Oil and Natural Gas: Potential Lifecycle Greenhouse Gas Emissions and Social Cost of Carbon, BOEM Report 2016-065 (Nov. 2016), https://www.boem.gov/OCS-Report-BOEM-2016-065/.

production of between 1.5 and 10 BBO.[546] Removing this oil from the global market could therefore result on a reduction of between .75 and 5 BBO, with corresponding reductions on GHG pollution.

The mechanism for this reduction in foreign oil consumption is clear. An increase of X BBO of imports to the United States under the No Action Alternative is by definition a decrease of X BBO of supply for the rest of the world, which will in its turn decrease oil consumption, and hence GHG pollution, outside the United States. Oil market analysis conducted by the Stockholm Environment Institute (SEI), and consistent with BOEM's own internal MarketSim parameters, has previously confirmed that this reduction in global oil consumption could be around 50 percent of the decrease in rest-of-world supply—a highly significant portion of the carbon accounting for the project.[547]

As summarized by experts at SEI:

> The oil market is also highly global, with oil readily traded among countries, and substantial infrastructure in place to do so. The U.S. both imports and exports oil, and world and domestic oil prices very closely track each other (U.S. EIA 2016). For this reason, we expect that changes in U.S. oil production would affect an integrated global oil market, an assumption also made by many other analysts that have looked at changes in U.S. oil supply (Bordoff and Houser 2015; Rajagopal and Plevin 2013; Allaire and Brown 2012; Metcalf 2007; IEc 2012). Though in the past the oil market could be strongly influenced by cartel behavior among a small number of producers, many analysts now see the market as more likely to behave competitively (The Economist 2016; U.S. EIA 2016), meaning that increases or decreases in supply do translate into shifts in prices and, in turn, consumption.[548]

As noted above, the Interagency Working Group on Social Cost of Greenhouse Gases has developed a tool to determine the costs of GHG pollution.[549] BLM's decision not to apply this

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[546] DEIS vol. 1 at 3-7.

[547] P. Erickson, *U.S. Again Overlooks Top CO2 Impact of Expanding Oil Supply . . . But That Might Change*, Stockholm Environment Institute (Apr. 30, 2016); P. Erickson & M. Lazarus, *Would constraining US fossil fuel production affect global CO2 emissions? A case study of US leasing policy*, CLIMATIC CHANGE (2018); P. Erickson & M. Lazarus, *How limiting oil production could help California meet its climate goals*, Stockholm Environment Institute (2018).

[548] P. Erickson & M. Lazarus, How would phasing out US federal leases for fossil fuel extraction affect CO_2 emissions and 2°C goals?, Stockholm Environment Institute, Working Paper No. 2016-2 at 23 (2016) (Erickson & Lazarus, How would phasing out US federal leases for fossil fuel extraction affect CO_2 emissions and 2°C goals?).

[549] Environmental Protection Agency (EPA), EPA Fact Sheet, SOCIAL COST OF CARBON (2015). On March 28, 2017, President Trump directed the Office of Information and Regulatory Affairs to revisit the metric, but he did not rule out its use in the future. *See* Exec. Order No.

tool or another tool to assess the costs of Arctic Refuge GHG pollution[550] artificially skews BLM's analysis to make Refuge drilling look less harmful. An accurate estimate of net carbon emissions resulting from the proposed action is a prerequisite for applying a social cost of carbon analysis. A complete and accurate assessment of the costs of Arctic Refuge drilling's impacts on the climate is even more essential to a reasoned decision because BLM takes into account the potential economic benefits of the project. For example, it states that total taxes and royalties from Arctic Refuge drilling would amount to approximately $104.6 million.[551] It is arbitrary for the agency to quantify certain economic benefits of Arctic Refuge drilling (and allude to others) without accurately disclosing the social cost of its likely carbon emissions.[552]

BLM's justification for its failure to utilize the social cost of carbon (or otherwise quantify the cost of carbon emissions) is arbitrary and capricious. In Appendix F, the agency claims that a) current protocols do not require applying the social cost of carbon metric to the DEIS; b) NEPA does not require cost-benefit analysis; c) that the DEIS does, in fact, analyze non-monetary impacts from carbon emissions; d) that this approach is justified because it is easier to understand; and e) that, regardless, the social cost of carbon is flawed.[553] As an initial matter, BLM cannot hide behind the fact that current protocols do not require a particular social cost of carbon metric or that prior guidance on the Interagency Working Group's social cost of carbon metric has been retracted. That metric remains a readily available means of analyzing a potentially significant impact. (Indeed, it is worth noting that BLM used estimates of the social cost of carbon in NEPA reviews prior to release of the Interagency Working Group's protocol in 2010.[554]) Additionally, BLM cannot justify its omission of social cost by simply claiming that they chose a different methodology. The DEIS provides *no* meaningful quantitative analysis of the social cost of GHG pollution, despite quantifying the economic benefits of the program leading to such pollution.

BLM further attempts to dismiss its failure to analyze costs by claiming that "[a]ny increased economic activity that is expected to occur with the proposed action is simply an economic impact, rather than an economic benefit" and that "[s]ome people may perceive increased economic activity as a 'positive' impact . . . whereas another person may view increased economic activity as negative or undesirable."[555] This rhetorical sleight of hand does not dispel the fact that BLM has failed to quantify the economic impacts of carbon emissions as part of its accounting for the economic impacts of the Coastal Plain oil and gas leasing program. BLM is choosing to quantify the benefits of the leasing program but failing to

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13,783, § 5(b), 82 Fed. Reg. at 16,095-96; *see also* H. Hess, *OIRA Works Quietly on Updating Social Cost of Carbon*, GREENWIRE (June 15, 2017).

[550] DEIS vol. 1 at 3-9.

[551] DEIS vol. 1 at 3-236.

[552] *See Mont. Envtl. Info. Ctr.*, 274 F.Supp.3d at 1098; *High Country Conservation Advocates*, 52 F. Supp. 3d at 1190–93.

[553] DEIS vol. 2 Appendix at F-2-F-4.

[554] *See Bristlecone Alliance, et al.*, 179 IBLA 51, 87 2010 WL 2345539 at *31 (Apr. 14, 2010).

[555] DEIS vol. 2 Appendix F at F-3.

accurately quantify the costs from carbon emissions.[556] In other words, the agency has functionally—and impermissibly— chosen to set the costs of those emissions at zero.[557]

Moreover, any claim by BLM that its decision-making does not turn on the purported economic benefits of leasing is contradicted by BLM and Interior's own statements to the public. For example, a recent BLM press release titled "THEY SAID IT COULDN'T BE DONE: TRUMP ADMIN DOMINATES WITH BILLION-DOLLAR OIL AND GAS SALE" expressly touts lease sale revenues as evincing the success of the Trump Administration's "Energy Dominance" policies.[558] Indeed, with regard to Coastal Plain leasing, then Secretary of Interior Ryan Zinke stated in December 2018, "An energy-dominant America starts with an energy-dominant Alaska, and among the scores of accomplishments we have had at Interior under President Donald J. Trump, taking these steps toward opening the 1002 section of Alaska's North Slope stands out among the most impactful toward bolstering America's economic strength and security."[559]

Quantifying the downstream emissions from the proposed leasing here does not in itself provide a sufficient description of the severity and magnitude of the impacts that will result from those emissions. Moreover, it does not provide the public with a meaningful basis for understanding the total "economic impact" of the proposed leasing.

3. Economic Analyses Show that Near-Perfect Substitution Is Not a Reasonable Assumption.

BLM asserts that the No Action Alternative would result in only 3.4 to 3.9 percent less demand for oil, and therefore GHG pollution, than the action alternatives.[560] The assumption is that the other 96 percent of forgone Arctic Refuge oil would be replaced by other production that

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[556] *See High Country Conservation Advocates*, 52 F. Supp. 3d at 1190-93.

[557] *Id.*; *see also Ctr. For Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1200 (9th Cir. 2008).

[558] Press Release, Bureau of Land Mgmt., "They Said It Couldn't Be Done: Trump Admin Dominates with Billion-Dollar Oil and Gas Sale" (Sept. 7, 2018), *available at* https://www.blm.gov/press-release/they-said-it-couldnt-be-done-trump-admin-dominates-billion-dollar-oil-and-gas-sale; DOI Press Release, "Energy Revolution Unleashed: Interior Shatters Previous Records with $1.1 Billion in 2018 Oil and Gas Lease Sales" (Feb. 6, 2019), available at https://www.doi.gov/news/energy-revolution-unleashed-interior-shatters-previous-records-11-billion-2018-oil-and-gas; DOI Press Release, "They Said It Couldn't Be Done:Trump Admin Dominates with Billion-dollar Oil and Gas Sale" (Sept. 6, 2018), available at https://www.doi.gov/pressreleases/they-said-it-couldnt-be-done-trump-admin-dominates-billion-dollar-oil-and-gas-sale.

[559] "BLM Alaska Releases Draft Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program," DOI Press Release (Dec. 20, 2018), *available at* https://www.doi.gov/pressreleases/blm-alaska-releases-draft-environmental-impact-statement-coastal-plain-oil-and-gas.

[560] DEIS vol. 1 at 3-7.

would only happen if Arctic Refuge production does not happen.[561] However, by excluding one of the largest factors in its analysis (non-domestic oil consumption), BLM presents a misleading view of the impacts of its action. Artificially limiting its analysis and not fully reporting the findings of the model it relies on allows BLM to irrationally conclude that increased oil production from the Arctic Refuge would lead to only a negligible increase in emissions over the No Action Alternative.

Numerous analyses show that near-perfect substitution for oil and gas production simply does not occur in the real world and is not a reasonable assumption. Oil and gas production operates in a global market where changes in U.S. production translate into shifts in global prices, global consumption, and associated GHG pollution. All other things being equal, analyses show that increasing U.S. oil and gas production lowers oil prices and increases global consumption, while leaving U.S. oil and gas undeveloped increases oil prices and decreases global consumption. In short, every barrel of oil and unit of gas that is left undeveloped results in a reduction in global oil and gas consumption with associated decreases in GHG pollution, as detailed below.

A comprehensive analysis of the GHG consequences of ending new oil leasing on U.S. federal lands and waters, and avoiding renewal of existing leases for resources that are not yet producing, found that ceasing new oil leasing would result in a large GHG and climate benefit.[562] Like BLM's analysis, this study accounted for the effects of substitution by other fuels for the oil that would be forgone by ending new leasing. The study estimated that for each unit (QBtu) of federal oil production cut, other oil supplies would substitute for about half a unit (0.56 QBtu) and net oil consumption would drop by nearly half a unit (0.44 QBtu). Additionally, about half of that drop in consumption (0.22 Qbtu) would be replaced by a mix of oil substitutes (such as biofuels or electricity, which SEI estimates to have 85 percent the carbon intensity of oil).[563] In short, every barrel of federal oil left undeveloped would result in nearly half a barrel reduction in net oil consumption, with associated reductions in GHG pollution. The analysis estimated that ending new federal oil leasing would reduce 2030 global CO_2 emissions from oil consumption by 54 million metric tons of CO_2, with an increase in CO_2 emissions from other fuels of 23 million metric tons of CO_2, for a net emissions benefit of 31 million metric tons of CO_2.[564] The analysis recommended that "policy-makers should give greater attention to measures that slow the expansion of fossil fuel supplies."[565]

An analysis of the effects of removing subsidies for U.S. oil and gas production found that decreases in the U.S. oil and gas supply would result in substantial decreases in global oil

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[561] DEIS vol. 1 at 3-7.

[562] *See generally* Erickson & Lazarus, How would phasing out US federal leases for fossil fuel extraction affect CO_2 emissions and 2°C goals?

[563] *Id.* at 24.

[564] *Id.* at 25.

[565] *Id.* at 1.

and gas consumption.[566] In the case of oil, the model estimated that a decrease of 600,000 barrels per day in U.S. oil supply, resulting from a drop in U.S. oil production due to subsidy removal, would lead to a decrease in global oil consumption of 300,000 to 500,000 barrels per day.[567] In the model, the decreased U.S. oil supply is only partially replaced by other sources of U.S., OPEC, and other rest-of-world supply. In short, each U.S. barrel not developed would result in a net reduction in global oil consumption of 0.5 barrels to 0.8 barrels.[568] Similarly, for natural gas, a 1.06 to 1.32 Tcf per year decrease in U.S. natural gas supply would lead to a net reduction in global gas consumption of 0.94 to 1.06 Tcf per year,[569] which translates into a net reduction in global gas consumption of 0.7 to 1 unit for each unit of U.S. natural gas left undeveloped.

An analysis by experts at Columbia University and the Rhodium Group on the effects of lifting U.S. crude oil export restrictions shows that U.S. oil production affects global crude oil prices,[570] which is only possible if there is not perfect substitution. As illustrated in Figure 23 of the study, when U.S. crude oil exports are permitted, as they were by the lifting of the crude oil export ban in December 2015, all modeling groups agreed that the international oil market will respond to changes in U.S. production.[571] Specifically, all modeling groups projected that global crude prices will decrease as U.S. production increases, resulting in an increase in global crude oil demand: "a 1.2 million b/d increase in U.S. production due to removing current export restrictions could result in anywhere between a 0 and 1 million b/d increase in global crude demand."[572] This study demonstrates that crude oil is sold and consumed in a global market, where increasing U.S. supply increases global consumption and results in more greenhouse gas pollution.

In sum, numerous scientific and economic analyses show that the assumption of near-perfect substitution for U.S. oil and gas production is unfounded and unreasonable, and dramatically misrepresents the significant greenhouse gas and climate impacts from oil and gas leasing.

4. The DEIS Fails to Properly Evaluate the Climate Change Impacts Related to Methane Emissions

The DEIS estimates the direct emissions of methane (CH_4) that will occur due to leakage during oil and gas production from the Coastal Plain for the increment of production associated

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[566] *See generally* G. Metcalf, The Impact of Removing Tax Preferences for U.S. Oil and Gas Production, Council on Foreign Relations (Aug. 2016); *see also* P. Erickson, Rebuttal: Oil Subsidies—More Material for Climate Change Than You Might Think, Council on Foreign Relations (Nov. 2, 2017).

[567] Metcalf at 16, Tbl. 2.

[568] *Id.*

[569] *Id.* at 17, Tbl. 3.

[570] *See generally* J. Bordoff & T. Houser, Navigating the U.S. Oil Export Debate (Jan. 2015).

[571] *Id*. at 42, Fig. 23.

[572] *Id.* at 57.

with only with the increased demand stimulated by the Coastal Plain. The DEIS calculates this estimate by using data from the U.S. EPA Inventory of US Greenhouse Gas Emissions and Sinks 1990-2016 (2018). The DEIS asserts that the EPA inventory data shows that "the EPA estimate of methane's GHG contribution from petroleum production processes represents on the order of 5 percent of the CO_{2e} contribution from the nationwide petroleum and natural gas combustion."[573] In other words, BLM apparently took EPA's estimates for total methane released from petroleum production systems in the U.S., which EPA presents in the inventory in the form of carbon dioxide equivalency, and divided that number by EPA's estimates for total greenhouse gas emissions from U.S. combustion of oil and natural gas — which is almost entirely CO_2 emissions, also expressed by EPA in the form of carbon dioxide equivalency.[574] The DEIS then asserts that, based on this general ratio of emissions from production to emissions from combustion, the methane emissions associated with producing the increment of Coastal Plain oil and gas reflecting increased demand due to the Coastal Plain program will be 5% of the emissions from downstream combustion of that increment.[575] As detailed below, BLM has failed to take a hard look at the methane emissions by ignoring obviously relevant factors, and thereby underestimating the total emissions, and by totally failing to consider the relevant timeframe for assessing the global warming potential of the additional methane that will be added to the atmosphere as a result of the Coastal Plain program. As a result of these errors, BLM has failed to adequately consider the impacts of its proposed actions on climate change.

a. The DEIS Underestimates Methane Emissions

The DEIS underestimates methane emissions by failing to address or account for available scientific information indicating that the EPA inventory emissions estimates on which BLM relies vastly underestimate emissions. As described above, the estimate of methane emissions from the proposed Coastal Plain program in the DEIS is calculated using data from the U.S. EPA Inventory of US Greenhouse Gas Emissions and Sinks 1990-2016 (April 2018). Recent scientific science published in June of 2018 indicates that the magnitude of methane leakage in 2015 from oil and gas supply chain emissions were about 60% higher than the U.S. Environmental Protection Agency inventory estimate for that year.[576] The study suggests that this discrepancy exists because current EPA inventory methods miss emissions that occur during abnormal operating conditions. The study used ground-based, facility-scale measurements and validated them with aircraft observations in areas accounting for ~30% of U.S. gas production. A When scaled up nationally, the facility-based estimate of 2015 supply chain emissions was 13 ±

[573] DEIS at 3-8 to 3-9.

[574] BLM does not provide any explanation of how it calculated the 5%, nor any citation to specific portions of the EPA inventory, so the public must guess how BLM used the data in EPA's 655-page inventory to calculate this 5% estimate.

[575] DEIS vol. 1 at 3-9.

[576] R.A. Alvarez et al., Assessment of methane emissions from the U.S. oil and gas supply chain, *Science*, Vol. 361, Issue 6398 (July 13, 2018), pp. 186-188, DOI: 10.1126/science.aar7204. The EPA inventory estimates for years 2015 and 2016 are similar. *See* U.S. EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2016 (2018) at 3-69 to 3-70 and 3-79.

2 teragrams per year, equivalent to 2.3% of gross U.S. gas production. Notably, NOAA scientists co-authored the study. One of the co-authors, Jeff Peischl, a Cooperative Institute for Research in Environmental Sciences (CIRES) scientist working in NOAA's Chemical Sciences Division stated that: "This study provides the best estimate to date on the climate impact of oil and gas activity in the United States…It's the culmination of 10 years of studies by scientists across the country, many of which were spearheaded by CIRES and NOAA."[577] Despite the obvious significance of this credible study to the assumptions in the DEIS, BLM totally fails to consider it. As a result, the DEIS significantly underestimates the methane emissions from the proposed Coastal Plain oil and gas program.

b. The DEIS Fails to Disclose and Consider the Timeframe for Global Warming Potential it Uses to Estimate Methane Emissions

Global Warming Potential ("GWP") is a concept that is critical to understanding any estimate of methane emissions made for the purpose of assessing climate change impacts. Global Warming Potential is the accumulated radiative forcing within a specific time frame caused by emitting 1 kilogram (kg) of the gas in question, relative to 1 kg of CO_2.[578] In simpler terms, it is a ratio of how much atmospheric warming a given greenhouse gas will cause *over a specified number of years* compared to the same mass of carbon dioxide. The Global Warming Potential of methane is very different depending on whether the timeframe considered is 20 years or 100 years because methane is very short-lived compared to carbon dioxide, but is much more powerful in terms of its capacity to trap heat in the atmosphere. The GWP for methane when considering a 100 year timeframe ranges from 28 to 36.[579] In contrast, the GWP for methane when considering a 20 year timeframe to examine the impact of the emissions is 84-87.[580] The GWP for CO_2 for any timeframe is always 1. Notably, the DEIS makes no mention of this concept whatsoever in its discussion of methane.

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[577] University of Colorado at Boulder, New study finds US oil and gas methane emissions 60 percent higher than estimated, (Jun. 21, 2018) https://phys.org/news/2018-06-oil-gas-methane-emissions-percent.html.

[578] *See, e.g.*, U.S. EPA Inventory of US Greenhouse Gas Emissions and Sinks 1990-2016 (2018) at 1-8.

[579] *See* U.S. EPA, Understanding Global Warming Potentials, https://www.epa.gov/ghgemissions/understanding-global-warming-potentials#Learn%20why (last accessed January 16, 2019); *see also* U.S. EPA Inventory of US Greenhouse Gas Emissions and Sinks 1990-2016 (2018) at 1-10, Table 1-3, showing range of 100 year GWPs from assessment reports. The 2018 US EPA Inventory uses a 100-year GWP for methane of 25, the number from the IPCC's 2007 Assessment Report, due to reporting requirements associated with the international agreements around climate change, but acknowledges that more recent Assessment Reports have updated that estimate. *See id*. at 1-9 to 1-10.

[580] *See* U.S. EPA, Understanding Global Warming Potentials, https://www.epa.gov/ghgemissions/understanding-global-warming-potentials#Learn%20why (last accessed January 16, 2019).

The US EPA Inventory uses the GWPs for the 100-year time frame only. Consequently, the calculations in the DEIS present methane emissions only in terms of the equivalence to CO_2 over a 100-year timeframe. If the DEIS also considered the climate change impacts of its actions over a shorter time frame, and calculated the methane emissions in light of the GWP for a 20 year timeframe, the methane emissions, expressed in CO_2 equivalents, would be approximately 2.7 times greater than the amount presented in the DEIS. Notably, EPA itself makes clear that the use of the 100-year timeframe in its inventory is based on a political agreement between nations to standardize how emissions are reported under the United Nations Framework Convention on Climate Change, and that other time horizons are available.[581] BLM itself has at times considered the 20-yr GWP in addition to the 100-yr GWP.[582]

Although the DEIS provides no explanation, BLM appears to have calculated the 5% figure it provides by taking the U.S. EPA Inventory figures for 2016 methane emissions from U.S. petroleum systems and natural gas systems, reported in MMT CO_2 eq using a 100-year time frame GWP, and divided that number by the 2016 CO_2 emissions from US combustion of oil and gas. Though the main body of the EPA inventory report provides its estimates using a 100-yr GWP for methane of 25 to accord with international framework reporting consistency requirements, it appears that BLM adjusted the methane emissions to reflect a 100-yr GWP of about 31, to be consistent with the methane GWP of 28-34 from the more recent 2014 IPCC assessment.[583] Applying the same rationale the DEIS appears to employ, but with the 20 year GWP for methane, the resulting ratio of US methane emissions from production to US CO_2 emissions from combustion would be about 14% instead of 5%.[584] Furthermore, taking into

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[581] *See W. Org. of Res. Councils v. U.S. Bureau of Land Mgmt*., No. CV 16-21-GF-BMM, 2018 WL 1475470, at *15 (D. Mont. Mar. 26, 2018), appeal dismissed, No. 18-35836, 2019 WL 141346 (9th Cir. Jan. 2, 2019) ("EPA based its use of the 100-year time horizon on a political agreement between nations rather than on science."); U.S. EPA Inventory of US Greenhouse Gas Emissions and Sinks 1990-2016 (2018) at 1-8 ("Parties to the UNFCCC have also agreed to use GWPs based upon a 100-year time horizon, although other time horizon values are available.").

[582] *See, e.g., W. Org. of Res. Councils v. U.S. Bureau of Land Mgmt*., No. CV 16-21-GF-BMM, 2018 WL 1475470, at *15 (D. Mont. Mar. 26, 2018), appeal dismissed, No. 18-35836, 2019 WL 141346 (9th Cir. Jan. 2, 2019) ("The Miles City PRMP and FEIS included estimates based on the 20-year time horizon.)

[583] The US EPA Inventory provides an estimate for 2016 of 38.6 MMT CO_{2eq} (100-yr methane GWP of 25) for methane from US petroleum systems (production), 163.5 MMT CO_{2eq} (100-yr methane GWP of 25) for methane from US natural gas systems (production), and 4966 MMT CO_{2eq} for CO_2 emissions from US combustion of oil and gas. Adjusting the methane figures for a 100 yr GWP of 31 instead of 25, by multiplying them by 31/25, would result in estimates of 47.8 MMT CO_{2eq} (100-yr methane GWP of 31) and 202.7 MMT CO_{2eq} for petroleum and gas systems respectively, for a total of 47.8 + 202.7 = 250.5 MMT CO_{2eq} (100-yr methane GWP of 31). The resulting ratio of US methane emissions from production to US CO_2 emissions from combustion is then 250.5 / 4966 = 0.05 = 5%.

[584] Converting the US EPA Inventory estimates for 2016 of 38.6 MMT CO_{2eq} (100-yr methane GWP of 25) for methane from US petroleum systems (production), 163.5 MMT CO_{2eq} (100-yr methane GWP of 25) for methane from US natural gas systems (production) for a 20 –yr

account the reality evinced by the Alvarez et al. study that actual oil and gas production methane emissions are 60% higher than EPA's methane estimates, the resulting ratio would be 22.4% instead of 5% when consider the 20-yr GWP.

By ignoring the importance of GWP timeframe entirely, the DEIS has failed to take a hard look at the impacts of methane from the Coastal Plain program. The impacts of increased methane emissions over a timeframe of 20 years are highly relevant in particular in light of the most recent report from the IPCC, which concluded that significant emissions reduction are necessary by 2030 to avoid the most devastating impacts of climate change as discussed in detail below. In particular, deep reductions of methane and other short-lived GHG emissions are required to limit global warming to 1.5°C with no or limited overshoot (at least 35% reductions in both methane and black carbon by 2050 relative to 2010).

5. BLM fails to account for black carbon emissions

BLM also fails to estimate black carbon emissions from Arctic Refuge drilling, despite the fact that our groups provided detailed information about black carbon and its impacts in our scoping comments. According to EPA, black carbon "is now recognized as an important climate-forcing agent with particular impact on the arctic region."[585] Black carbon, or more colloquially, "soot," is comprised of "small dark particles that remain after incomplete combustion of fossil fuel or biomass."[586] Black carbon "darkens the surface" of snow and ice, "directly absorbing light [and] reducing the reflectivity ('albedo') of snow and ice," both of which "are widely understood to lead to climate warming."[587] EPA has found that this increased absorption of solar radiation is a significant contributor to local warming, and importantly, to the hastening of snow and ice melt, and that "[s]ensitive regions such as the Arctic . . . are particularly vulnerable to the warming and melting effects of [black carbon]."[588] Indeed, "[s]tudies have shown that [black carbon] has especially strong impacts in the Arctic, contributing to earlier spring melting and sea

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methane GWP of 84-87, by multiplying by 86/25, yields estimates of 132.8 MMT CO_{2eq} (20-yr methane GWP of 86) for methane from US petroleum systems (production), and 562.4 MMT CO_{2eq} (20-yr methane GWP of 86) for methane from US natural gas systems, for a total of 132.8+562.4 = 695.2 MMT CO_{2eq} (20-yr methane GWP of 86). The ratio of US methane emissions from production to US CO_2 emissions from combustion is then 695.2 / 4966 = 0.14 = 14%.

[585] EPA Region 10, Response to Comments for Outer Continental Shelf Permit to Construct and Title V Air Quality Operating Permit, Conical Drilling Unit Kulluk at 121 (Oct. 21, 2011).

[586] Rao, R. and J.H. Somers. Undated. Black Carbon as a Short-Lived Climate Forcer: A Profile of Emission Sources and Co-Emitted Pollutants. Environmental Protection Agency. https://www3.epa.gov/ttnchie1/conference/ei19/session5/rao.pdf.

[587] EPA, REPORT TO CONGRESS ON BLACK CARBON at iii, xxviii, 3, 17 (Mar. 2012).

[588] *Id*. at iii, 18.

ice decline."[589] The acceleration of melting due to black carbon deposition is "believed to contribute significantly to the rapid melting of Arctic and Himalayan glaciers."[590]

"[Black carbon]'s short atmospheric lifetime (days to weeks) and heterogeneous distribution . . . result in regionally concentrated climate impacts," meaning "the location of emissions releases is a critical determinant of [black carbon]'s impacts, which is not the case for long-lived and more homogeneously distributed" greenhouse gas like carbon dioxide.[591] As a result, according to EPA, "[t]here is general scientific consensus that mitigation of [black carbon] will lead to positive regional impacts" and that "[t]he Arctic . . . may benefit more than other regions from reducing emissions of [black carbon]," with mitigation of "sources near to or within the Arctic having particularly significant impacts per unit of emissions."[592]

Several types of fuel sources, including fossil and biomass, emit black carbon, but in differing ratios. Diesel engines are a particularly important source, with up to 80% of its sub-2.5 micrometer particulate matter (PM2.5) composed of black carbon.[593] PM2.5 (and smaller), in addition to being a climate-forcing material through altered albedo, is also associated with human health impacts, particularly cardiovascular and respiratory ailments.[594] The flaring of natural gas is another important source of black carbon, particularly in the Arctic, where it contributes 42% of the annual mean black carbon concentration, and 52% of the concentration in March,[595] when it could have significant effects on early spring ice dynamics.

Given these impacts, the eight-nation Arctic Council in April 2015 adopted a framework agreement to hasten reduction of black carbon and methane emissions, in which those nations (including the U.S.) committed to taking "enhanced, ambitious, national and collective action to accelerate the decline in our overall black carbon emissions." [596] The Framework established an Expert Group on Black Carbon and Methane, which met in 2017 and recommended "that black carbon emissions be further collectively reduced by at least 25-33 percent below 2013 levels by 2025.[597]

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[589] *Id.* at 4.
[590] Rao & Somers, *supra*, at 10.
[591] *Id.* at 12.
[592] *Id.* at 13–14.
[593] *Id.* at 2.
[594] *Id.*
[595] Stohl, et al. 2013. Black carbon in the Arctic: the underestimated role of gas flaring and residential combustion emission. Atmospheric Chemistry & Physics 13:8833-8855.
[596] Enhanced Black Carbon and Methane Emissions Reductions: An Arctic Council Framework for Action. Annex 4. IQALUIT 2015 SAO Report to Ministers, https://oaarchive.arctic-council.org/bitstream/handle/11374/610/ACMMCA09_Iqaluit_2015_SAO_Report_Annex_4_TFBCM_Framework_Document.pdf?sequence=1&isAllowed=y.
[597] Arctic Council Secretariat, 2017. Expert Group on Black Carbon and Methane: Summary of progress and recommendations. 49 pp. https://oaarchive.arctic-council.org/bitstream/handle/11374/1936/EDOCS-4319-v1-

BLM fails to estimate the emissions of black carbon from Arctic Refuge drilling or identify potential mitigation measures when discussing air quality impacts and climate change.

6. *The DEIS Fails to Take a Hard Look at the Cumulative Impacts of the Action's Contribution to Climate Change*

The DEIS fails to assess the individual and cumulative impacts of the GHG emissions that will result from the program. There is no assessment of the climate change impact associated with the anticipated emissions. Nor does the DEIS adequately analyze the impacts of climate change on the resources of the Refuge. Moreover, there is no assessment of how the proposed action, cumulatively with other similar actions being taken by BLM nationwide, will cause impacts through climate change, or undermine attainment of the carbon budget and emissions reductions that are urgently necessary to address disastrous climate change impacts.

a. The DEIS Provides No Meaningful Analysis of the Cumulative Impacts

Instead of providing *any* analysis whatsoever of the impact of the action's contribution to climate change, when considered cumulatively with other reasonably foreseeable drivers of climate change, the DEIS states:

> The potential cumulative climate impacts of global development and associated GHG emissions have been discussed extensively in the published literature, including several reports by the Intergovernmental Panel on Climate Change and numerous scientific journals, and therefore, are not repeated here (BLM 2018a; IPCC 2014; Melillo et al. 2014; ACIA 2005).

The DEIS does not even provide a summary of the conclusions of the documents that it cites. The total absence of any analysis considering how the contribution of the emissions from the Coastal Plain oil and gas program action alternatives will interact with other sources of emissions to exacerbate the impacts of climate change violates the requirement to take a hard look at the cumulative impacts of the action being studied.

Courts have made clear that agencies cannot incorporate non-NEPA documents by reference as a substitute for providing analysis of an impact in the EIS itself, as BLM has attempted to do here.[598] Further, agencies cannot avoid analysis by purporting to "tier" to other

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[598] *See, e.g.*, *All. for Wild Rockies v. Kimbell*, 310 F. App'x 106, 109–10 (9th Cir. 2009) ("unlawful tiering occurs when a NEPA document refers to a more general non-NEPA document in order to explain and evaluate the environmental impact of the decision in question." (citing *League of Wilderness Defenders v. U.S. Forest Serv*., 549 F.3d 1211, 1218-20 (9th Cir.2008)); *see also Or. Natural Res. Council v. U.S. BLM*, 470 F.3d 818, 823 (9th Cir. 2006) (holding similarly proposed tiering impermissible because "the Watershed Analysis is not a NEPA

NEPA documents that themselves do not contain analysis that evaluates the specific impact in question.[599] BLM's reference to the SEIS for the GMT2 project ("BLM 2018a") does not provide an analysis of the cumulative effects of Coastal Plain leasing on climate change. Most obviously, the GMT2 SEIS evaluates a project producing *vastly* less oil and gas than BLM projects for the Coastal Plain leasing program.[600]

Moreover, in lieu of an actual cumulative impacts analysis, the GMT2 SEIS merely compares the proportion of oil produced by the GMT2 to the total oil production for Alaska and the US.[601] The DEIS concedes that Coastal Plain production will result in a *net* increase in downstream oil emissions by stimulating demand for oil. For "scale" it presents the net emissions from increased demand as a proportion relative to 2015 total GHG emissions from Alaska, the United States, and the world. Merely presenting emissions or oil volumes relative to totals from other sources, which is what both the GMT2 SEIS and present DEIS do, cannot constitute an adequate analysis of cumulative impacts. In *San Juan Citizens All. v. United States Bureau of Land Mgmt.*, No. 16-CV-376-MCA-JHR, 2018 WL 2994406, at *14 (D.N.M. June 14, 2018), the district court found that BLM had violated NEPA's requirement to consider cumulative impacts of oil and gas leasing on climate change by asserting that the emissions associated with combustion of all of the oil and gas from the parcels in question would not be different from the no leasing alternative because the total amount of emissions was small compared to total national and global emissions. The court explained that BLM's "facile conclusion that this particular impact is minor and therefore 'would not produce climate change impacts that differ from the No Action Alternative,' is insufficient" to comply with requirement to consider cumulative impacts.[602] Here, BLM provides even less analysis than what the court rejected in that case, as it draws no conclusion whatsoever about the climate change exacerbating consequences of increased emissions resulting from the Coastal Plain leasing program.

In sum, the DEIS fails to assess in any manner how driving up annual emissions by the amount identified in the DEIS over a period of 70 years will exacerbate climate change.

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document"); *Kern v. U.S. BLM*, 284 F.3d 1062, 1073 (9th Cir.2002) (holding that "tiering to a document that has not itself been subject to NEPA review is not permitted").

[599] *See, e.g.*, *Muckleshoot Indian Tribe v. US Forest Service*, 177 F.3d 800, 810–11 (9th Cir. 1999) (concluding that the EIS for a land exchange improperly tiered to the EIS for the applicable land and resources management plan because neither the exchange EIS nor the plan EIS fully analyzed the cumulative impacts of the increased logging on parcels that would be transferred).

[600] *See* DEIS at Table 3-3, page 3-7.

[601] *See* BLM 2018a at 312-313 ("The climate change analysis is essentially a cumulative effects analysis, and no additional cumulative effects analysis is included.")

[602] *San Juan Citizens All. v. United States Bureau of Land Mgmt.*, No. 16-CV-376-MCA-JHR, 2018 WL 2994406, at *14 (D.N.M. June 14, 2018).

b. The DEIS Fails to Adequately Assess Climate Change Impacts to Biological Resources, and the Cumulative and Synergistic Effects of Oil and Gas Development and Climate Change in the Refuge

The cursory treatment of cumulative effects described above is not cured by the discussion in the DEIS of climate change impacts on particular resources of the Refuge. Throughout the DEIS, BLM relies on improper attempts to tier, ignores the best available scientific information, and makes unsupported conclusory statements and generalizations instead of actually analyzing the cumulative impacts to the resources of the Coastal Plain.

Our Scoping Comments reminded the BLM that under NEPA, the agency must consider direct, indirect, and cumulative effects;[603] the latter referring to "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." The required "hard look" at these impacts must be structured in the context of a changing environment and the impacts of climate change. The overwhelming weight of scientific evidence allows no other conclusion but that the impacts of climate change are not only "reasonably foreseeable," but indeed already upon us. In accordance with established CEQ Guidance for assessing cumulative impacts,[604] BLM must address the additive, synergistic, and countervailing impacts between the effects of climate change and the effects of the various alternatives.

Our Scoping Comments reminded the BLM of their obligation to utilize recent, credible and comprehensive information, such as the "2017 Climate Science Special Report,"[605] as the information basis for assessment of climate change and its impacts on the north slope of Alaska, which include changes to temperature, permafrost, sea ice and the oceans. Indeed, in the interim since the submission of our comments yet another comprehensive source of climate change information has been published: The U.S. Global Change Research Program released the "Fourth National Climate Assessment" (NCA18) on November 23, 2018. In addition to extensive detail on the observed and projected changes to our climate driven primarily by fossil fuel use,[606] the

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[603] 40 C.F.R. § 1508.25(c)

[604] Council on Environmental Quality (CEQ). 1997. Considering Cumulative Effects Under the National Environmental Policy Act. Council of Environmental Quality, Executive Office of the President, Washington, D.C.

[605] USGCRP, 2017: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 470 pp., doi: 10.7930/J0J964J6, *available at*: https://science2017.globalchange.gov/

[606] Hayhoe, K., D.J. Wuebbles, D.R. Easterling, D.W. Fahey, S. Doherty, J. Kossin, W. Sweet, R. Vose, and M. Wehner, 2018: Our Changing Climate. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 72–144. doi: 10.7930/NCA4.2018.CH2.

NCA18 describes in detail the consequences for Alaska's terrestrial and marine wildlife and ecosystems; people, communities and infrastructure; and activities, culture and public health.[607]

The EIS captures none of this recent research, and instead relies almost entirely on outdated information. Specifically, instead of conducting the required analysis, the EIS inappropriately attempts a shortcut in the impacts discussion: "Regarding the potential effects of climate change on the region in general, the reader is referred to Section 3.2.4 of the GMT2 [Greater Mooses Tooth 2] Final SEIS for a detailed discussion."[608] The referenced section, Sec. 3.2.4 of the GMT2 SEIS,[609] does not, in fact, contain a detailed discussion or the potential impacts of climate change on the region. Instead, it contains the following text: "Potential climate change impacts in the project study area remain essentially as described in BLM 2014 (Greater Mooses Tooth One SEIS), Section 3.2.4.3, and are summarized as follows. . ." The climate change impacts discussed in Section 3.2.4 in the GMT1 SEIS[610] document, to which the coastal plain EIS is attempting to tier, relies primarily on the 2012 "*The United States National Climate Assessment – Alaska Technical Regional Report.*"[611] That document, which at the time was a recent and credible information source, is thus now nearly seven years out of date. In a region that "is among the fastest warming regions on Earth,"[612] ignoring the past seven years' worth of readily available, credible scientific information in the analysis is a grievous oversight. To cite just one example, sea ice loss, noted in those documents as threat to polar bears, walrus and ice seals, has continued to accelerate, with every year's annual minimum falling below the

[607] Markon, C., S. Gray, M. Berman, L. Eerkes-Medrano, T. Hennessy, H. Huntington, J. Littell, M. McCammon, R. Thoman, and S. Trainor, 2018: Alaska. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 1185–1241. doi: 10.7930/NCA4.2018.CH26

[608] Coastal Plain Oil and Gas Leasing Program DEIS, page 3-5.

[609] Bureau of Land Management. 2018. Alpine Satellite Development Plan for the Proposed Greater Mooses Tooth 2 Development Project Final Supplemental Environmental Impact Statement. Bureau of Land Management, Alaska State Office. September 2018. Anchorage, Alaska. https://eplanning.blm.gov/epl-front-office/projects/nepa/65817/155289/190057/GMT2_Final_SEIS_Volume_1-_Chapters_1-6.pdf

[610] Bureau of Land Management. 2014. Greater Mooses Tooth One Final Supplemental Environmental Impact Statement. Bureau of Land Management, Alaska State Office. October 2014. https://eplanning.blm.gov/epl-front-office/projects/nepa/37035/50832/55575/GMT1_Final_SEIS_Volume_1_Oct_2014_(2)_508.pdf

[611] Markon, C.J., S.F. Trainor, and F.S. Chapin, III, eds. 2012. The United States National Climate Assessment – Alaska Technical Regional Report: U.S. Geological Survey Circular 1379. 148 p. Anchorage, Alaska

[612] Hayhoe et al. 2018 (*op. cit.*)

2001-2010 average.[613] The 2018 National Climate Assessment's Alaska[614] chapter alone cites over 200 references dating from more recently than 2013—information that this EIS fails to convey. The Coastal Plain EIS must capture recent developments such as sea ice trends and other recent warming impacts, in order to provide an accurate analysis of climate change impacts.

In addition to the reliance on outdated information, we question more broadly the appropriateness of tiering the impacts discussion from information in the Mooses Tooth SEIS documents. GMT1 and GMT2 are both individual drilling projects, each comprised of a single drill pad. Therefore, the scope, scale, size and location of these projects differs greatly from the Arctic Refuge Coastal Plain proposal, and it varies dramatically in relation to the size of the Coastal Plain region, which is much larger in the NPRA than it is in the Arctic Refuge. Due to these distinctions, the analysis in those SEIS documents of the effects of the habitat destruction from infrastructure development combined with climate change impacts cannot rationally be tiered to or incorporated by reference without any additional analysis of how the more expansive scale of the proposed Coastal Plain leasing will interact with the impacts of climate change. Furthermore, these two projects were tiered to the to the 2012 Final Environmental Impact Statement[615] for the Integrated Activity Plan for National Petroleum Reserve-Alaska[616] -- a plan whose status is now uncertain, pending a review as required by Secretarial Order 3352 (May 31, 2017),[617] for which BLM announced scoping on November 21, 2018.[618]

Our Scoping Comments outlined in detail the climate change-related issues that the BLM needs to assess with respect to biological resources: To cite just a few examples:

> The EIS must analyze the direct, indirect and cumulative effects of the proposed action against a backdrop of continued climate change which is already causing habitat loss, conflicts with humans, and energetic costs, nutritional stress and strenuous long-distance swimming for polar bears. BLM must also consider how greenhouse gas (GHG) and black carbon pollution generated from an oil and gas program in the Arctic Refuge will affect polar bears and hinder recovery of the

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[613] http://nsidc.org/arcticseaicenews/charctic-interactive-sea-ice-graph/. See also Serreze, M. C., & Meier, W. N. (2018). The Arctic's sea ice cover: trends, variability, predictability, and comparisons to the Antarctic. *Annals of the New York Academy of Sciences*.

[614] Markon, et al. 2018 (*op.cit.)*

[615] Bureau of Land Management. 2012. National Petroleum Reserve-Alaska FINAL Integrated Activity Plan/Environmental Impact Statement. Bureau of Land Management, Alaska State Office. November 2012. https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=14702

[616] Bureau of Land Management. 2013. National Petroleum Reserve-Alaska. Integrated Activity Plan, Record of Decision. February 2013. https://eplanning.blm.gov/epl-front-office/projects/nepa/5251/42462/45213/NPR-A_FINAL_ROD_2-21-13.pdf

[617] https://www.doi.gov/sites/doi.gov/files/elips/documents/3352 - National Petroleum Reserve - Alaska.pdf

[618] https://www.federalregister.gov/documents/2018/11/21/2018-25336/notice-of-intent-to-prepare-an-integrated-activity-plan-and-environmental-impact-statement-for-the

species. (Page 46)

As discussed above, polar bears are spending more time onshore due to climate change, so terrestrial spills, lagoon, and nearshore spills are increasingly likely to affect their habitat and prey. (page 54)

It is critical that BLM analyze direct and indirect impacts in context with continued climate change in order to fully understand the effects of potential oil and gas development in the Arctic Refuge on polar bears. (page 58)

The EIS must robustly analyze both the effects of oil and gas development on climate change, and assess cumulative effects by describing the interactions between those activities and the various impacts of climate change on biological resources, wildlife and habitats within the Refuge. (page 150)

Some of the more climate-vulnerable species in the Refuge may need to move to broader expanses of tundra to the east and west that may persist longer into the future. It is thus important to maintain connectivity between the Refuge and these other areas, particularly on the Canadian side, where islands stretch the northern extent of terrestrial habitats.

The EIS does not satisfactorily address any of these issues, and indeed fails utterly to assess the interactions between how drilling activities and climate change might affect wildlife and habitat. The Climate Change discussion in the Marine Mammals section (3.3.5) briefly addresses the challenges to polar bears and other marine mammal species, but it fails utterly to address the interacting and cumulative effects of climate change and oil and gas drilling. The discussion in the Birds section (page 3-91) is brief, general, speculative and lacking in specificity for the many species involved. The discussion of climate change impacts on Terrestrial Mammals (page 3-109) fails to give any more than a passing mention to most of the climate - vulnerable coastal plain species.[619] Furthermore, the discussion of climate change impacts to caribou rightly describes some of the negative effects (vegetation change, increased insect harassment), but the section then concludes, without providing evidence of beneficial effects outweighing negative impacts, that: "Because climate change could involve both adverse and beneficial effects on caribou, it is not possible to predict the impacts on the PCH and CAH."

The EIS further fails to reference important relevant information on wildlife impacts found in the Arctic National Wildlife Refuge Revised Comprehensive Conservation Plan (CCP), which addresses climate change in detail, particularly in the "Affected Environment" chapter.[620]

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[619] Aimee Delach & Noah Matson, Defenders of Wildlife, *No Refuge from Warming, Climate Change Vulnerability of the Mammals of the Arctic National Wildlife Refuge*, *available at*: https://defenders.org/publications/no_refuge_from_warming_climate_change_vulnerability_of_the_mammals_of_the_arctic_national_wildlife_refuge.pdf.

[620] CCP EIS vol.1 ch.4.

The EIS only cites the CCP as a reference for Alternative A impacts, and ignores its lengthy discussion on climate change impacts to Vegetation (section 4.3.3), Fish (4.3.5.4), Birds (4.3.6.11) and Mammals (4.3.7).

Instead of conducting an actual analysis of direct, indirect and cumulative effects, the EIS simply resorts to repeating the following sentence: "The effects of climate change described under *Affected Environment* above, could influence the rate or degree of the potential direct and indirect impacts" under "Direct and Indirect Impacts" and "The effects of climate change described under *Affected Environment* above, could influence the rate or degree of the potential cumulative impacts" under "Cumulative Impacts" for each of the following topics:

Section 3.2.4 Physiography

Section 3.2.5 Geology and minerals

Section 3.2.7, Paleontological Resources

Section 3.2.8, Soil Resources

Section 3.2.9, Sand and Gravel

Section 3.2.10, Water Resources ("Direct and Indirect Impacts" only)

Section 3.3.1, Wetlands and Vegetation

Section 3.3.2, Fish and Aquatic species

Section 3.3.3, Birds

Section 3.3.4, Terrestrial mammals

Section 3.3.5, Marine mammals

Section 3.4.2, Cultural resources

Section 3.4.3, Subsistence Uses and resources

Section 3.4.6, Recreation

Section 3.4.8, Visual resources

Section 3.4.9, Transportation

Section 3.4.10, Economy

Nowhere does the EIS reckon with the nature of these impacts or how the impacts of climate change will interact with the impacts of oil and gas leasing and exploration. This failure to do an even qualitative assessment violates NEPA's requirement to take a "hard look" at these impacts.

c. The DEIS Fails to Evaluate the Impacts in Light of the Need for Urgent Emission Reductions

The DEIS also entirely fails to examine how the program will undermine attainment of the carbon budgets necessary to stabilize climate change. The DEIS totally fails to consider the cumulative impacts in light of the recent (2018) IPCC reports outlining the urgent need for drastic and sustained GHG reductions by 2030 to avoid the most disastrous consequences of climate change. BLM has totally failed to consider how the impact of the Coastal Plain leasing, cumulatively with reasonably foreseeable emissions from the federally managed mineral estate within BLM's jurisdiction, will influence the severity and timing of climate change impacts. This information is of obvious relevance to BLM's decision-making because BLM retains broad discretion to impose stipulations on the Coastal Plain leasing to defer the timing of production activities. A proper analysis of the cumulative impacts of the proposed action on climate change would provide information needed to evaluate how the timing of production could be delayed or otherwise conditioned to, inter alia, avoid stimulating demand.

Oil and gas leasing in the Arctic Refuge is fundamentally incompatible with staying within the global carbon budget necessary to maintain a livable planet.[621] The United States has committed to climate change targets that require the nation to steadily decrease greenhouse gas emissions. The Paris Climate Agreement recognized the need to hold long-term global average temperature "to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels."[622] Extensive research demonstrates the urgent need to reduce greenhouse gas emissions to meet that target. For example, the 2018 report from the Intergovernmental Panel on Climate Change (IPCC), quantified the devastating harms that would occur at 2°C warming, highlighting the necessity of limiting warming to 1.5°C to avoid catastrophic impacts to people and life on Earth.[623] Consistent with that assessment, in

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[621] Oil Change International, Drilling Towards Disaster: Why U.S. Oil and Gas Expansion is Incompatible with Climate Limits (January 2019), http://priceofoil.org/content/uploads/2019/01/Drilling-Towards-Disaster-Web-v2.pdf at 33 ("The opening of the Arctic Refuge to oil and gas exploration constitutes a fundamental denial of the path the United States must take to avoid climate catastrophe. Encouraging production growth in a remote and pristine environment from the mid2030s and beyond stands in direct opposition to how U.S. leaders must respond to the growing climate crisis.").

[622] United Nations Framework Convention on Climate Change, Conference of the Parties, Nov. 30-Dec. 11, 2015, Adoption of the Paris Agreement Art. 2, U.N. Doc. FCCC/CP/2015/L.9 (December 12, 2015), http://unfccc.int/resource/docs/2015/cop21/eng/l09.pdf ("Paris Agreement").

[623] IPCC [Intergovernmental Panel on Climate Change], Global Warming of 1.5°C, an IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty (October 6, 2018), http://www.ipcc.ch/report/sr15/.

November 2018, the U.S. Global Change Research Program released the Fourth National Climate Assessment, an authoritative assessment of the science of climate change that describes the economic costs of climate change.[624] It concludes, among other things, that "the impacts of climate change are intensifying across the country, and that climate-related threats to Americans' physical, social, and economic well-being are rising."[625] These include more frequent and intense extreme weather and climate-related events, increasing temperatures, and rising sea levels, which are expected to disrupt the economy, resulting in "annual losses in some economic sectors . . . [of] hundred of billions of dollars by the end of the century—more than the current gross domestic product (GDP) of many U.S. states."[626]

Immediate action is necessary to reduce emissions sufficiently to limit warming to 1.5°C. The 2018 IPCC special report on *Global Warming of 1.5°C* estimates the cumulative amount of carbon dioxide that can be emitted to maintain a 66 percent probability of limiting warming to 1.5°C at between 420 $GtCO_2$ and 570 $GtCO_2$ from January 2018 onwards.[627] At the current emissions rate of 42 $GtCO_2$ per year, this carbon budget would be expended in just 10 to 14 years, underscoring the urgent need for transformative global action to transition from fossil fuel use to clean energy.[628] In pathways consistent with 1.5°C, global net anthropogenic CO_2 emissions must decline by about 45% from 2010 levels by 2030 and reach net zero around 2045 or 2050.[629]

Reducing fossil fuel extraction is a necessary part of the solution. A recent global analysis found that carbon emissions from burning the oil, gas, and coal in the world's *currently operating* fields and mines would exceed the carbon budget consistent with staying below

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[624] The complete report is available at https://nca2018.globalchange.gov/.

[625] A. Jay *et al*., Overview, in *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* (D. R. Reidmiller *et al.*, eds., U.S. Global Change Research Program (2018)) (emphasis omitted).

[626] U.S. Global Change Research Program, Summary, in *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* (D. R. Reidmiller *et al.*, eds., U.S. Global Change Research Program (2018)).

[627] IPCC [Intergovernmental Panel on Climate Change], Global Warming of 1.5°C, an IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty (October 6, 2018), http://www.ipcc.ch/report/sr15/ at Summary for Policymakers, SPM-16.

[628] *Id.*

[629] IPCC [Intergovernmental Panel on Climate Change], Global Warming of 1.5°C, an IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty (October 6, 2018), http://www.ipcc.ch/report/sr15/,at Summary for Policymakers, SPM-15.

1.5°C.[630] The estimated U.S. carbon budget consistent with limiting temperature rise to 2°C—a level of warming well above what the Paris Agreement requires—ranges from 34 $GtCO_2$ to 123 $GtCO_2$.[631] To stay well below 2°C, the 2019 study recommends that no new fossil fuel extraction or transportation infrastructure should be built, and governments should grant no new permits for new fossil fuel extraction and infrastructure.[632] Moreover, some fields and mines, primarily in rich countries, must be closed before fully exploiting their resources.[633] Importantly, a 2015 scientific and economic study found that "all Arctic [oil and gas] resources should be classified as unburnable," because "development of [oil and gas] resources in the Arctic . . . [is] incommensurate with efforts to limit average global warming to 2 °C."[634] A U.S. Geological Survey report demonstrates that fossil fuels produced on federal lands account for a significant percentage of U.S. emissions—approximately 24 percent of national carbon dioxide, seven percent of methane, and two percent of nitrogen emissions from 2005-2014.[635] The potential carbon emissions from already leased fossil fuel resources on U.S. federal lands would exhaust the remaining U.S. carbon budget consistent with the 1.5°C target.[636]

A recent study in the journal Climatic Change analyzed the effectiveness of policies to restrict fossil fuel supply and concluded "restrictive supply-side policy instruments (targeting fossil fuels) have numerous characteristic economic and political advantages over otherwise similar restrictive demand-side instruments (targeting greenhouse gases)."[637]

Moreover, in 2016, the United States recognized that Arctic development must be consistent with national and international climate goals. In a joint statement with Canadian Prime Minister Trudeau, President Obama agreed that in the Arctic "commercial activities will occur only when the highest safety and environmental standards are met, including national and global

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[630] Oil Change International at 5.

[631] Robiou du Pont, Yann et al., Equitable mitigation to achieve the Paris Agreement goals, 7 Nature Climate Change 38 (2017); Peters, Glen P. et al., Measuring a fair and ambitious climate agreement using cumulative emissions, 10 Environmental Research Letters 105004 (2015); Gignac, Renaud and H. Damon Matthews, Allocating a 2C cumulative carbon budget to countries, 10 Environmental Research Letters 075004 (2015).

[632] Oil Change International at 11.

[633] *Id*.

[634] C. McGlade & P. Ekins, *The geographical distribution of fossil fuels unused when limiting global warming to 2°C*, 517 NATURE 187, 187, 190 (2015).

[635] M.D. Merrill *et al. Federal Lands Greenhouse Gas Emissions and Sequestration in the United States: Estimates for 2005–14*, U.S. Geological Survey Scientific Investigations Report 2018–5131 (2018), https://doi.org/10.3133/sir20185131.

[636] Ecoshift Consulting, et al., The Potential Greenhouse Gas Emissions of U.S. Federal Fossil Fuels, Prepared for Center for Biological Diversity & Friends of the Earth (2015), http://www.ecoshiftconsulting.com/wpcontent/uploads/Potential-Greenhouse-Gas-Emissions-U-S-Federal-Fossil-Fuels.pdf.

[637] F. Green & R. Denniss, *Cutting with both arms of the scissors: the economic and political case for restrictive supply-side climate policies*, CLIMATIC CHANGE (2018).

climate and environmental goals, and Indigenous rights and agreements."[638] Additionally, if, as the Joint Statement commits, Canada and the United States develop a "science-based standard for considering the life-cycle impacts of commercial activities in the Arctic,"[639] it will disclose both the potential for expansion of fossil fuel supplies to compete directly for market share with clean alternatives and efficiency technology, and the deleterious investment signals stemming from perpetuation of federal involvement in promoting carbon-intensive energy sources.

In sum, oil and gas development in the Arctic is a critical issue for the current administration to reexamine as it assesses how to bring its supply-side policies in line with international commitments to combat climate change, and how to meet climate targets based on sound science and economics. This analysis must assess how reducing the supply of oil from federal lands can affect global oil markets and lead to a reduction in demand and a resulting reduction in GHG pollution. Oil and gas production requires investments in capital-intensive, high-carbon fuel infrastructure that resists being shut down and locks in long-term fuel supplies, making it more difficult and expensive to later shift to a low-carbon pathway and reach greenhouse gas targets.[640] BLM must acknowledge that drilling in the Arctic Refuge is inconsistent with maintaining a livable planet.

d. The Best Available Science Demonstrates that Urgent GHG Emissions Reductions Must Be Achieved in the Near Term, and Management of US Federal Oil and Gas Leasing Can Impact Stabilization of Climate Change.

The EPA has determined that human emissions of greenhouse gases are causing global warming that is harmful to human health and welfare.[641] The D.C. Circuit has upheld this decision as supported by the vast body of scientific evidence on the subject.[642] Indeed, EPA could not have found otherwise, as virtually every climatologist in the world accepts the legitimacy of global warming and the fact that human activity has resulted in atmospheric warming and planetary climate change.[643] The world's leading minds and most respected institutions—guided by increasingly clear science and statistical evidence—agree that dramatic

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[638] The White House, *U.S.-Canada Joint Statement on Climate, Energy, and Arctic Leadership* (Mar. 10, 2016).

[639] *Id.*

[640] Oil Change International at 13.

[641] *See* 74 Fed. Reg. 66,496 (Dec. 15, 2009), *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act.*

[642] *See Coal. for Responsible Regulation, Inc. v. E.P.A.*, 684 F.3d 102, 120-22 (D.C. Cir. 2012).

[643] *See, e.g., See* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *The Science of Climate Change* (1995); U.S. Climate Change Science Program, *Abrupt Climate Change* (Dec. 2008); Hansen, James et al., *Global Surface Temperature Change*, REVIEWS OF GEOPHYSICS, 48, RG4004 (June 2010); *see also*, Muller, Richard A., *Conversion of a Climate Change Skeptic*, NEW YORK TIMES, July 28, 2012 (citing Richard A. Muller, et. al., *A New Estimate of the Average Earth Surface Temperature, Spanning 1753 to 2011*; Richard A. Muller, et. al., *Decadal Variations in the Global Atmospheric Land Temperatures*.

action is necessary to avoid planetary disaster.[644] GHG concentrations have been steadily increasing over the past century,[645] and the insatiable consumption of fossil fuels is pushing the world to a tipping point where, once reached, catastrophic change will be unavoidable.[646] In fact, the impacts from climate change are already being experienced, with drought and extreme weather events becoming increasingly common.[647]

Renowned NASA climatologist Dr. James Hansen provides the analogy of loaded dice—suggesting that there still exists some variability, but that climate change is making these extreme events ever more common.[648] In turn, climatic change and GHG emissions are having dramatic impacts on plant and animal species and habitat, threatening both human and species

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[644] *See, e.g.,* Rob Atkinson, et al., *Climate Pragmatism: Innovation, Resilience, and No Regrets* (July 2011); Ramanathan, Veerabhadran et al., *The Copenhagen Accord for Limiting Global Warming: Criteria, Constraints, and Available Avenues* (Feb. 2010); UNITED NATIONS, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *Climate Change 2007: Synthesis Report* (2007); A.P. Sokolov, et al., *Probablistic Forecast for Twenty-First-Century Climate Based on Uncertainties in Emissions (without Policy) and Climate Parameters,* MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT) (Oct. 2009) (abstract); UNITED NATIONS, FRAMEWORK CONVENTION ON CLIMATE CHANGE, *Report of the Conference of the Parties* (Dec. 2011); Bill McKibben, *Global Warming's Terrifying New Math,* ROLLING STONE, July 19, 2012; Elizabeth Muller, *250 Years of Global Warming,* BERKLEY EARTH, July 29, 2012; Marika M. Holland, et. al., *Future abrupt reductions in summer Arctic sea ice,* Geophysical Research Letters, Vol. 33, L23503 (2006).

[645] *See* Randy Strait, et al., *Final Colorado Greenhouse Gas Inventory and Reference Case Projections: 1990-2020,* CENTER FOR CLIMATE STRATEGIES (Oct. 2007); Robin Segall et al., *Upstream Oil and Gas Emissions Measurement Project,* U.S. ENVIRONMENTAL PROTECTION AGENCY; Lee Gribovicz, *Analysis of States' and EPA Oil & Gas Air Emissions Control Requirements for Selected Basins in the Western United States,* WESTERN REGIONAL AIR PARTNERSHIP (Nov. 2011).

[646] *See, e.g.,* James Hansen, *Tipping Point: Perspective of a Climatologist,* STATE OF THE WILD 2008-2009; GLOBAL CARBON PROJECT, *A framework for Internationally Co-ordinated Research on the Global Carbon Cycle,* ESSP Report No. 1; INTERNATIONAL ENERGY AGENCY, *CO_2 Emissions from Fuel Combustion,* Highlights 2011; GLOBAL CARBON PROJECT, *10 Years of Advancing Knowledge on the Global Carbon Cycle and its Management*; Malte Meinshausen, et al., *Greenhouse-gas emission targets for limiting global warming to 2° C,* 458 NATURE, April 30, 2009.

[647] *See, e.g.,* UNITED NATIONS, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation* (2011); Aiguo Dai, *Increasing drought under global warming in observations and models,* NATURE: CLIMATE CHANGE (Aug. 2012); Stephen Saunders, et. al., *Hotter and Drier: The West's Changed Climate* (March 2008).

[648] *See,* James Hansen, et al., *Climate Variability and Climate Change: The New Climate Dice* (Nov. 2011); James Hansen, et al., *Perception of Climate Change* (March 2012); James Hansen, et al., *Increasing Climate Extremes and the New Climate Dice* (Aug. 2012).

resiliency and the ability to adapt to these changes.[649] According to experts at the Government Accountability Office ("GAO"), federal land and water resources are vulnerable to a wide range of effects from climate change, some of which are already occurring. These effects include, among others, "(1) physical effects, such as droughts, floods, glacial melting, and sea level rise; (2) biological effects, such as increases in insect and disease infestations, shifts in species distribution, and changes in the timing of natural events; and (3) economic and social effects, such as adverse impacts on tourism, infrastructure, fishing, and other resource uses."[650]

Despite the strength of these findings, federal agencies have historically failed to take serious action to address these impacts. This type of dismissive approach fails to satisfy the guidance outlined in Department of Interior Secretarial Order 3226, discussed below, or the requirements of NEPA. "Reasonable forecasting and speculation is … implicit in NEPA, and we must reject any attempt by agencies to shirk their responsibilities under NEPA by labelling any and all discussion of future environmental effects as 'crystal ball inquiry.'"[651]

NEPA imposes "action forcing procedures … requir[ing] that agencies take a *hard look* at environmental consequences."[652] These "environmental consequences" may be direct, indirect, or cumulative.[653] BLM is required to take a hard look at those impacts as they relate to the agency action. "Energy-related activities contribute 70% of global GHG emissions; oil and gas together represent 60% of those energy-related emissions through their extraction, processing and subsequent combustion."[654] Even if science cannot isolate each additional coal mine or oil or gas well's contribution to these overall emissions, this does not obviate BLM's responsibility to consider fossil fuel development in the action area in light of the cumulative impacts of fossil fuel emissions. In other words, the BLM cannot ignore the larger relationship that oil and gas management decisions have to the broader climate crisis that we face. Here, the agency's

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[649] *See* Fitzgerald Booker, et al., *The Ozone Component of Climate Change: Potential Effects on Agriculture and Horticultural Plant Yield, Product Quality and Interactions with Invasive Species*, 51 J. INTEGR. PLANT BIOL. 4, 337-351 (2009); Peter Reich, *Quantifying plant response to ozone: a unifying theory*, TREE PHYSIOLOGY 3, 63-91 (1987).

[650] GAO Report, *Climate Change: Agencies Should Develop Guidance for Addressing the Effects on Federal Land and Water Resources* (2007); *see also* Committee on Environment and Natural Resources, National Science and Technology Council, *Scientific Assessment of the Effects of Global Climate Change on the United States* (2008); Melanie Lenart, et al. *Global Warming in the Southwest: Projections, Observations, and Impacts* (2007) (describing impacts from temperature rise, drought, floods and impacts to water supply on the southwest).

[651] *Save Our Ecosystems v. Clark*, 747 F.2d 1240, 1246 n.9 (9th Cir. 1984 (quoting *Scientists' Inst. for Pub. Info., Inc. v. Atomic Energy Comm.*, 481 F.2d 1079, 1092 (D.C. Cir. 1973)).

[652] *Methow Valley*, 490 U.S. at 350 (citations omitted) (emphasis added).

[653] 40 C.F.R. §§ 1502.16, 1508.7, 1508.8.

[654] International Investors Group on Climate Change, *Global Climate Disclosure Framework for Oil and Gas Companies*.

analysis must include the full scope of GHG emissions.[655] If we are to stem climate disaster—the impacts of which we are already experiencing—the agency's decision making must be reflective of this reality and plan accordingly.

BLM is responsible for the management of 700 million acres of federal onshore subsurface minerals.[656] Indeed, "the ultimate downstream GHG emissions from fossil fuel extraction from federal lands and waters by private leaseholders could have accounted for approximately 23% of total U.S. GHG emissions and 27% of all energy-related GHG emissions."[657] This suggests that "ultimate GHG emissions from fossil fuels extracted from federal lands and waters by private leaseholders in 2010 could be more than 20-times larger than the estimate reported in the CEQ inventory, [which estimates total federal emissions from agencies' operations to be 66.4 million metric tons]. Overall, ultimate downstream GHG emissions resulting from fossil fuel extraction from federal lands and waters by private leaseholders in 2010 are estimated to total 1,551 [million metric tons of CO_2 equivalent ("$MMTCO_2e$")]."[658] In 2010, the GAO estimated that BLM could eliminate up to 40% of methane emissions from federally authorized oil and natural gas development, the equivalent of eliminating 126 Bcf or 46.3 $MMTCO_2e$ of GHG pollution annually and equivalent to roughly 13 coal-fired power plants.[659] More recently, the United States Geological Survey estimated that greenhouse gas emissions from public lands fossil fuel production (excluding exports) from 2005 through 2015 constituted between 22.2% and 25.9% of total U.S. emissions.[660]

Therefore, even though greenhouse gas emissions from the proposed program may look minor when viewed on the scale of the global climate crisis, when considered cumulatively with all of the other GHG emissions from BLM-managed land, they become significant and cannot be ignored. Moreover, this analysis is of obvious relevance to determinations within BLM's

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[655] *See Neighbors of Cuddy Mountain v. U.S. Forest Service*, 137 F.3d 1372, 1379 (9th Cir. 1998) ("To 'consider' cumulative effects, some quantified or detailed information is required. Without such information, neither the courts nor the public, in reviewing the [agency's] decisions, can be assured that the [agency] provided the hard look that it is required to provide.").

[656] *See* U.S. DOI-BLM, *Mineral and Surface Acreage Managed By BLM, available at:* http://www.blm.gov/wo/st/en/info/About_BLM/subsurface.html.

[657] Stratus Consulting, prepared for: The Wilderness Society, *Greenhouse Gas Emissions from Fossil Energy Extracted from Federal Lands and Waters*, Feb. 1, 2012.

[658] *Id.*

[659] GAO, *Federal Oil & Gas Leases: Opportunities Exist to Capture Vented and Flared Natural Gas, Which Would Increase Royalty Payments and Reduce Greenhouse Gases*, GAO-11-34 at 12 (Table 1)(October 2010). This GHG equivalence assumes a CH_4 warming potential of 72 (20-year warming period) as per the Intergovernmental Panel on Climate Change's Fourth Assessment Report and using EPA's GHG equivalencies calculator.

[660] U.S. Geological Survey 2018, Federal Lands Greenhouse Gas Emissions and Sequestration in the United States: Estimates for 2005–14, Scientific Investigations Report 2018–5131.

discretion here, such as how to condition lease terms, and qualifying the rights associated with any leases issued to ensure that BLM meets its substantive mandates to, inter alia, prevent undue and unnecessary degradation, ensure that its actions do not jeopardize ESA-listed species, use its resources to recover such species, and preserve the values of the Refuge for its priority purposes, as required by the Improvement Act and ANILCA. In particular, this analysis is relevant to the question of whether the lease terms should defer production until such as time as carbon reduction requirements to address climate change have been met.

In assessing the cumulative impact, BLM must consider recent climate science and carbon budgeting, and must consider how opening additional lands to fossil fuel leasing, in combination with other reasonably foreseeable and occurring BLM leasing, will undermine attainment of the emissions reductions necessary *now* to prevent the worst impacts of climate change from occurring. Since the dawn of the industrial revolution a century ago, the average global temperature has risen some 1.6 degrees Fahrenheit. Most climatologists agree that, while the warming to date is already causing environmental problems, another 0.4 degree Fahrenheit rise in temperature, representing a global average atmospheric concentration of carbon dioxide ("CO_2") of 450 parts per million ("ppm"), could set in motion unprecedented changes in global climate and a significant increase in the severity of natural disasters—and could represent the point of no return.[661] In February 2017, the atmospheric concentration of CO_2 was approximately 406.42 ppm, up from 404.04 ppm the same month a year earlier.[662]

Climate change has been intensively studied and acknowledged at the global, national, and regional scales. Climate change is being fueled by the human-caused release of greenhouse gas emissions, in particular carbon dioxide and methane. The Intergovernmental Panel on Climate Change ("IPCC") is a Nobel Prize-winning scientific body within the United Nations that reviews and assesses the most recent scientific, technical, and socio-economic information relevant to our understanding of climate change. In its report to policymakers in 2014, the IPCC provided a summary of our understanding of human-caused climate change. Among other things, the IPCC summarized:[663]

- Human influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gases are the highest in history. Recent climate changes have had widespread impacts on human and natural systems.

- Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, and sea level has risen.

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[661] *See* David Johnston, *Have We Passed the Point of No Return on Climate Change?*, Scientific American (April 2015), *available at:* http://www.scientificamerican.com/article/have-we-passed-the-point-of-no-return-on-climate-change/.

[662] NOAA, Earth System Research Laboratory, *Trends in Atmospheric Carbon Dioxide*, *available at:* http://www.esrl.noaa.gov/gmd/ccgg/trends/.

[663] IPCC AR5, *Summary for Policymakers* (March 2014) *available at:* http://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf.

- Anthropogenic greenhouse gas emissions have increased since the pre-industrial era, driven largely by economic and population growth, and are now higher than ever. This has led to atmospheric concentrations of carbon dioxide, methane, and nitrous oxide that are unprecedented in at least the last 800,000 years. Their effects, together with those of other anthropogenic drivers, have been detected throughout the climate system and are extremely likely to have been the dominant cause of the observed warming since the mid-20th century.

- In recent decades, changes in climate have caused impacts on natural and human systems on all continents and across the oceans. Impacts are due to observed climate change, irrespective of its cause, indicating the sensitivity of natural and human systems to changing climate.

- Continued emission of greenhouse gases will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive, and irreversible impacts for people and ecosystems. Limiting climate change would require substantial and sustained reductions in greenhouse gas emissions which, together with adaptation, can limit climate change risks.

- Surface temperature is projected to rise over the 21st century under all assessed emission scenarios. It is very likely that heat waves will occur more often and last longer, and that extreme precipitation events will become more intense and frequent in many regions. The ocean will continue to warm and acidify, and global mean sea level will continue to rise.

Carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are recognized as the key greenhouse gases contributing to climate change. As mentioned above, in 2009, the EPA found that these "six greenhouse gases taken in combination endanger both the public health and the public welfare of current and future generations."[664] The D.C. Circuit has upheld this decision as supported by the vast body of scientific evidence on the subject.[665] According to the National Oceanic and Atmospheric Administration ("NOAA"), "[t]he combined average temperature over global land and ocean surfaces for August 2016 was the highest for August in the 137-year period of record, marking the 16th consecutive month of record warmth for the globe." [666] The global climate crisis is happening and it may well be accelerating quickly.

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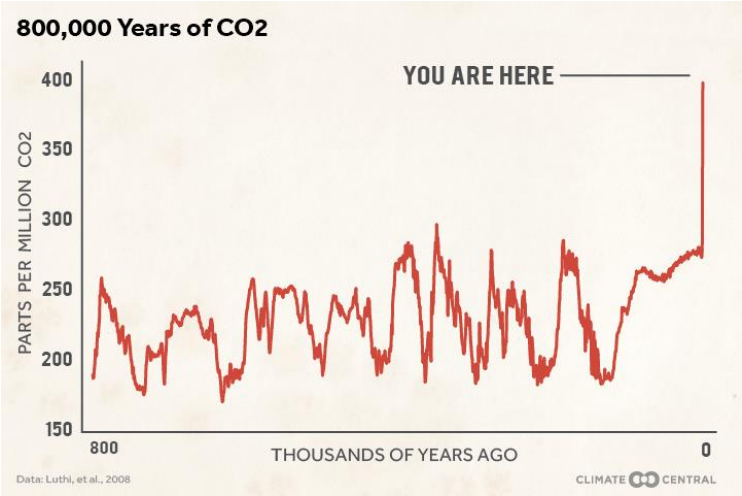
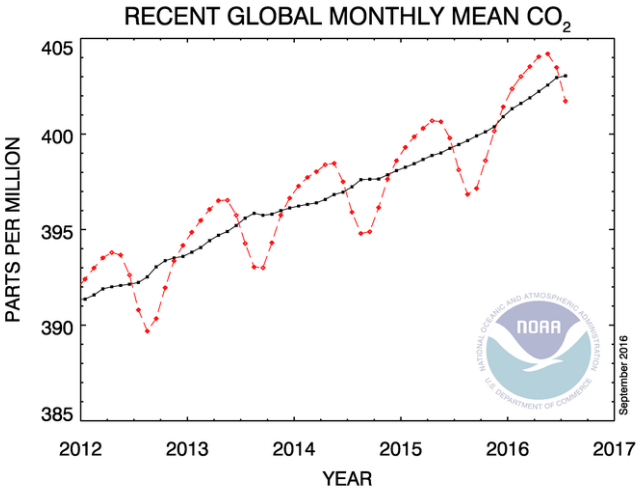
[664] U.S. Environmental Protection Agency, *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act* 74 Fed. Reg. 66,496 (Dec. 15, 2009).

[665] *See Coal. for Responsible Regulation, Inc. v. EPA.*, 684 F.3d 102, 120-22 (D.C. Cir. 2012).

[666] NOAA, Global Analysis – August 2016, *available at:* https://www.ncdc.noaa.gov/sotc/global/201608.





The graphs above show globally averaged historic and monthly mean carbon dioxide.

The IPCC in 2013 affirmed: "Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased" causing "widespread impacts on human and natural systems."[667] This is consistent with the findings of the United States' 2014 Third National Climate Assessment, stating: "That the planet has warmed is 'unequivocal,' and is corroborated through multiple lines of evidence, as is the conclusion that the causes are very likely human in origin."[668] With particular regard to the Southwest Region—which includes Colorado, New Mexico, Utah, Arizona, Nevada, and California—the National Climate Assessment included in the following overview:[669]

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[667] IPCC AR5 Synthesis Report at 2. See also Overland, J., et al., The urgency of Arctic change, Polar Science (2018), doi: https://doi.org/10.1016/j.polar.2018.11.008.

[668] Jerry M. Melillo, *et al.*, Climate Change Impacts in the United States: The Third National Climate Assessment (2014) at 61, *available at:* http://nca2014.globalchange.gov.

[669] *See id.* at 463–86.

- Snowpack and streamflow amounts are projected to decline in parts of the Southwest, decreasing surface water supply reliability for cities, agriculture, and ecosystems.

- The Southwest produces more than half of the nation's high-value specialty crops, which are irrigation-dependent and particularly vulnerable to extremes of moisture, cold, and heat. Reduced yields from increasing temperatures and increasing competition for scarce water supplies will displace jobs in some rural communities.

- Increased warming, drought, and insect outbreaks, all caused by or linked to climate change, have increased wildfires and impacts to people and ecosystems in the Southwest. Fire models project more wildfire and increased risks to communities across extensive areas.

- Flooding and erosion in coastal areas are already occurring even at existing sea levels and damaging some California coastal areas during storms and extreme high tides. Sea level rise is projected to increase as Earth continues to warm, resulting in major damage as wind-driven waves ride upon higher seas and reach farther inland.

- Projected regional temperature increases, combined with the way cities amplify heat, will pose increased threats and costs to public health in southwestern cities, which are home to more than 90% of the region's population. Disruptions to urban electricity and water supplies will exacerbate these health problems.

The recently-published 2018 Fourth National Climate Assessment confirms and updates these findings, concluding, *inter alia*, that:

- Climate change creates new risks and exacerbates existing vulnerabilities in communities across the United States, presenting growing challenges to human health and safety, quality of life, and the rate of economic growth.

- Climate change affects the natural, built, and social systems we rely on individually and through their connections to one another. These interconnected systems are increasingly vulnerable to cascading impacts that are often difficult to predict, threatening essential services within and beyond the Nation's borders.

- While mitigation and adaptation efforts have expanded substantially in the last four years, they do not yet approach the scale considered necessary to avoid substantial damages to the economy, environment, and human health over the coming decades.

- The quality and quantity of water available for use by people and ecosystems across the country are being affected by climate change, increasing risks and costs to agriculture, energy production, industry, recreation, and the environment.

- Impacts from climate change on extreme weather and climate-related events, air quality, and the transmission of disease through insects and pests, food, and water increasingly

threaten the health and well-being of the American people, particularly populations that are already vulnerable.

- Climate change increasingly threatens Indigenous communities' livelihoods, economies, health, and cultural identities by disrupting interconnected social, physical, and ecological systems.

- Ecosystems and the benefits they provide to society are being altered by climate change, and these impacts are projected to continue. Without substantial and sustained reductions in global greenhouse gas emissions, transformative impacts on some ecosystems will occur; some coral reef and sea ice ecosystems are already experiencing such transformational changes.

- Coastal communities and the ecosystems that support them are increasingly threatened by the impacts of climate change. Without significant reductions in global greenhouse gas emissions and regional adaptation measures, many coastal regions will be transformed by the latter part of this century, with impacts affecting other regions and sectors.[670]

Immediate and substantial greenhouse gas reductions are required to avoid catastrophic impacts to people and communities. "Following the warmest year on record in 2014 according to most estimates, 2015 reached record warmth yet again, surpassing the previous record by more than 0.1°C."[671]

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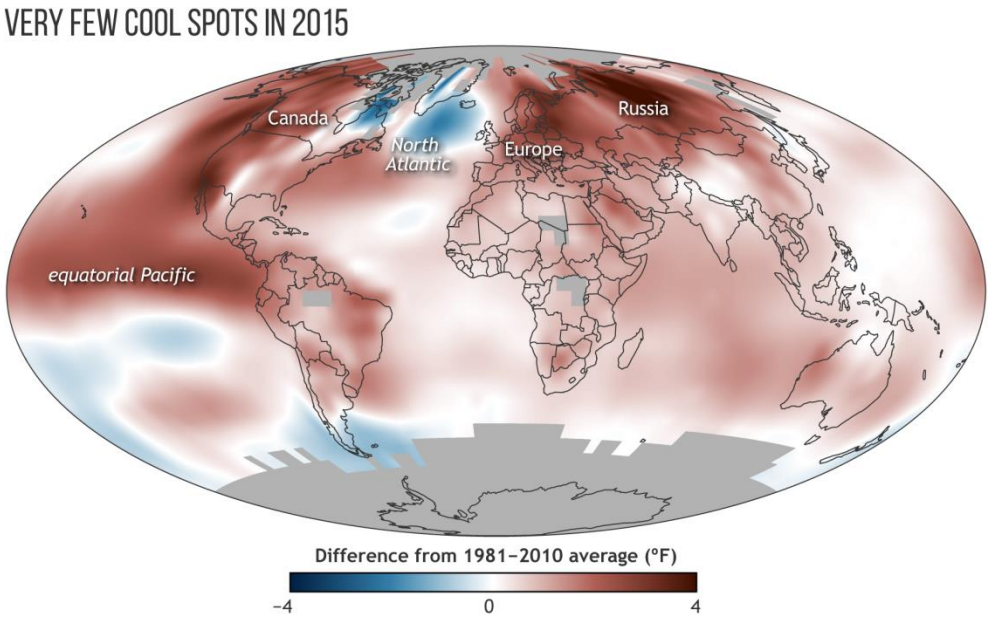
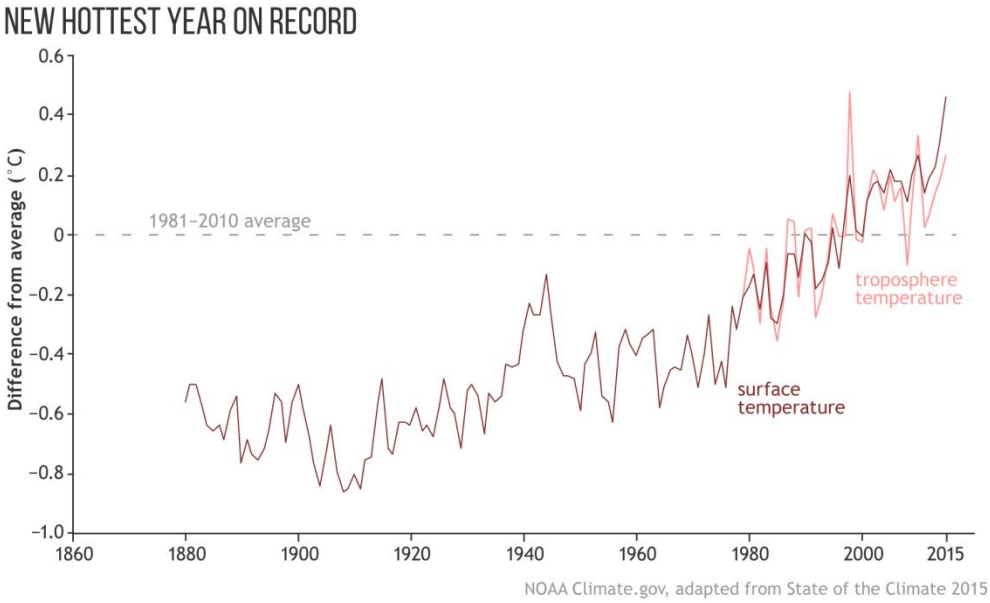
[670] U.S. Global Change Research Program, 2018: *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II: Report-in-Brief* [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)], http://nca2018.globalchange.gov/.

[671] American Meteorological Society, *State of the Climate in 2015*, Vol.97, No.8 (Aug. 2016), at S7.





The Paris Agreement commits all signatories to a target holding long-term global average temperature "to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels."[672] As articulated by a team of international climate scientists, including Dr. James Hansen, in a 2013 report: "The widely accepted target of limiting human-made global warming to 2 degrees Celsius (3.6 degrees Fahrenheit) above preindustrial level is too high and would subject young people, future generations and nature to irreparable harm…. Observational data reveal that some climate

[672] Paris Agreement at Art. 2.

extremes are already increasing in response to warming of several tenths of a degree in recent decades; these extremes would likely be much enhanced with warming of 2°C or more."[673] "Runaway climate change—in which feedback loops drive ever-worsening climate change, regardless of human activities—are now seen as a risk even at 2°C of warming."[674] Indeed, the impacts of 2°C temperature rise have been "revised upwards, sufficiently so that 2°C now more appropriately represents the threshold between 'dangerous' and 'extremely dangerous' climate change."[675]

Although the Paris Agreement underscored that immediate action is needed to avoid 'extremely dangerous' warming, meeting the voluntary commitments adopted in Paris alone will be insufficient to meet goal of limiting temperature change to between 1.5°C and 2.0°C above pre-industrial levels. As noted by a 2015 UNEP technical report: The emissions gap between what the full implementation of the unconditional [intended nationally determined contributions (INDCs)] contribute and the least-cost emission level for a pathway to stay below 2°C, is estimated to be 14 $GtCO_2e$ (range: 12-17) in 2030 and 7 $GtCO_2e$ (range: 5-10) in 2025. When conditional INDCs are included as fully implemented, the emissions gap in 2030 is estimated to be 12 GtCO2e (range: 10-15) and 5 $GtCO_2e$ (range: 4-8) in 2025.[676]

In other words, far greater emissions reductions are necessary to stay below 2.0°C, let alone aspire to no more than 1.5°C of warming. If no further progress were made beyond the Paris Agreement, expected warming by 2100 would be 3.5°C.[677] In the alternative, if no action is taken and the status quo is maintained estimated warming by 2100 is upwards of 4.5°C.[678]

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[673] James Hansen, *et al.*, *Assessing "Dangerous Climate Change": Required Reduction of Carbon Emissions to Protect Young People, Future Generations and Nature*, 8 PLoS ONE 8 e81648 (2013).

[674] Greg Muttitt, *et al.*, *The Sky's Limit: Why the Paris Climate Goals Require a Managed Decline of Fossil Fuel Production*, Oil Change International (Sept. 2016) at 6; *see also* David Spratt, *Climate Reality Check: After Paris, Counting the Cost* (March 2016) at 8 ("there is an unacceptable risk that before 2°C of warming, significant "long-term" feedbacks will be triggered, in which warming produces conditions that generate more warming, so that carbon sinks such as the oceans and forests become less efficient in storing carbon, and polar warming triggers the release of significant permafrost and clathrate carbon stores. Such an outcome could render ineffective human efforts to control the level of future warming to manageable proportions.").

[675] Kevin Anderson and Alice Bows, *Beyond 'Dangerous' Climate Change: Emission Scenarios for a New World*, Phil. Trans. R. Soc. (2011).

[676] United Nations Environment Programme (UNEP), *The Emissions Gap Report 2015: A UNEP Synthesis Report* (Nov. 2015) at xviii.

[677] Spratt, *Climate Reality Check* at 2.

[678] *See* Climate Interactive, Climate Scorecard, available at: https://www.climateinteractive.org/programs/scoreboard/*; see also*, Andrew P. Schurer, *et al.*, *Separating Forced from Chaotic Climate Variability over the Past Millennium*, Journal of Climate, Vol. 26 (March 2013).

With specific regard to United States commitments under the Paris Agreement, the U.S. INDC set specific greenhouse gas emissions reduction target for 2025 of a 26% to 28% reduction below the 2005 emission levels, producing a range in 2005 net GHG emissions from 6,323 to 7,403 $MTCO_2e$.[679] The difference between this target and the estimated 2025 emissions without INDC policies results in an 'emissions gap' ranging from 896 to 2,121 $MTCO_2e$.[680]

Both the IPCC and National Climate Assessment recognize the dominant role of fossil fuels in driving climate change:

> While scientists continue to refine projections of the future, observations unequivocally show that climate is changing and that the warming of the past 50 years is primarily due to human-induced emissions of heat-trapping gases. These emissions come mainly from burning coal, oil, and gas, with additional contributions from forest clearing and some agricultural practices.[681]

CO_2 emissions from fossil fuel combustion and industrial processes contributed about 78% to the total GHG emission increase between 1970 and 2010, with a contribution of similar percentage over the 2000–2010 period (*high confidence*).[682]

As summarized in a recent report:

> The Paris Agreement aims to help the world avoid the worst effects of climate change and respond to its already substantial impacts. The basic climate science involved is simple: cumulative carbon dioxide (CO_2) emissions over time are the key determinant of how much global warming occurs. This gives us a finite *carbon budget* of how much may be emitted in total without surpassing dangerous temperature limits.[683]

Scientific research has established that there is no room in the global carbon budget for new fossil fuel extraction if we are to avoid the worst dangers from climate change. Instead, new fossil fuel production and infrastructure must be halted and most existing production must be phased out to meet the Paris Agreement climate targets and avoid catastrophic climate dangers.

The United States has committed to the climate change target of holding the long-term global average temperature "to well below 2°C above pre-industrial levels and to pursue efforts

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[679] Jeffery Greenblatt & Max Wei, *Assessment of the climate commitments and additional mitigation policies of the Unites States*, Nature Climate Change (Sept. 2016), *available at:* http://www.nature.com/nclimate/journal/vaop/ncurrent/full/nclimate3125.html.

[680] *Id.* at 2; *see also* UNEP, Emissions Gap Report.

[681] Third National Climate Assessment at 2.

[682] IPCC AR5 Synthesis Report at 46.

[683] *The Sky's Limit* at 6.

to limit the temperature increase to 1.5°C above pre-industrial levels"[684] under the Paris Agreement.[685] The United States signed the Paris Agreement on April 22, 2016 as a legally binding instrument through executive agreement,[686] and the treaty entered into force on November 4, 2016. The Paris Agreement codifies the international consensus that climate change is an "urgent threat" of global concern.[687] The Agreement recognized the 1.5°C climate target because 2°C of warming is no longer considered a safe guardrail for avoiding catastrophic climate impacts and runaway climate change.[688]

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[684] United Nations Framework Convention on Climate Change, Conference of the Parties, Nov. 30-Dec. 11, 2015, Adoption of the Paris Agreement Art. 2, U.N. Doc. FCCC/CP/2015/L.9 (December 12, 2015), http://unfccc.int/resource/docs/2015/cop21/eng/l09.pdf ("Paris Agreement").

[685] On December 12, 2015, 197 nation-state and supra-national organization parties meeting in Paris at the 2015 United Nations Framework Convention on Climate Change Conference of the Parties consented to the Paris Agreement committing its parties to take action so as to avoid dangerous climate change.

[686] United Nations Treaty Collection, Chapter XXVII, 7.d Paris Agreement, List of Signatories; U.S. Department of State, Background Briefing on the Paris Climate Agreement (December 12, 2015). Although not every provision in the Paris Agreement is legally binding or enforceable, the U.S. and all parties are committed to perform the treaty commitments in good faith under the international legal principle of *pacta sunt servanda* ("agreements must be kept"). Vienna Convention on the Law of Treaties, Art. 26.

[687] *See* Paris Agreement, at Annex (*"Recognizing* the need for an effective and progressive response to the urgent threat of climate change on the basis of the best available scientific knowledge").

[688] Hansen, James et al., Target atmospheric CO_2: Where should humanity aim?, 2 The Open Atmospheric Science Journal 217 (2008); Anderson, Kevin & Alice Bows, Beyond 'dangerous' climate change: emission scenarios for a new world, 369 Philosophical Transactions of the Royal Society 20 (2011); Hansen, James et al., Assessing "dangerous climate change": Required reduction of carbon emissions to protect young people, future, generations and nature, 8 PLoS ONE e81648 (2013); IPCC [Intergovernmental Panel on Climate Change], Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, [Core Writing Team, R.K. Pachauri & L.A. Meyer (eds.)], IPCC, Geneva, Switzerland (2014), http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf at 72-73; U.N. Subsidiary Body for Scientific and Technological Advice, Report on the Structured Expert Dialogue on the 2013-2015 review, FCCC/SB/2015/1NF.1 (2015), http://unfccc.int/resource/docs/2015/sb/eng/inf01.pdf.; Hansen, James et al., Ice melt, sea level rise and superstorms: evidence from paleoclimate data, climate modeling, and modern observation that 2°C global warming could be dangerous, 16 Atmospheric Chemistry and Physics 3761(2016); Schleussner, Carl-Friedrich et al., Differential climate impacts for policy-relevant limits to global warming: the case of 1.5C and 2C, 7 Earth Systems Dynamics 327 (2016).

Notably, a 2018 report from the Intergovernmental Panel on Climate Change (IPCC), the authoritative international scientific body for the assessment of climate change, quantified the devastating harms that would occur at 2°C warming, highlighting the necessity of limiting warming to 1.5°C to avoid catastrophic impacts to people and life on Earth.[689] According to the IPCC's analysis, the damages that would occur at 2°C warming compared with 1.5°C include more deadly heatwaves, drought and flooding; 10 centimeters of additional sea level rise within this century, exposing 10 million more people to flooding; a greater risk of triggering the collapse of the Greenland and Antarctic ice sheets with resulting multi-meter sea level rise; dramatically increased species extinction risk, including a doubling of the number of vertebrate and plant species losing more than half their range, and the virtual elimination of coral reefs; 1.5 to 2.5 million more square kilometers of thawing permafrost area with the associated release of methane, a potent greenhouse gas; a tenfold increase in the probability of ice-free Arctic summers; a higher risk of heat-related and ozone-related deaths and the increased spread of mosquito-borne diseases such as malaria and dengue fever; reduced yields and lower nutritional value of staple crops like corn, rice, and wheat; a doubling of the number of people exposed to climate-change induced increases in water stress; and up to several hundred million more people exposed to climate-related risks and susceptible to poverty by 2050.[690]

Scientific research has estimated the global carbon budget – the cumulative amount of carbon dioxide that can be emitted – for maintaining a likely chance of meeting the Paris climate target of 1.5°C or well below 2°C. According to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), total cumulative anthropogenic CO_2 emissions must remain below 400 $GtCO_2$ from 2011 onward for a 66 percent probability of limiting warming to 1.5°C, and below 1,000 $GtCO_2$ from 2011 onward for a 66 percent probability of limiting warming to 2°C above pre-industrial levels.[691] The 2018 IPCC special report on *Global Warming of 1.5°C* provided a revised carbon budget for a 66 percent probability of limiting warming to 1.5°C, estimated at 420 $GtCO_2$ and 570 $GtCO_2$ depending on the temperature dataset used, from January 2018 onwards.[692] At the current emissions rate of 42

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[689] IPCC [Intergovernmental Panel on Climate Change], Global Warming of 1.5°C, an IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty (October 6, 2018), http://www.ipcc.ch/report/sr15/.

[690] *Id.* at Summary for Policymakers.

[691] IPCC [Intergovernmental Panel on Climate Change], 2013: Summary for Policymakers. In: Climate Change 2013: The Physical Science Basis, Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F. et al. (eds.)], Cambridge University Press (2013) at 25; IPCC [Intergovernmental Panel on Climate Change], Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)], IPCC, Geneva, Switzerland (2014) at 63–64 & Table 2.2.

[692] IPCC [Intergovernmental Panel on Climate Change], Global Warming of 1.5°C, an IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and

$GtCO_2$ per year, this carbon budget would be expended in just 10 to 14 years, underscoring the urgent need for transformative global action to transition from fossil fuel use to clean energy.[693]

Importantly, a 2016 global analysis found that the carbon emissions that would be emitted from burning the oil, gas, and coal in the world's *currently operating* fields and mines would fully exhaust and exceed the carbon budgets consistent with staying below 1.5°C or 2°C.[694] Further, the reserves in currently operating oil and gas fields alone, even excluding coal mines, would lead to warming beyond 1.5°C. An important conclusion of the analysis is that *most* of the existing oil and gas fields and coal mines will need to be closed before their reserves are fully extracted in order to limit warming to 1.5 degrees.[695] Some existing fields and mines will need to be closed to limit warming to 2 degrees.[696]

In short, there is no room in the carbon budget for *new* fossil fuel extraction *anywhere*, including in the United States.[697] Additionally, most of the world's existing oil and gas fields and coal mines will need to be closed before their reserves are fully extracted to meet a 1.5°C target. The United States has an urgent responsibility to lead in this transition from fossil fuel production to 100 percent clean energy as a wealthy nation with ample financial resources and technical capabilities, and due to our dominant role in driving climate change and its harms. The U.S. is the world's largest historic emitter of greenhouse gas pollution, responsible for 26 percent of cumulative global CO_2 emissions since 1870, and is currently the world's second highest emitter on an annual and per capita basis.[698]

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related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty (October 6, 2018), http://www.ipcc.ch/report/sr15/.

[693] *Id.*

[694] Oil Change International, The Sky's Limit: Why the Paris Climate Goals Require a Managed Decline of Fossil Fuel Production (September 2016), available at: http://priceofoil.org/2016/09/22/the-skys-limit-report/.

[695] Oil Change International, The Sky's Limit California: Why the Paris Climate Goals Demand That California Lead in a Managed Decline of Oil Extraction, May 2018, available at: http://priceofoil.org/ca-skys-limit at 7, 13.

[696] Oil Change International, The Sky's Limit: Why the Paris Climate Goals Require a Managed Decline of Fossil Fuel Production (September 2016) at 5, 7.

[697] This conclusion was reinforced by the IPCC Fifth Assessment Report which estimated that global fossil fuel reserves exceed the remaining carbon budget (from 2011 onward) for staying below 2°C (a target incompatible with the Paris Agreement) by 4 to 7 times, while fossil fuel resources exceed the carbon budget for 2°C by 31 to 50 times. *See* Bruckner, Thomas et al., 2014: Energy Systems. In: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press (2014), available at: http://ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_chapter7.pdf at Table 7.2.

[698] Global Carbon Project, Global Carbon Budget (November 13, 2017) at 10, 18, 32, http://www.globalcarbonproject.org/carbonbudget/17/presentation.htm

Research on the United States' carbon budget and the carbon emissions locked in U.S. fossil fuels similarly establishes that the U.S. must halt new fossil fuel production and rapidly phase out existing production to avoid the worst dangers of climate change. Scientific studies have estimated the U.S. carbon budget consistent with a 1.5°C target at 25 $GtCO_2eq$ to 57 $GtCO_2eq$ on average,[699] depending on the sharing principles used to apportion the global budget across countries.[700] The estimated U.S. carbon budget consistent with limiting temperature rise to 2°C – a level of warming well above what the Paris Agreement requires and which would result in devastating harms – ranges from 34 $GtCO_2$ to 123 $GtCO_2$,[701] depending on the sharing

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[699] Robiou du Pont, Yann et al., Equitable mitigation to achieve the Paris Agreement goals, 7 Nature Climate Change 38 (2017), and Supplemental Tables 1 and 2. Quantities measured in $GtCO_2eq$ include the mass emissions from CO_2 as well as the other well-mixed greenhouse gases (CO_2,methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and SF_6) converted into CO_2-equivalent values, while quantities measured in $GtCO_2$ refer to mass emissions of just CO_2 itself.

[700] Robiou du Pont et al. (2017) averaged across IPCC sharing principles to estimate the U.S. carbon budget from 2010 to 2100 for a 50 percent chance of returning global average temperature rise to 1.5°C by 2100, consistent with the Paris Agreement's "well below 2°C" target, and based on a cost-optimal model. The study estimated the U.S. carbon budget consistent with a 1.5°C target at 25 $GtCO_2eq$ by averaging across four equity principles: capability (83 $GtCO_2eq$), equal per capita (118 $GtCO_2eq$), greenhouse development rights (-69 $GtCO_2eq$), and equal cumulative per capita (-32 $GtCO_2eq$). The study estimated the U.S. budget at 57 $GtCO_2eq$ when averaging across five sharing principles, adding the constant emissions ratio (186 $GtCO_2eq$) to the four above-mentioned principles. However, the constant emissions ratio, which maintains current emissions ratios, is not considered to be an equitable sharing principle because it is a grandfathering approach that "privileges today's high-emitting countries when allocating future emission entitlements." For a discussion of sharing principles, see Kartha, S. et al., Cascading biases against poorer countries, 8 Nature Climate Change 348 (2018).

[701] Robiou du Pont et al. (2017) estimated the U.S. carbon budget for a 66 percent probability of keeping warming below 2°C at 60 $GtCO_2eq$ based on four equity principles (capability, equal per capita, greenhouse development rights, equal cumulative per capita), and at 104 $GtCO_2eq$ based on five principles (adding in constant emissions ratio, but see footnote above). For a 66 percent probability of keeping warming below 2°C, Peters et al. (2015) estimated the U.S. carbon budget at 34 $GtCO_2$ based on an "equity" approach for allocating the global carbon budget, and 123 $GtCO_2$ under an "inertia" approach. The "equity" approach bases sharing on population size and provides for equal per-capita emissions across countries, while the "inertia" approach bases sharing on countries' current emissions. Similarly using a 66 percent probability of keeping warming below 2°C, Gignac et al. (2015) estimated the U.S. carbon budget at 78 to 97 $GtCO_2$, based on a contraction and convergence framework, in which all countries adjust their emissions over time to achieve equal per-capita emissions. Although the contraction and convergence framework corrects current emissions inequities among countries over a specified time frame, it does not account for inequities stemming from historical emissions differences. When accounting for historical responsibility, Gignac et al. (2015) estimated that the United States has an additional cumulative carbon debt of 100 $GtCO_2$ as of 2013. *See* Peters, Glen P. et al., Measuring a fair and ambitious climate agreement using

principles used. Under any scenario, the remaining U.S. carbon budget compatible with the Paris climate targets is extremely small.

An analysis of U.S. fossil fuel resources demonstrates that the potential carbon emissions from already leased fossil fuel resources on U.S. federal lands would essentially exhaust the remaining U.S. carbon budget consistent with the 1.5°C target. This analysis estimated that recoverable fossil fuels on U.S. *federal lands* would release up to 349 to 492 $GtCO_2eq$ of carbon emissions, if fully extracted and burned.[702] Of that amount, *already leased* fossil fuels would release 30 to 43 $GtCO_2eq$ of emissions, while as yet unleased fossil fuels would emit 319 to 450 $GtCO_2eq$ of emissions. Thus, carbon emissions from *already leased* fossil fuel resources *on federal lands alone* (30 to 43 $GtCO_2eq$) would essentially exhaust the U.S. carbon budget for a 1.5°C target (25 to 57 $GtCO_2eq$), if these leased fossil fuels are fully extracted and burned. The potential carbon emissions from unleased fossil fuel resources (319 to 450 $GtCO_2eq$) would exceed the U.S. carbon budget for limiting warming to 1.5°C many times over.[703] This does not include the additional carbon emissions that will be emitted from fossil fuels extracted on non-federal lands, estimated up to 500 $GtCO_2eq$ if fully extracted and burned.[704] This research further establishes that the United States must halt new fossil fuel projects and close existing fields and mines before their reserves are fully extracted to achieve the Paris climate targets and avoid the worst damages from climate change.

Furthermore, research that models emissions pathways for limiting warming to 1.5° or 2°C shows that a rapid end to fossil fuel extraction in the United States is critical. Specifically, research indicates that g*lobal* fossil fuel CO_2 emissions must *end entirely* by mid-century and likely as early as 2045 for a reasonable likelihood of limiting warming to 1.5° or 2°C. [705] Due to

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cumulative emissions, 10 Environmental Research Letters 105004 (2015); Gignac, Renaud and H. Damon Matthews, Allocating a 2C cumulative carbon budget to countries, 10 Environmental Research Letters 075004 (2015).

[702] Ecoshift Consulting, et al., The Potential Greenhouse Gas Emissions of U.S. Federal Fossil Fuels, Prepared for Center for Biological Diversity & Friends of the Earth (2015), available at: http://www.ecoshiftconsulting.com/wpcontent/uploads/Potential-Greenhouse-Gas-Emissions-U-S-Federal-Fossil-Fuels.pdf.

[703] Ecoshift Consulting, et al., The Potential Greenhouse Gas Emissions of U.S. Federal Fossil Fuels, Prepared for Center for Biological Diversity & Friends of the Earth (2015), at 4.

[704] Ecoshift Consulting, et al., The Potential Greenhouse Gas Emissions of U.S. Federal Fossil Fuels, Prepared for Center for Biological Diversity & Friends of the Earth (2015), at 3 ("the potential GHG emissions of federal fossil fuels (leased and unleased) are 349 to 492 Gt CO2e, representing 46% to 50% of potential emissions from all remaining U.S. fossil fuels").

[705] Rogelj, Joeri et al., Energy system transformations for limiting end-of-century warming to below 1.5°C, 5 Nature Climate Change 519 (2015); IPCC [Intergovernmental Panel on Climate Change], Global Warming of 1.5°C, an IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty (October 6, 2018), http://www.ipcc.ch/report/sr15/.

the small U.S. carbon budget, the United States must end fossil fuel CO_2 emissions even earlier: between 2025 and 2030 on average for a reasonable chance of staying below 1.5°C, and between 2040 and 2045 on average for a reasonable chance of staying below 2°C.[706] Ending U.S. fossil fuel CO_2 emissions between 2025 and 2030, consistent with the Paris climate targets, would require an immediate halt to new production and closing most existing oil and gas fields and coal mines before their reserves are fully extracted.

Ending the approval of new fossil fuel production and infrastructure is also critical for preventing "carbon lock-in," where approvals and investments made now can lock in decades worth of fossil fuel extraction that we cannot afford. New approvals for wells, mines, and fossil fuel infrastructure -- such as pipelines, marine and rail import and export terminals -- require upfront investments that provide financial incentives for companies to continue production for decades into the future.[707] Given the long-lived nature of fossil fuel projects, ending the approval of new fossil fuel projects avoids the lock-in of decades of fossil fuel production and associated emissions.[708]

In a recent special report, issued October 2018, the IPCC has underscored the need for urgent emissions reductions on an unprecedented scale.[709] To avoid exceeding 1.5°C of warming, global net CO_2 emissions reductions would need to decline by 45% relative to 2010

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[706] *See* Climate Action Tracker, USA (last updated 30 April 2018), available at: http://climateactiontracker.org/countries/usa at Country Summary figure showing U.S. emissions versus year.

[707] Davis, Steven J. and Robert H. Socolow, Commitment accounting of CO2 emissions, Environmental Research Letters 9: 084018 (2014); Erickson, Peter et al., Assessing carbon lock-in, 10 Environmental Research Letters 084023 (2015); Erickson, Peter et al., Carbon lock-in from fossil fuel supply infrastructure, Stockholm Environment Institute, Discussion Brief (2015); Seto, Karen C. et al., Carbon Lock-In: Types, Causes, and Policy Implications, 41 Annual Review of Environmental Resources 425 (2016); Green, Fergus and Richard Denniss, Cutting with both arms of the scissors: the economic and political case for restrictive supply-side climate policies, Climatic Change, https://doi.org/10.1007/s10584-018-2162-x (2018).

[708] Erickson et al. (2015): "The essence of carbon lock-in is that, once certain carbon-intensive investments are made, and development pathways are chosen, fossil fuel dependence and associated carbon emissions can become "locked in", making it more difficult to move to lower-carbon pathways and thus reduce climate risks." Green and Denniss (2018): "When production processes require a large, upfront investment in fixed costs, such as the construction of a port, pipeline or coalmine, future production will take place even when the market price of the resultant product is lower than the long-run opportunity cost of production. This is because rational producers will ignore 'sunk costs' and continue to produce as long as the market price is sufficient to cover the marginal cost (but not the average cost) of production. This is known as 'lock-in.'"

[709] *See* IPCC, Global Warming of 1.5 °C (Oct. 2018), *available at* http://www.ipcc.ch/report/sr15/.

levels by 2030, and reach net zero by 2050.[710] To keep warming below 2°C, emissions would have to decline by 20% relative to 2010 levels by 2030, and reach zero by 2075.[711] According to the report, "[b]y the end of 2017, anthropogenic CO_2 emissions since the preindustrial period are estimated to have reduced the total carbon budget for 1.5°C by approximately 2200±320 $GtCO_2$." [712] Further, "[t[he associated remaining budget is being depleted by current emissions of 42± 3 $GTCO_2$ per year."[713] Estimates of the remaining carbon budget to remain under 1.5°C depend on the measure of temperature effects considered and the probability of success.[714] For a 50% chance of successfully staying under 1.5°C, estimates range from 580 to 770 $GTCO_2$.[715] For a 66% chance, estimates range from 420 to 570 $GTCO_2$.[716]

The report explains that limiting "limiting global warming to 1.5°C …would require rapid and far-reaching transitions," including in energy, "unprecedented in terms of scale."[717] With high confidence, the report finds that, "In 1.5°C pathways with no or limited overshoot, renewables are projected to supply 70–85% (interquartile range) of electricity in 2050."[718] It also acknowledges that current Paris Agreement ambitions will fail to limit warming to 1.5°C, even if additional aggressive emissions goals are pursued *after* 2030: "Estimates of the global emissions outcome of current nationally stated mitigation ambitions as submitted under the Paris Agreement would lead to global greenhouse gas emissions in 2030 of 52–58 $GtCO_2$eq yr-1 (*medium confidence)*. Pathways reflecting these ambitions would not limit global warming to 1.5°C, even if supplemented by very challenging increases in the scale and ambition of emissions reductions after 2030 (*high confidence*)."[719] With high confidence, the report finds that, "Pathways that limit global warming to 1.5°C with no or limited overshoot show clear emission reductions by 2030 … All but one show a decline in global greenhouse gas emissions to below 35 $GtCO_2$eq yr-1 in 2030, and half of available pathways fall within the 25–30 $GtCO_2$eq yr-1 range (interquartile range), a 40–50% reduction from 2010 levels."[720] Alarmingly,

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[710] IPCC, Global Warming of 1.5 °C: Summary for Policy Makers (Oct. 2018), at SPM-15, *available at* http://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf.

[711] *Id*.

[712] *Id*. at SPM-16.

[713] *Id*.

[714] *Id*. at SPM-16.

[715] *Id*.

[716] *Id*. The report also notes the sources of uncertainty in the budget estimates: "Uncertainties in the climate response to CO_2 and non-CO_2 emissions contribute ±400 $GtCO_2$ and the level of historic warming contributes ±250 $GtCO_2$ (*medium confidence*). Potential additional carbon release from future permafrost thawing and methane release from wetlands would reduce budgets by up to 100 $GtCO_2$ over the course of this century and more thereafter (*medium confidence*). In addition, the level of non-CO_2 mitigation in the future could alter the remaining carbon budget by 250 $GtCO_2$ in either direction (*medium confidence*)." 2018 IPCC Report at SPM-16.

[717] *Id*. at SPM-21.

[718] *Id*.

[719] *Id*. at SPM-24.

[720] *Id*.

the report also finds, "Pathways reflecting current nationally stated mitigation ambition until 2030 are broadly consistent with cost-effective pathways that result in a global warming of about 3°C by 2100, with warming continuing afterwards (*medium confidence*)."[721]

Simply put, the timeframe to avoid catastrophic climate change is short, and the management of our federal minerals is dangerously out of step with this reality.

To meet NEPA's requirements for the consideration of cumulative impacts, BLM must consider the emissions anticipated from the Coastal Plain program in light of the urgent need for reductions identified by the IPCC. Moreover, BLM's consideration of alternatives must include alternatives that consider how BLM can use its discretion to mitigate these impacts, for example, by lease terms that defer production.

7. *The DEIS Misrepresents the Economic Impacts of the Alternatives by Failing to Provide Adequate Information to Gauge the Negative Economic Impacts of the Proposed Leasing Alternatives*

Though calculating the positive economic impacts of the projected oil and gas extraction,[722] the DEIS fails to ascertain the costs associated with the contribution to climate change resulting from its decision, or the economic benefits of avoiding or delaying carbon emissions. Consequently, the economic analysis is slanted and misrepresents the economic consequences of the proposed action. The DEIS fails to provide the information necessary to assess the magnitude of the negative consequences associated with the plan's contribution to climate change, and to assess those impacts in economic terms. The DEIS also fails to provide the information necessary to assess the economic benefits from the avoided emissions that would result from deferring production under the leases. In other words, the DEIS fails to consider whether delaying production is a more economically efficient way of keep carbon sequestered, and therefore remaining within carbon budgets, than other methods of reducing carbon emissions. Without adequate information to make such comparisons, the EIS is skewed, inflating the apparent economic benefits of the oil and gas production while obscuring its economic harms.

B. BLM'S ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON AIR QUALITY IS INADEQUATE.

BLM's air quality impacts analysis is deficient and fails to identify and disclose reasonably foreseeable direct, indirect, and cumulative air quality impacts from all phases of oil and gas development on the Coastal Plain. Attachment A to our comments provides a detailed technical review of the air quality analysis contained in the Draft EIS, prepared by Megan Williams. We fully incorporate that document by reference into our comments, and provide a brief summary below.

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[721] *Id.*

[722] *See, e.g.*, DEIS vol. 1 at 3-236–3-237 (quantifying royalties on the anticipated oil and gas production), 3-235 (quantifying income generated from labor induced by the oil and gas program).

An adequate NEPA analysis and compliance with the Clean Air Act requires BLM to quantitatively analyze the air pollution impacts associated with each alternative considered in the EIS, ensure prevention of significant deterioration of air quality, fully analyze a suite of enforceable mitigation measures, and address impacts from greenhouse gas emissions. In order to adequately analyze these issues, BLM was required to perform a quantitative analysis of criteria pollutants, but entirely failed to do so.[723] Further exacerbating this issue, BLM's qualitative analysis in the draft EIS is deficient.

Baseline levels of air quality must be established prior to allowing development on the Coastal Plain. In the absence of a baseline monitoring data record that is representative of ambient air conditions on the Coastal Plain, BLM should ensure that quality-assured monitoring data are collected within the program area in accordance with EPA and State data quality criteria and that the data are made available to the public, prior to allowing development on the Coastal Plain.[724] Establishment of a comprehensive monitoring network within the program area will help serve as a backstop to track and ensure air quality protection throughout the Coastal Plain and to help identify areas of concern with regard to air impacts. Beyond establishing baseline air quality monitoring data, however, BLM must complete a more comprehensive, quantitative modeling analysis of future development in this DEIS in order to *prevent* significant impacts throughout the Coastal Plain (as opposed to taking corrective action after a significant impact is identified by an air quality monitor).

The DEIS fails to analyze or condition leasing on a comprehensive set of required, measurable, and enforceable mitigations to ensure there will be no significant impacts to air quality associated with leasing and development of the Coastal Plain.[725] BLM's failure to include specific, enforceable mitigation measures makes it unclear how the agency will ensure there will be no significant impacts to air quality – i.e., that development will not adversely impact human health and the natural environment and will not result in significant deterioration of air quality as required by the Clean Air Act. None of the Lease Stipulations address air quality, and the BLM's Required Operating Procedures 5 and 6 do not adequately address air quality and are largely discretionary. Monitoring does not mitigate against impacts to air quality, and BLM should not conflate these requirements. We encourage BLM to closely review the list of potential measures included in Ms. Williams' report that may mitigate impacts to air quality for inclusion in the final EIS.[726] The failure to analyze sufficient mitigation measures also violates NEPA, which requires BLM to consider reasonable alternatives to eliminate or mitigate adverse impacts to air quality. As BLM expressly acknowledges, the potential impacts to air quality under all of the action alternatives would be identical – demonstrating that the range of alternatives is insufficient.[727] BLM must put forth an alternative that ensures no significant air quality impacts and full compliance with the Clean Air Act. This would include one that fully considers whether

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[723] *See* Attachment A, secs. II & III.

[724] *See* Attachment A, sec. I.

[725] *See* Attachment A, sec. VI.

[726] Attachment A, sec. VI.

[727] DEIS vol. 1 at 3-16 ("Alternatives B through D would be the same as described under Impacts Common to All Action Alternatives.").

there will be unacceptable health risks associated with criteria and hazardous air pollutant impacts, significant cumulative visibility impacts, or significant deterioration of air quality. BLM should use modeling to determine what specific mitigation measures and pace / location / intensity of development will be needed to ensure BLM's actions will not cause or contribute to violations of the National Ambient Air Quality Standards or adverse impacts to air quality related values, and then BLM must include those measures as enforceable mitigation measures in the DEIS.

Even setting aside the failure to analyze or condition leasing on a comprehensive set of mitigations, the DEIS is deficient because BLM failed to conduct the modeling necessary to adequately analyze air quality impacts, compare alternatives, and support conclusions about compliance with the Clean Air Act. BLM is required to independently estimate the emissions inventory, model air pollution impacts associated with each of the action alternatives, and compare these results to the baseline of Alternative A.[728] The absence of modeling deprives the public and decision makers from understanding the air quality impacts of an oil and gas program and evaluating the potential tradeoffs and differences between alternatives – including between Alternative A and the action alternatives. Air quality modeling is a necessary tool for assessing future air pollutant impacts under NEPA and supporting BLM's conclusion that oil and gas activities would be unlikely to exceed health-based National Ambient Air Quality Standards and thresholds set to protect against adverse impacts to air quality related values. A quantitative modeling assessment of the air quality impacts from the alternative development scenarios, based on modeling of emissions associated with the specific assumptions for the development Alternatives – including the location and density of development – would be needed in order to understand whether or not impacts would be greater under certain alternatives for some pollutants, in some locations. BLM's failure to conduct modeling renders the DEIS deficient.

Moreover, BLM's decision to not include a modeling analysis of potential future oil and gas development impacts on the Coastal Plain in the DEIS because the location, timing, and level of development is not known at this time, is not supported by evidence that the BLM either cannot obtain the needed information without exorbitant cost or cannot present a credible scientific estimation based on methods generally accepted in the scientific community.[729] According to NEPA regulation, if an estimation of reasonably foreseeable significant adverse impacts cannot be obtained because, among other things, the means to obtain it are "not known", BLM has an obligation to include an evaluation "based upon theoretical approaches or research methods generally accepted in the scientific community" provided that "the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason."[730] These methods of dealing with incomplete information are required under NEPA and must be thoroughly exercised before drawing the conclusion that an analysis of oil and gas development impacts cannot be included in the DEIS.[731]

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[728] Attachment A, sec. II.
[729] *See* 40 C.F.R. § 1502.22
[730] 40 C.F.R. § 1502.22
[731] *See* 40 C.F.R. § 1502.22

BLM's conclusion that future oil and gas development on the Coastal Plain is unlikely to exceed air quality standards and thresholds is based on other air analyses – performed to assess both onshore and offshore development – that are deficient, predict significant air quality impacts, likely underestimate potential impacts, and are not representative of oil and gas development on the Coastal Plain.[732]

BLM also entirely fails to analyze how hazardous air pollutant emissions may impact public health.[733] The EIS acknowledges that the Clean Air Act regulates hazardous air pollutants which may impact human health, [734] but then never again mentions how oil and gas activities on the Coastal Plan may produce emissions which are potentially hazardous to human health. This omission is unacceptable. BLM needs to carefully consider how increased air pollution may impact exposed populations, including residents of Kaktovik, Refuge visitors, industry workers, and others who are in the vicinity of the program area for subsistence purposes.[735]

Although visibility is integral to the wilderness characteristics, aesthetics, and recreational values of the Coastal Plain and adjacent Mollie Beattie Wilderness, the DEIS fails to analyze haze and other air quality impacts on Class I and sensitive Class II airsheds.[736] BLM cannot merely rely on conclusory statements that future projects on the Coastal Plain would be "unlikely" to violate important air quality standards and visibility. Current operations on the North Slope have proven otherwise.[737]

BLM also fails to adequately address greenhouse gas emissions and climate change impacts from development of oil and gas leases. Though BLM quantifies direct and indirect greenhouse gas (GHG) emissions by reference to the GMT2 Final EIS, it is not clear this comparison accurately captures potential emissions resulting from oil and gas leasing and development on the Coastal Plain.[738] Moreover, BLM's analysis does not draw any conclusions with regard to the significance of GHG or overall emissions, and entirely fails to consider any potential climate change mitigation.[739]

Finally, BLM did not explain its failure to convene a technical workgroup under the terms of the Memorandum Of Understanding Among The U.S. Department Of Agriculture, U.S. Department Of The Interior, And U.S. Environmental Protection Agency, Regarding Air Quality

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[732] *See* Attachment A, sec. IV.

[733] *See also infra* Part III.Z.

[734] DEIS vol. 1 at 3-11. In addition to criteria pollutants, the Clean Air Act regulates toxic air pollutants, or hazardous air pollutants, that are known or suspected to cause cancer or other serious health effects or adverse environmental impacts. The hazardous air pollutant regulatory process identifies specific chemical substances that are potentially hazardous to human health.

[735] *See* Attachment A, sec. III.B.2.

[736] *See* Attachment A secs. III.B.3 & IV.A.3. *See also infra* Part V. S, T, W.

[737] *See* Sabrina Shankman, *Oil boom sets off health fears in Alaskan Arctic*, SAN FRANCISCO CHRONICLE (Aug. 1. 2018).

[738] *See* Attachment A, sec. VII.

[739] *See* Attachment A, sec. VII; *see also supra* Part V.A..

Analyses And Mitigation For Federal Oil And Gas Decisions Through The National Environmental Policy Act Process Understanding (Air Quality MOU), signed June 23, 2011, as requested in our scoping comments. BLM must conduct modeling pursuant to the Air Quality MOU between these agencies for air quality analyses and mitigation in connection with oil and gas development on Federal lands.[740] Indeed, BLM has done this modeling in the past pursuant to the terms of the MOU: in conjunction with the FWS, U.S. Environmental Protection Agency, U.S. Bureau of Ocean Energy Management, National Park Service, U.S. Forest Service, and the State of Alaska, BLM has conducted air quality modeling to address the potential near-field and far field air quality impacts of several other BLM-authorized oil and gas leasing activities on the North Slope, including the NPR-A IAP, Greater Mooses Tooth (GMT1), and Greater Mooses Tooth 2 (GMT2). BLM's failure to utilize the experience and expertise of these agencies to ensure air quality modeling conducted as part of this NEPA analysis thoroughly and accurately discloses the effects of all phases of oil and gas development on Arctic Refuge air quality raises serious questions as to scientific integrity and transparency of this NEPA process.

C. BLM'S ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON SOUNDSCAPES IS DEFICIENT.

Maintaining the natural soundscape of the Arctic Refuge is crucial to its wilderness, recreation, wildlife, and subsistence purposes, as is highlighted in the CCP:

> Natural quiet and natural sounds are intrinsic elements of the Wilderness character of designated Wilderness and the wilderness characteristics of the entire Refuge. As such, their perpetuation is important for meeting the Refuge's purposes, goals, objectives, and special values. Human-caused sounds may mask or obscure natural sounds and disrupt wildlife behavior. They may interfere with locating prey or detecting predators, or with the complex communication systems many species have evolved to assist in mating or other behaviors. As well, human-caused sound interferes with the sense of solitude that is important to many visitors.[741]

In the DEIS, BLM fails to note the importance of the natural soundscape of the Coastal Plain in achieving the purposes of the Refuge. Moreover, the DEIS does not fully analyze the foreseeable acoustic impacts of oil and gas development on the natural soundscape.

Non-natural noise, such as that created as a result of oil and gas development, can affect the physiology, behavior, and spatial distribution of wildlife.[742] It also degrades wilderness characteristics like naturalness and opportunities for solitude. BLM should have taken these

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[740] See generally, Memorandum of Understanding Among the U.S. Dept. of Agriculture, U.S. Dept. of Interior and U.S. EPA Regarding Air Quality Analysis And Mitigation For Federal Oil And Gas Decisions Through The National Environmental Policy Act Process (2011).

[741] CCP EIS vol. 1 at 4-43–4-44; *see also* CCP ROD at 11–12 ("The Refuge exemplifies the idea of wilderness embodying tangible and intangible values including natural conditions, natural quiet, wild character, and exceptional opportunities for solitude, adventure, and immersion in the natural world." (emphasis added)).

[742] *See, e.g.*, Shannon et al. 2016.

values and Refuge purposes into account in its analysis of the acoustic environment. A thorough analysis of the impacts of the proposed development scenarios on the soundscape of the Coastal Plain and the resulting impacts on resources including wildlife, wilderness, and recreation is crucial to the NEPA process. The DEIS section on the acoustic environment fails to articulate an accurate or complete environmental baseline or adequately analyze the foreseeable noise impacts of an oil and gas program.

First, the affected acoustic environment in the DEIS is deficient because it fails to identify an adequate baseline using accurate data on background ambient noise levels in the project area. In our scoping comments, we highlighted the need for BLM to gather sufficient baseline soundscape data for areas within and throughout the Coastal Plain.[743] That baseline data should have then been utilized in a noise impact study, including modeling of all development scenarios. Instead of gathering new data sufficient to establish an accurate and current baseline, BLM utilized data from the 2010 background acoustic monitoring study at Point Thomson.[744] Data collected nearly a decade ago outside the Coastal Plain does not constitute "a comparable description of existing acoustic environment in the program area," as the DEIS claims.[745] The Point Thomson study measured noise levels adjacent to the northwestern border of the Refuge, not the ambient noise levels within and throughout the Coastal Plain.[746] Moreover, Point Thomson is closer to the Prudhoe Bay complex, so ambient noise levels are likely to be different than those in the Refuge. Without first establishing an adequate baseline for *this* program area, BLM cannot effectively evaluate the impacts of oil and gas development on the soundscape of the Coastal Plain.

Second, the DEIS fails to conduct acoustic modeling of all development scenarios to accurately forecast foreseeable noise impacts. This can be accomplished through existing methodologies.[747] As noted in our scoping comments, BLM must then utilize acoustic ecologists and wildlife biologists to fully assess the reasonably foreseeable direct, indirect, and cumulative impacts of increased anthropogenic noise on various wildlife species.

Instead, BLM relies on highly generalized, qualitative statements about potential impacts from ground-based development equipment and increased aircraft traffic on wildlife, wilderness, recreation, and subsistence. The actual impacts analysis includes confusing and conflicting statements. For instance, it states that there would be no potential impacts common to all alternatives, but then goes on to state that the acoustic impacts would be similar under all the action alternatives, but less extensive in NSO areas under Alternatives C and D.[748] The DEIS does not provide support for the assertion that noise impacts would be limited or nonexistent in NSO areas, which would still be affected by aircraft, seismic operations, vehicle use, and potentially intense ground-based development where NSO stipulations are waived.

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[743] Scoping Comment Letter at 122.
[744] DEIS vol. 1 at 3-17.
[745] DEIS vol. 1 at 3-17.
[746] *See* CCP EIS vol. 1 at 4-44.
[747] *E.g.*, Keyel et al. 2017; Keyel et al. 2018.
[748] *See* DEIS vol. at 3-20–3-23.

Nor does the DEIS adequately analyze foreseeable acoustic impacts to wildlife. As noted in our scoping comments, BLM should have carefully evaluated the impacts of noise from fixed-wing aircraft and helicopters on caribou. Instead, BLM oversimplified the impacts to all terrestrial mammals by grouping them in a single chart.[749] The DEIS lacks a careful and specific evaluation of the impacts of increased air traffic noise on caribou, birds, marine mammals, or other species.[750] It also fails to adequately analyze or mitigate foreseeable acoustic impacts to fish associated with seismic and other development activities.[751]

Finally, the proposed lease stipulations and ROPs that BLM claims will prevent or mitigate acoustic impacts are insufficient. For instance, the DEIS relies on ROP 34 to minimize the effects of low-flying aircraft on wildlife, subsistence activities, local communities, and recreationists.[752] As discussed in in the comments below on caribou, this ROP is inadequate and *less* protective than current Federal Aviation Administration guidance recommending a minimum altitude of 2,000 feet about National Wildlife Refuges and other noise-sensitive areas. For similar reasons, Stipulation 10 under Alternative D is not, as BLM claims, adequate to "protect wilderness values."[753] The stipulation simply recites current recommended practice to limit low-flying aircraft in noise-sensitive areas.

D. BLM'S ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON SOILS, PERMAFROST, TUNDRA, AND VEGETATION IS INADEQUATE.

As with numerous other sections of the draft EIS, the discussion of soil-based and vegetation-related impacts is woefully inadequate to perform NEPA's key function: providing decision makers, other agencies, and the public the needed information to understand and help minimize the possible environmental damage from federal choices. In Title II of the 2017 Tax Act, Congress authorized leasing in the Coastal Plain that its chief sponsor described as having a miniscule footprint — 1/10,000th the size of the Refuge — and as protecting the environment.[754] In fact, leasing-related federal authorizations are slated to affect the Coastal Plain profoundly and across a far greater region.

Production facilities with spiderwebs of road-connected drillpads will kill vegetation, impact permafrost, and spread damaging dust far beyond their physical perimeters, as will other permanent roads and sand and gravel quarries. Statutory acreage limits will be exceeded on speculative assumptions about successful rehabilitation. A potentially vast network of ice roads will further damage soils and vegetation, in demonstrably lasting fashion. Like gravel roads, they

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[749] DEIS vol. 1 at 3-111.
[750] *See infra* Part V.H, I, L.
[751] *See infra* Part V.G.
[752] DEIS vol. 1 at 3-22.
[753] DEIS vol. 1 at 3-22–3-23.
[754] Senator Lisa Murkowski, Floor Speech on Reconciliation Legislation (November 30, 2017), www.murkowski.senate.gov/press/speech/floor-speech-reconciliation-legislation-tax-reform.

could introduce invasive species that would spread into this pristine ecosystem. Pipelines will leak, even if not sabotaged. Snow fences will alter insulation of permafrost and cause subsidence and permanent changes to vegetation. Seismic surveys before and after leasing will stamp a physical grid on the entire Coastal Plain, directly affect hundreds of thousands of acres, altering or destroying vegetation, causing subsidence and erosion, and creating ponds and surface water channels whose effects can run far afield from vehicle tracks.

These impacts will affect an Arctic region much more vulnerable to long-term physical impacts than other U.S. arctic areas that have seen intensive oil and gas development thus far. This is a region whose soils and vegetation are concurrently under assault from climate change in ways that not only will accentuate development impacts, but also make past experience an unreliable guide as to future effects. Everything about this scenario demands that all possible measures be instituted to reduce environmental damage. Yet readers of the draft EIS have no idea about the scope and pervasiveness of these potential impacts to vegetation, soils, and permafrost, and no basis to provide informed input about the choices BLM faces. This deeply faulty picture illegally violates NEPA's core mandate. As discussed in more detail below, BLM needs to revise and reissue the EIS with a full assessment of the impacts to soil, permafrost, tundra, vegetation, and wetlands to ensure both BLM and the public have sufficient information about the impacts and how to address them.

1. *BLM Failed to Adequately Analyze the Impacts of the Oil and Gas Program on Soils and Permafrost.*

BLM's discussion of the impacts to soils and permafrost is so truncated and sparse that it deprives the public of the ability to understand the wide range of impacts likely to occur to these resources from oil- and gas-related activities on the Coastal Plain. It also provides no indication that BLM took a hard look at the potential direct, indirect, and cumulative impacts of the oil and gas program, as required by NEPA. For example, BLM fails to adequately quantify the total number of acres that could be impacted due to the placement of gravel fills and VSMs for roads, pads, airstrips, and structures. BLM estimates that, under all the action alternatives, there will be approximately 2,000 acres of disturbance from gravel fill.[755] BLM's analysis does not quantify the potential indirect impacts to soils and permafrost, which could extend well beyond the actual footprint of the gravel and could persist for decades.[756] Oil development impacts are not limited to the area where drill pad gravel or support beams touch the ground. Gravel roads cause permanent hydrological and surface morphological changes to the landscape, altering permafrost freeze-and-thaw cycles and creating issues related to thermokarst. These effects can include deeper permafrost thaw, earlier snowmelt in close proximity to the road, and alterations to

[755] DEIS vol. 1 at 3-46.

[756] National Research Council of the National Academies, Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope, Committee on Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope 156 (2003) [NRC Report].

hydrology.[757] Gravel roads and related traffic on roads can also lead to issues with dust, salts, and contaminants being deposited into streams and ponds or onto nearby tundra, where it can smoother or alter the mix of vegetation. The road dust can smother vegetation, reducing transpiration, and decreasing albedo, leading to a warming effect that can increase the depth of thaw in the summer.[758] This can lead to changes in geomorphology, where ice wedges melt around flat or high-centered polygons and can become degraded polygons. BLM also fails to consider the potential impacts that could occur from infrastructure, such as pipelines, that may not directly touch the ground, but could still shade areas and potentially lead to changes in vegetation and permafrost. There could also be warming that occurs around the base of the vertical support members (VSMs), which can threaten the integrity of infrastructure over time (e.g. sags in pipelines, which can lead to spills). Changes in soil hydrology may also influence the fire regime within the Coastal Plain. BLM's analysis fails to take into account the full range of significant impacts that will substantially increase the damage to tundra and other resources in a way that extends well beyond 2,000 acres. BLM needs to quantify and analyze the full set of impacts to soil and permafrost resources.

One specific area where BLM has dramatically underestimated impacts is with regard to dust. The draft EIS estimates that fugitive dust, gravel spray, thermokarsting, and impoundments may affect soils and vegetation up to 328 feet from roads and pads.[759] These impacts are likely to occur across a much broader area. One study from the Russian Arctic found that a more appropriate buffer is 3,280 feet, given the potential zone of impacts from windblown dust.[760] A recent study on the Dalton Highway showed that significant disturbance and impacts to vegetation occurred in a 200-meter-wide corridor adjacent to the highway — double the distance BLM relies on in the draft EIS.[761]

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[757] *See, e.g.*, Walker, D. A., M. Kanevskiy, Y. L. Shur, M. K. Raynolds, J. L. Peirce, M. Buchhorn, K. Ermokhina, and L. A. Druckenmiller. 2018. 2016 ArcSEES Data Report: Snow, thaw, temperature, and permafrost borehole data from the Colleen and Airport sites, Prudhoe Bay, and photos of Quintillion fiber optic cable impacts, North Slope, Alaska. Alaska Geobotany Center Data Report AGC18-01, Institute of Arctic Biology, University of Alaska Fairbanks, Fairbanks, Alaska, USA; Raynolds, M.K., Walker, D.A., Kofinas, G.P., & Ambrosius, K.J. (2012). Sixty years of landscape change within an arctic oilfield, Prudhoe Bay, Alaska. In A. Colpaert, T. Kumpula, & L. Mononen (Eds.), *12th International Circumpolar Remote Sensing Symposium* (pp. 73-74). Levi, Finland; BENJAMIN SULLENDER, AUDUBON ALASKA, ECOLOGICAL IMPACTS OF ROAD AND AIRCRAFT-BASED ACCESS TO OIL INFRASTRUCTURE 16–17 (2017), https://ak.audubon.org/sites/g/files/amh551/f/road_aircraft_access_report_final.pdf.

[758] *See, e.g.*, D.A. Walker & K.R. Everett, *Road Dust and Its Environmental Impact on Alaskan Taiga and Tundra*, 19(4) ARCTIC & ALPINE RESEARCH 479 (2018).

[759] DEIS vol. 1 at 3-93.

[760] Kumpula, T., A. Pajunen, E. Kaarlejärvi, B. C. Forbes, and F. Stammler. 2011. Land Use and Land Cover Change in Arctic Russia: Ecological and Social Implications of Industrial Development. Global Environmental Change 21:550-562.

[761] Myers-Smith, I. H., B. K. Arnesen, R. M. Thompson, and F. S. Chapin III. 2006. Cumulative Impacts on Alaskan Arctic Tundra of a Quarter Century of Road Dust. Ecoscience 13:503-510.

BLM repeatedly refers to other documents as a way to truncate and obscure analysis in the draft EIS, contrary to NEPA. For example, BLM refers to the NPRA's Greater Mooses Tooth 2 development's analysis as "fully describing" how climate change is impacting soils and permafrost.[762] The text of the draft EIS, however, contains only wholly uninformative, bland statements like "climate change described under *Affected Environment* above [i.e. the reference to the NPRA document], could influence the rate or degree of the potential cumulative impacts."[763] It contains none of the information in the NPRA document about changes to surface topography, increased water accumulation, changed drainage patterns (including sudden drainage events), and increased potential for soil erosion and sedimentation. In the Refuge's Coastal Plain, many of these phenomena have already been greatly accelerated by climate change in the past 30 years.[764] BLM also repeatedly cites, without informatively explaining or summarizing, the environmental analysis for the Nanushuk project, which is on state lands immediately adjacent to the Reserve; BLM relies on the Nanushuk decision to support its statements about changes to snow conditions that can occur from infrastructure, reclamation impacts, the potential for accelerated permafrost thaw, and for the proposition that placement of fill will cover soils and kill existing vegetation, which in turn alters the thermal active layer.[765]

BLM's incorporation of these unrelated decision documents by reference is deficient on multiple grounds. First, BLM failed to provide adequate citations or explanations about the content and nature of those documents, contrary to binding NEPA regulations and guidance that require summaries of referenced material.[766] It is impossible for the public to determine precisely which sections BLM is referring to and to understand how the analyses in those documents may or may not apply to the Coastal Plain.

Second, BLM generalized its analysis in a way that assumes all permafrost and soil conditions across the entire North Slope are homogenous, and failed to look at the conditions and concerns specific to the Coastal Plain. The terrain, permafrost, hydrology, and snow conditions on the Coastal Plain differ greatly from those found further to the west in areas like the NPRA and the Nanushuk project. The Coastal Plain is primarily dominated by foothills (45%), hilly coastal plain (22%), and river floodplains and deltas (25%), with a small portion that is part of

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[762] DEIS vol. 1 at 3-46.

[763] DEIS vol. 1 at 3-48.

[764] D.A. "SKIP" WALKER ET AL., LIKELY IMPACTS OF PROPOSED 3D-SEIMSIC SURVEYS TO THE TERRAIN, PERMAFROST, HYDROLOGY, AND VEGETATION IN THE 1002 AREA, ARCTIC NATIONAL WILDLIFE REFUGE, ALASKA 27–28 (2019) [hereinafter Seismic White Paper].

[765] DEIS vol. 1 at 3-46 to 3-47; *see also id.* at 3-46 ("Changes in the landforms due to erosion and thermokarst, such as slumping and channelization, affects [sic] the vegetation and water characteristics of the area (USFWS 2015a)."); *cf.* Seismic White Paper, *supra*, at 25 ("[G]round compaction by seismic vehicles, combined with the projected increases in temperatures and precipitation for the region, increase the risks for long-term hydrological impacts and widespread destabilization of ice-rich permafrost terrain.").

[766] *See* 40 C.F.R. § 1502.21; *see also supra.*

the Sadlerochit Mountains (0.03%).[767] Flat thaw-lake plains, which are typical in the northern portion of the NPRA and Prudhoe Bay area, make up only 3% of the Arctic Refuge's Coastal Plain.[768] These differences lead to there being broad floodplains and deltas in some areas and deep ravines and gullies in other areas of the Coastal Plain, which in turn has the potential to impact snow distribution, hydrology, permafrost, and vegetation in the region[769] — all in ways that are different from what occurs further to the west in areas like the NPRA. The Coastal Plain also has relatively low amounts of winter snowfall and strong winter winds that can lead to significant scouring and unpredictable and inconsistent snow cover.[770] This in turn could lead to very different impacts from those that have occurred further to the west, where there is comparatively greater snow cover to mitigate against impacts from activities like seismic exploration.

Similarly, BLM insupportably assumes that information about recovery from past impacts is a reliable guide for the future. In reality, however, "effects of climate fluctuation further complicate the evaluation of the effects of seismic exploration."[771] However true that is today, the confounding effect will likely only grow more pronounced as climate change works ever greater impacts on the Coastal Plain.[772] Thus, even where retrospective study of development impacts and recovery times is done in similar geophysical conditions, it is likely that in the future those impacts and recovery times will increase.

BLM's analysis also fails to account for the unique permafrost conditions on the Coastal Plain and how impacts might substantially differ from those in areas to the west. For example, extremely ice-rich silt deposits called yedoma are abundant in a broad band across the western half of the Coastal Plain.[773] These deposits can be more than 40 meters thick and, if they were to thaw completely, could result in thaw settlement at levels of 10–20 meters of more.[774] The impacts of exploration and development on yedoma and other ice-rich soil features on the Coastal Plain, could lead to thermokarst formation and thermal erosion, followed by subsidence, ponding, and new surface drainage patterns that threaten extensive ecosystem changes and dangers to infrastructure, and could be difficult or impossible to mitigate.[775] Simply referencing analyses of other, importantly different Arctic landscapes does not constitute the legally mandated assessment of potential impacts to, and mitigation measures for, the unique distribution and characteristics of these and other soil structures in the Coastal Plain.

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[767] Seismic White Paper, *supra*, at 15.
[768] *Id.*
[769] *Id.*
[770] *Id.* at 7, 21–22.
[771] Seismic White Paper, *supra*, at 31.
[772] Wang, K., Jafarov, E., Overeem, I., Romanovsky, V., Schaefer, K., Clow, G., Urban, F., Cable, W., Piper, M., Schwalm, C., Zhang, T., Kholodov, A., Sousanes, P., Loso, M., and Hill, K.: A synthesis dataset of permafrost-affected soil thermal conditions for Alaska, USA, Earth Syst. Sci. Data, 10, 2311-2328, https://doi.org/10.5194/essd-10-2311-2018, 2018.
[773] Seismic White Paper, *supra*, at 26.
[774] *Id.*
[775] *Id.* at 23–26.

Despite all of these differences between the Coastal Plain and areas further to the west, BLM's analysis fails to account for the unique ways in which impacts and degradation to soil and permafrost resources might occur on the Coastal Plain. BLM cannot rely on documents related to completely different projects involving wholly different conditions and areas to bypass a meaningful analysis specific to this area and this oil and gas program. BLM must obtain the necessary information to allow it to evaluate the impacts of an oil and gas program on the Coastal Plain. BLM is playing a shell game with its environmental analysis by referring to documents that involve entirely different decisions in a different region of the Arctic with very different permafrost, snow cover, terrain, ground ice content, hydrology, and other conditions. BLM needs to substantially revise this section to fully address the potential impacts to soil and permafrost resources on the Coastal Plain and reissue the draft for public review.

BLM also needs to fully account for the impacts from seismic exploration on the Coastal Plain. BLM's failure to adequately address past, present, and future seismic exploration leaves its analysis of the potential impacts to soil resources and permafrost fatally deficient. It is particularly important that BLM address the undulating terrain of the Coastal Plain. Slope transitions are one of the places where seismic equipment is likely to cause damage to the vegetation and permafrost. BLM needs to account for these terrain and other differences in analyzing the potential impacts.

BLM completely ignores the fact that it is currently preparing to approve an extensive pre-leasing seismic proposal from SAExploration (SAE) throughout the Coastal Plain.[776] That is a reasonably foreseeable—and connected—action that, if it goes forward as proposed, will itself have significant impacts to soil and permafrost and cumulatively combine with and exacerbate other impacts to soils and permafrost.[777] The EIS estimates that there will be around 900 square miles of impacts from seismic activities. But SAE's proposal alone would directly impact 150,000 acres and would involve around 37,800 miles of seismic lines.[778] Given the near certainty of other seismic testing proposals, BLM's conclusion that there will be only 900 square miles of impacts is unsupported by, and contrary to, the record. It does not take into consideration the fact that seismic exploration is not a one-time operation. It is often repeated as companies move to subsequent oil and gas phases, with exploration in some areas occurring on a yearly basis. It also does not take into account the proprietary nature of seismic survey results, which can lead to different companies repeating seismic surveys across the same area to gather their own data. These seismic operations, particularly when considered cumulatively, have the potential to significantly degrade permafrost, destroy vegetation, and dramatically alter hydrologic systems. BLM's analysis in no way accounts for these combined impacts.

BLM's discussion of the impacts to the Coastal Plain that occurred from the seismic program in the 1980s is also inadequate. BLM notes in passing in its cumulative impacts section that previous seismic exploration and an exploratory test well disturbed the surface vegetation

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[776] *See supra* (describing the seismic proposal).

[777] Seismic White Paper, *supra*, at 6 ("The [SAE] seismic plan will create a "checkerboard" of trails across the entire 1002 Area").

[778] *Id.* at 6, 10.

and impacted the thaw of permafrost, changed drainage patterns, and changed vegetation growth for over 25 years after disturbance.[779] BLM then goes on to state that, while improvements have been made to avoid impacts on the ground surface, future seismic surveys may have similar impacts.[780] This is not an adequate assessment of the impacts. BLM has not provided any indication that it has fully analyzed the potential cumulative impacts from seismic surveys, as evidenced by the fact that the agency does not even account for the current seismic proposal before the agency. BLM's cursory acknowledgement that there are likely to be similar impacts does nothing to lay out why those impacts previously occurred, whether there are specific ways in which impacts could be avoided now, how those impacts are likely to cumulatively impact the region, or any other information. BLM's note that technologies have improved also ignores the reality of SAE's proposal and is not supported. SAE's proposal involves much of the same equipment that caused significant impacts in the 1980s, but its proposal is substantially more intense than that conducted in the 1980s.[781] That means that it is likely to lead to even more extensive damage on the Coastal Plain.[782] BLM needs to fully discuss and analyze the impacts of the previous seismic program from the 1980s as part of its current assessment.

BLM's discussion of the different impacts that are likely to occur under each alternative provides no meaningful analysis of the differences between the various alternatives. The EIS notes that the potential impacts under each of the alternatives would be the same as its general description of potential impacts (which, as noted above, also does not contain an adequate analysis of the potential impacts).[783] The only differences the alternatives analysis notes are that there are slightly different levels of disturbance from gravel fill and gravel mines, and that lease stipulations would limit surface occupancy to the western area of the Coastal Plain under Alternatives C and D.[784] This is not an adequate analysis. This in no way accounts for the differences in permafrost and soil resources across the Coastal Plain and how impacts across the Coastal Plain might have different impacts than might occur under a scenario that limits development activity to certain areas in the Refuge. It also does not acknowledge or account for the fact that BLM has the ability to waive any limitations on surface occupancy, which could further compound impacts. BLM needs to substantially revise this section to fully describe and account for the potential differences in impacts for each of the alternatives.

BLM also failed to adequately assess the cumulative effects from the oil and gas program. The entire purpose of a cumulative effects analysis is for the agency to take a close look at the ways in which effects could combine and result in environmental degradation that could compound over time.[785] BLM only touches on a handful of points in its cumulative effects

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[779] DEIS vol. 1 at 3-48.
[780] DEIS vol. 1 at 3-48.
[781] Seismic White Paper, *supra*, at 29.
[782] *See, e.g.*, Seismic White Paper, *supra*, at 10–11, 28–29.
[783] DEIS vol. 1 at 3-47–3-48.
[784] DEIS vol. 1 at 3-47–3-48.
[785] 40 C.F.R. § 1508.7 (indicating a cumulative impact is "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or

section for soils and permafrost: that previous seismic surveys caused long-term damage to soils and permafrost and future surveys may have similar impacts; that there may be greater than 2,000 acres of impacts to soils and permafrost if acreage is regained from reclamation;[786] that there could be changes to soil composition, drainage patterns, erosion, and thermal regimes; and that climate change could influence the rate or degree of cumulative impacts.[787] While BLM recognizes these impact categories, it does nothing to quantify or otherwise analyze them and disclose to the public and decision makers how they are likely to affect the Coastal Plain. The agency also does not discuss how past, present, or future actions could combine to exacerbate and magnify impacts. This is not an adequate analysis of the potential cumulative effects. It does not discuss in any meaningful way what those impacts might be, the scale on which they would occur, the timeframe in which they would occur, how those effects might combine or overlap, or anything else. It also fails to discuss the full range of activities that could cumulatively combine to cause these impacts. The draft EIS mentions seismic surveys and the 2,000 acres directly occupied by surface facilities, but does not account for other impacts, such as those from exploratory drilling and ice roads, other off-road travel that could occur in the program area, or gravel mines. The discussion also does not account for cumulative impacts to soils and vegetation that could occur from contamination issues as well — a serious omission given the long history of oil spills from North Slope oil drilling and transportation operations. In other words, this section provides no indication BLM took a close look at any of the potential cumulative impacts to soils and permafrost, let alone properly informed outsiders about them.

BLM's related analysis of water resources also fails to adequately account for changes to vegetation and soil resources. The draft EIS includes a list of potential future impacts on surface water quality.[788] This list fails to includes changes to surface hydrology and drainage patterns associated with changes in vegetation and soil resources, as well as from water impoundment. Any time water collects, there is greater heat transfer to the adjacent soil. Once water channels or ponding are changed or increased, there is a positive feedback cycle of warming and acceleration of thaw. Changes to surface hydrology drainage patterns can lead to increased thermo-erosion and thermokarsting. Elsewhere in the draft EIS, BLM states that "[p]otential disturbance of the vegetation or water and wide erosion could initiate thawing of the upper ice-rich zones and trigger the development of thaw-lakes."[789] BLM also needs to consider the development of thaw-lakes, thermo-erosion channels, and thermokarst features in that section.

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person undertakes such actions"); *see also* Vargas-Moreno, J.C., B. Fradkin, S. Emperador, O. Lee, (eds). 2016. Project Summary: Prioritizing Science Needs Through Participatory Scenarios for Energy and Resource Development on the North Slope and Adjacent Seas. GeoAdaptive, LLC, Boston, Massachusetts, *available at* http://catalog.northslopescience.org/catalog/entries/8302-nssi-scenarios-final-reports-prioritizing-sc.

[786] As discussed elsewhere throughout these comments, BLM is mistaken that it can authorize more than 2,000 acres of total ground disturbance from development over time.

[787] DEIS vol. 1 at 3-48.

[788] DEIS vol. 1 at 3-55.

[789] DEIS vol. 1 at 3-56.

BLM limits its analysis of cumulative impacts to the program area, contrary to NEPA. BLM is required to consider all past, present, and reasonably foreseeable future actions.[790] That analysis is not limited to the limited geographic area in the program area and should consider broader impacts and degradation of permafrost and soil resources across the North Slope and northwest Canada. This should include an analysis of not only oil and gas impacts, but also other infrastructure that could further degrade oil and permafrost resources. BLM should also consider other nearby seismic activities, such as those conducted by SAE both last winter and this winter on state lands immediately adjacent to the Refuge and any activities on private lands within the boundaries of the Refuge.[791] The potential cumulative effects to soils and permafrost have the potential to extend well beyond the limited footprint of the program area.[792] This is particularly important given the potential for climate change to further accelerate and exacerbate the significant impacts to permafrost across all of the Arctic.

BLM's proposed mitigation measures in the required operating procedures and lease stipulations are also insufficient to address impacts to permafrost and soils. Outside of the very limited provisions that relate to off-road travel, the reader is left with effectively no indication what measures BLM will implement to prevent or mitigate against the full range of potential impacts to soil and permafrost resources. ROP 11 indicates ground operations would be allowed when soil temperatures at 12 inches below the tundra surface reach 23 degrees Fahrenheit and snow depths are an average of 9 inches, or 3 inches of snow water equivalent, whichever is less. The strong winds, varied topography, and variable snow depths on the Coastal Plain are likely to make it difficult for find routes with consistent or adequate snow cover to prevent impacts from activities like seismic exploration. Assuming those parameters are adequate to prevent any possibly significant harm, they cannot do that if only an *average* snow depth is used to determine when ground operations will be allowed. "Generally, low amounts of winter snowfall, strong winter winds, and the hilly terrain in the 1002 Area combine to create substantial areas of very thin and unpredictable snow."[793] Thus, even when snow depth was at its greatest recorded extent, in 2018, "vast areas of [the Coastal Plain] were snow free."[794] Nor does ROP 11 even explain how and where these measurements will be taken, and how often. Snow coverage can change throughout the season, even overnight.

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[790] 40 C.F.R. § 1508.7.

[791] *See, e.g.*, Alaska Dep't of Natural Resources, MLUP NS 18-004 SAExploration, Inc. Staines 3D Geophysical Exploration Permit Approval (2018), http://dog.dnr.alaska.gov/Documents/Permitting/NorthSlope/OperationPlans/2019/2018-12-31_Decision_MLUPNS_18-004_Approved.pdf; Henry Fountain, *See the Scars that Oil Exploration Cut Across Alaska's Wilderness*, N.Y. Times, Aug. 3, 2018, https://www.nytimes.com/2018/08/03/climate/alaska-anwr-seismic-testing-tracks.html (showing impacts from SAE's exploration activities just outside the Refuge last winter).

[792] *See, e.g.*, Raynolds, Martha K. et al., *Cumulative Geoecological Effects of 62 Years of Infrastructure and Climate Change in Ice-Rich Permafrost Landscapes, Prudhoe Bay Oilfield, Alaska*, GLOBAL CHANGE BIOLOGY (2014).

[793] Seismic White Paper, *supra*, at 7.

[794] *Id.* at 20.

ROP 11 also doesn't adequately account for different vegetation types with these default depths. Allowing ground operation at an average of 9 inches of snow depth puts vulnerable tussock tundra habitat at risk of damage.[795] Some tussock vegetation stands 18 inches tall when measured from the adjacent ground surface. If snow depth is insufficient to cover the tops of the tallest tussock vegetation, tussock vegetation may be crushed or sheared off during operations. Tussock vegetation that is crushed or sheared off dies, often replaced by different vegetation. This process can take 5 or more years, leaving the ground surface vulnerable to subsidence caused by a change in surface albedo, hydrology, and evapotranspiration. BLM needs to ensure snow depths cover the tops of the tallest tussock vegetation at sufficient depths. Similarly, shrubby vegetation is vulnerable to damage when not fully covered by snow. Ground operation should not be allowed in areas with shrubby vegetation unless snow depths are sufficient to cover the tops of shrubby vegetation. Ground operation will not be permitted on steep slopes with shrubby vegetation.

ROP 11 also contains additional provisions related to the types of vehicles and the manner in which they operate. These provisions appear to be drawn verbatim from best management practice C-2 in the NPRA.[796] While these provisions may arguably be appropriate in flatter areas with more consistent and deeper snow depths, they do not go far enough to address the unique range of terrain, snow conditions, permafrost, hydrology, vegetation community types, and other concerns that could lead to significant damage to the Coastal Plain. Further, similar measures have been insufficient to protect even these other areas, which are scarred by seismic operations, calling into question their ability to protect the Coastal Plain.[797] BLM cannot take a one-size-fits-all approach and assume that these provisions are sufficient to prevent degradation in areas that involve radically different conditions and concerns. BLM needs to obtain additional information about the unique characteristics of the Coastal Plain so it can outline with greater specificity how it will prevent degradation of soil, vegetation, and permafrost resources.

ROP 11 includes a provisions stating that "[i]ce roads would be designed and located to avoid the most sensitive and easily damaged tundra types as much as practicable." BLM should delete "as much as practicable" from this provision. Sensitive and easily damaged tundra is often located along stream banks where shrubby vegetation is common. Allowing ice road construction across shrubby stream bank vegetation for practicability risks damaging and/or killing vegetation in a location where soils are especially vulnerable to subsidence and erosion. It may not be "practicable" to avoid such vegetation at stream crossings, thus risking irreversible erosion and subsidence that could have long-term impacts on water quality.

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[795] *See, e.g.*, LORENE LYNN, RED MOUNTAIN CONSULTING LLC & MALAMUTE ENERGY, INC., REHABILITATION MONITORING REPORT FOR THE RENAISSANCE SNOW TRAIL, UMIAT, ALASKA: LAS 26566 (Nov. 30, 2018) (included in attached documents)

[796] Bureau of Land Mgmt., NPR-A Integrated Activity Plan Record of Decision app'x A, at 54 (2013).

[797] Henry Fountain, *See the Scars that Oil Exploration Cut Across Alaska's Wilderness*, N.Y. Times, Aug. 3, 2018, https://www.nytimes.com/2018/08/03/climate/alaska-anwr-seismic-testing-tracks.html.

Standard g in ROP 11 indicates snow fences may be used in areas of low snow to increase snow depths within an ice road or snow trail route. Snow fences are an effective means to accumulate snow for the purpose of building snow roads, but snow accumulation may cause significant changes to surface hydrology, permafrost thermal stability, and to vegetation communities. Snow accumulation behind snow fences delays the melt period by 1-3 weeks and sometimes 4_8 weeks,[798] causing changes to soil temperature, soil moisture, nutrient cycling, and vegetation communities. Subsidence has been documented as well.[799] BLM should modify ROP 11 so snow fences must be removed immediately following construction of a snow road. Excess snow accumulated by snow fences must be excavated or pushed to decrease snow depths to that found in surrounding tundra.

BLM is missing and needs to identify and obtain key information to fully understand and attempt to mitigate against the potentially significant impacts of oil and gas activities on soil and permafrost in the Refuge. BLM does not have adequate information about the permafrost conditions specific to the Coastal Plain of the Refuge to complete its analysis. BLM needs to obtain additional information about ground-ice distribution. BLM also needs to do an in-depth analysis of the wind speeds and snow cover to better understand where scour and draft occurs on the Coastal Plain. BLM also needs more information and studies to better understand the range of potential impacts to permafrost and hydrology likely to occur in different snow conditions, terrain types, and vegetation types. All of this necessitates a revised draft EIS.

2. BLM Failed to Adequately Analyze the Impacts of the Oil and Gas Program on Tundra, Vegetation, and Wetlands.

BLM has failed to quantify the total area of tundra, vegetation, and wetlands that is likely to be impacted by the oil and gas program. The vegetation and wetlands section of the draft EIS points to a hypothetical oil field scenario, consisting of a central processing facility, 8-mile roads connected to six satellite drill pads, a seawater treatment plant, and a 30-mile access road, which total an estimated 750 acres.[800] In the draft EIS, BLM states that it was not possible for the agency to quantify the potential impacts on specific wetland and vegetation types using a specific footprint because no on-the-ground actions have been authorized.[801] Instead, BLM calculates the proportions of each vegetation and wetland type occurring in each lease stipulation category and high-carbon potential zone.[802]

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[798] M. Martinelli, Jr., *Snow-Fence Experiments in Alpine Areas*, J. OF GLACIOLOGY vol. 12, no. 65, at 291–303 (1973); Kenneth M. Hinkel & John K. Hurd Jr., *Permafrost Destabilization and Thermokarst Following Snow Fence Installation, Barrow, Alaska, U.S.A.*, ARCTIC, ANTARCTIC, AND ALPINE RESEARCH (2006).

[799] Schimel, Josh P. et al., *Increased Snow Depth Affects Microbial Activity and Nitrogen Mineralization in Two Arctic Tundra Communities*, 36(2) SOIL BIOLOGY & BIOCHEMISTRY (2004).

[800] DEIS vol. 1 at 3-71.

[801] DEIS vol. 1 at 3-71.

[802] DEIS vol. 1 at 3-71.

It is completely unclear from BLM's vague reference to a typical hypothetical development scenario what the total potential impact might be to vegetation and wetland resources, and how the impacts might vary across the region from such a development. Even if BLM does not have an actual development proposal in front of it, BLM needs to do more to quantify and convey how development in different areas is likely to impact the specific tundra, vegetation, and wetland resources in different areas. BLM's quantification of the specific percentages of vegetation and wetlands within each of the areas open to leasing or other activities under the different alternatives is a start,[803] but ultimately just informs the public of the types of vegetation in areas open to development; it does not actually help the public to understand in a meaningful way what the impacts from the full range of oil and gas activities within those specific areas are likely to be and how those might differ. BLM's analysis never takes the required step of actually discussing how the differences in vegetation might play out in terms of impacts — what, for instance, the landscape will look like if intensive seismic surveying is conducted in vegetation types like tussock tundra and riparian shrublands that are particularly prone to vehicular impacts, or in moist sedge tundra, where recovery is especially poor.[804] If snow cover is inadequate and tussock tundra is damaged, it cannot recover in a human-significant timeframe. BLM cannot bypass providing a more in-depth analysis of the potential impacts to specific areas on the ground by stating that it does not have a specific proposal in front of it. BLM still has an obligation under NEPA to examine the full range of reasonably foreseeable impacts, including any impacts that might occur from waivers of any protective provisions.

BLM also needs to better quantify the potential indirect impacts. As noted throughout these comments, the footprint of development extends well beyond the limited 2,000-acre area where BLM allows placement of fill. BLM should include estimates of the total area that will be impacted by any activities, including indirect impacts. These impacts include nearby areas that could be impacted by dust, oil spills, and other contaminants or that could be altered due to other changes, such as impacts to hydrology that lead to changes in vegetation. BLM has not accounted for impacts to vegetation from pipelines, which will shade significant areas and potentially alter or kill vegetation.

BLM assumed there was a 328-foot buffer to account for the area of indirect effects on vegetation and wetlands.[805] BLM's buffer and consideration of indirect effects is far too small. There are significant impacts from fugitive dust, gravel spray, thermokarsting and thermoerosion, and impoundments. Some of these could extend well beyond just this 328-foot buffer. As noted above, the study of the Dalton Highway that BLM cites when setting the 328-foot buffer indicates that there were significant disturbances and impacts to vegetation that occurred across an area roughly twice that size.[806]

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[803] DEIS vol. 1 at 3-73–3-74.

[804] *See, e.g.*, Seismic White Paper, *supra*, at 32–33.

[805] DEIS vol. 1 at 3-71.

[806] DEIS vol. 1 at 3-72; Myers-Smith, I. H., B. K. Arnesen, R. M. Thompson, and F. S. Chapin III. 2006. Cumulative Impacts on Alaskan Arctic Tundra of a Quarter Century of Road

In the draft EIS, BLM limits the scope of its impacts analysis to only post-leasing activities.[807] BLM needs to analyze the full range of direct, indirect, and cumulative impacts that could occur to vegetation, tundra, and wetlands, including impacts from pre-leasing seismic activities, which the agency recognizes as a part of this project.[808] BLM failed to recognize or discuss the serious impacts that are likely to occur from SAExploration's current seismic proposal or other pre-leasing seismic activities, despite the fact that SAE's proposal is directly related to and intended to inform the lease sale program. The EIS estimates that seismic impacts will be limited to only 900 square miles, but that fails to account for SAE's plan, which could proposes approximately 37,800 miles of seismic lines, with direct impacts to 150,000 acres.[809] In a White Paper analysis by prominent scientists with deep expertise and research experience in the Arctic in a range of disciplines, they concluded that SAE's proposal was likely to cause "significant, extensive, and long-lasting direct, indirect, and cumulative impacts . . . to the microtopography, hydrology, permafrost, and vegetation of the 1002 Area."[810] That White Paper discusses a broad range of potential impacts to vegetation and hydrology from SAE's proposal and from seismic activities in general that BLM needs to analyze in relation to all leasing-related seismic surveying. It concludes that 3D-seismic technology has not improved to the point where there would not be significant damage to arctic tundra. Seismic activities cause compression of the tundra vegetation, which in turn causes changes to snow accumulation, hydrology, and thermal regimes, which are visible from the air and can lead to thermokarst and thermoerosion.[811] These impacts would likely have significant consequences to the habitats of many species of plants, insects, small mammals, birds, and potentially large mammals including caribou.[812] The draft EIS illegally fails to analyze these impacts.

The draft EIS notes that long-term studies have shown that the overall impact of seismic vehicle traffic on tundra is low, but impacts can still be measured up to 25 years after exploration.[813] The EIS also states that seismic lines and camp trails on the North Slope were found to be generally visible in summer vegetation for about 5 years after disturbance, and that longer-term impacts involved limited ground disturbance and ground subsidence where the trail became a wetter trough.[814] This high-level and generalized summary does not reflect the full range of long-term impacts likely to occur from a seismic program as intense as that proposed by SAE or that could occur from subsequent 3-D seismic surveys. The EIS does not adequately discuss the results of the studies that were conducted on areas disturbed as part of the 1980s

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Dust. Ecoscience 13:503-510; *see also* Kumpula, T., A. Pajunen, E. Kaarlejärvi, B. C. Forbes, and F. Stammler. 2011. Land Use and Land Cover Change in Arctic Russia: Ecological and Social Implications of Industrial Development. Global Environmental Change 21:550-562.

[807] DEIS vol. 1 at 3-70.

[808] DEIS vol. 2 at B-10 (listing pre-leasing 3D seismic exploration as a "Project Phase").

[809] *See supra* Part III.B.8.; *see also* Seismic White Paper, *supra*, at 6.

[810] Seismic White Paper, *supra*.

[811] Seismic White Paper, *supra*, at 6–7.

[812] Seismic White Paper, *supra*, at 7.

[813] DEIS vol. 1 at 3-71.

[814] DEIS vol. 1 at 3-71.

seismic program, which indicate there are likely to be significant, long-term impacts from future seismic surveys. There are also cumulative effects that will occur from conducting seismic surveys over areas that are still damaged from the 1980s. The seismic work that took place in the 1980s resulted in impacts that persisted for decades, some of which are still visible to this day and are expected to be permanent. There was still measurable disturbance from that program on 5% of the trails in 2009 and 3% in 2018 — 33 years after the initial disturbance.[815] The soil subsidence and vegetation changes that remain indicate that disturbance is likely to be present in those areas for decades to come.[816] Camp-move trails for seismic surveys caused some of the most damaging impacts to vegetation and tundra and took far longer to recover than many of the areas damaged by the seismic trails in the 1980s.[817]

The draft EIS states that impacts from off-road vehicle traffic could be mitigated "somewhat" by using vehicles that involve fewer pounds per square inch and by performing seismic operations later in the winter when there is more snow cover and soils are frozen deeper.[818] This fails to account for the unique terrain, vegetation (e.g., tussocks), and inconsistent snow cover in the Coastal Plain.[819] The Coastal Plain has relatively low amounts of winter snowfall and strong winter winds that can lead to significant scouring and unpredictable and inconsistent snow cover.[820] It also fails to take into consideration the level of intensity of SAE's proposed seismic program and seismic proposals in general. SAE still proposes to use many of the same vehicles and equipment that have been used in past seismic programs and that have led to vegetation and other damage.[821] Although there have been some improvements to vehicles, the number of vehicles SAE proposes to use is more than double that of past surveys and many of the vehicles are even heavier.[822] This also fails to account for the sheer intensity of SAE's proposal, which will involve dramatically more seismic lines and a much more extensive seismic program than conducted in the 1980s. Even if one assumes that only 5% of the area impacted by SAE's seismic proposal will persist for decades, that would still amount to 7,500 acres worth of severe, long-term impacts from just one seismic program.[823] Even that number, which standing alone is significant, does not take into account the potential for other seismic and oil and gas activities to cumulatively combine with the effects of SAE's current proposal. BLM's dismissal of the impacts from seismic in the EIS is contrary to the evidence before the agency and improperly ignores the full range of relevant impacts that should be analyzed in the EIS. BLM needs to revise the EIS to fully account for these impacts.

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[815] Seismic White Paper, *supra*, at 33.
[816] Seismic White Paper, *supra*, at 33.
[817] Seismic White Paper, *supra*, at 34.
[818] DEIS vol. 1 at 3-71.
[819] Seismic White Paper, *supra*, at 6–7, 15–16, 18–22.
[820] Seismic White Paper, *supra*, at 7, 21–22.
[821] Seismic White Paper, *supra*, at 29.
[822] Seismic White Paper, *supra*, at 29.
[823] This is based on the calculation that SAE's proposal will directly impact 150,000 acres. Seismic White Paper, *supra*, at

BLM's analysis of the potential impacts of ice roads and related mitigation measures is insufficient. The draft EIS states that ice roads have minimal effect on vegetation, which would recover to pre-construction conditions after approximately 20 years.[824] Ice roads can have major impacts that persist into other seasons and can severely alter hydrology, natural thermal regimes, and cause a wide variety of ecological impacts.[825] BLM itself recognizes that recovery can take decades, inconsistent with its claim of a minimal impact. The draft EIS emphasizes that more damage from ice roads occurs in well-drained areas, including moist tundra and shrub habitats.[826] The existing ice road study BLM relies on underscores that damage is more likely to occur in well-drained areas. That study has limited applicability to the Coastal Plain because it looked at four ice roads in the western Arctic, and recommended that, "[b]ecause of the greater impacts associated with tussock tundra uplands, future ice roads planning should concentrate on locating roads in wetland areas."[827] The Coastal Plain is made up of 59% moist herbaceous meadow types, including herbaceous and tussock tundra.[828] Tussock tundra is the most common vegetation type in the Coastal Plain of the Arctic Refuge and is particularly susceptible to damage because of the considerable microtopographic relief in the tussocks, which can be up to ten-inches tall.[829] BLM fails to recognize the prevalence of the exact vegetation type that is likely to be most vulnerable to damage from ice roads and pads. A one-size-fits all approach to these vegetation types is likely to result in damage to these vulnerable areas.

BLM's analysis of how the impacts will differ between alternatives focuses heavily on the no surface occupancy provisions to differentiate between the impacts under each alternative.[830] However, there are serious questions about whether the NSO and other timing provisions are likely to be effective. These provisions will only be effective to the extent that BLM actually adopts and holds to those safeguards. As written, the draft EIS allows for waivers, exceptions, and modifications to these and other requirements, opening the door for operators to avoid ever complying with those requirements.[831] BLM should remove these waivers exceptions, and modifications. However, because it has included them, BLM needs acknowledge and fully assess the ways in which waivers, exceptions, and modifications to these so-called protections could lead to far greater impacts and a much larger footprint than analyzed in the draft EIS.

BLM needs to obtain additional information in order to make sound decisions regarding the potential impacts of the oil and gas program on tundra, vegetation, and wetland resources. BLM needs to conduct additional studies related to snow depths, wind patterns, and scour patterns on the Coastal Plain, as well as the impacts of damaging surface vegetation where there are high volumes of massive ground ice. BLM also needs more information and studies to better understand the range of potential impacts likely to occur in different snow conditions, terrain

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[824] DEIS vol. 1 at 3-71.

[825] Sullender, *supra*, at 17.

[826] DEIS vol. 1 at 3-94.

[827] SCOTT GUYER & BRUCE KEATING, THE IMPACT OF ICE ROADS AND ICE PADS ON TUNDRA ECOSYSTEMS, NATIONAL PETROLEUM RESERVE-ALASKA at vii (2005).

[828] DEIS vol. 1 at 3-66.

[829] Seismic White Paper, *supra*, at 32.

[830] DEIS vol. 1 at 3-73 to -74.

[831] *See, e.g.*, DEIS vol. 1 at 2-4.

types, and vegetation types. NEPA requires that BLM identify and obtain this missing information as part of the EIS process.

E. BLM'S ANALYSIS OF GRAVEL AND THE IMPACTS OF GRAVEL MINING IS INADEQUATE.

There are a number of problems with BLM's consideration of gravel mining in the draft EIS. BLM did not adequately explain the authority to permit gravel mining on the Coastal Plain, the assumptions underlying its estimates of needed gravel, nor the impacts of gravel mining in general.

There are serious questions about the authority to conduct gravel mining on the Coastal Plain. ANILCA section 304(c) withdrew all national wildlife refuge lands in Alaska "from all forms of appropriation or disposal under the public land laws" except for the mineral leasing laws.[832] The Coastal Plain is further withdrawn from all forms of entry or appropriation under the mining laws and from operation of the mineral leasing laws.[833] The Tax Act did not modify these withdrawals. BLM has failed to identify any authority allowing it to permit gravel mining on the Coastal Plain, despite the fact that the EIS appears to assume gravel mining will be allowed. BLM needs to explain what it believes is the basis for its authority to allow gravel mining in the EIS.

Even assuming for the sake of argument that gravel mining could be allowed, BLM needs to further recognize and clarify FWS's role in any authorizations. FWS is the administrator and manager of the Refuge. In the draft EIS, BLM just states, "The BLM issues material sale permits."[834] This short statement does not adequately explain BLM's authority to issue such permits generally or specifically within the Refuge. BLM's general authority to issue permits for mining of gravel is governed by the Materials Act, which allows BLM to issue permits for mining of gravel and other mineral materials without actually leasing those lands.[835] However, it is not clear that BLM has authority over the disposal of any gravel materials on the Coastal Plain. BLM needs to explain FWS role as the administrator and manager of the Refuge and how any such actions would fit with the legal obligations in other statutes, such as the National Wildlife Refuge System Administration Act.

BLM's analysis of the potential impacts of gravel mines, should they be allowed, violates NEPA and is contrary to other statutes, such as the Tax Act. BLM appears to rely on its characterization of gravel mines as being outside of the 2,000-acre surface disturbance limit in order to avoid fully analyzing the impacts of mining on the surface resources of the Coastal Plain. BLM needs to fully account for the total number of acres that could be directly and

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[832] ANILCA § 304(c).

[833] 16 U.S.C. § 3142(I).

[834] DEIS vol. 2 Appendix D at D-3.

[835] *See* 43 CFR § 3601.3 ("BLM's authority to dispose of sand, gravel, and other mineral and vegetative materials that are not subject to mineral leasing or location under the mining laws is the Act of July 31, 1947, as amended (30 U.S.C. 601et seq.), commonly referred to as the Materials Act. This authority applies to sale and free use of these materials…").

indirectly impacted from gravel mining used to support the oil and gas program as part of the 2,000 acres.[836] The EIS characterizes gravel mines as equivalent to a mill that supplies steel for construction of other materials.[837] This makes no sense. Gravel mines will be used to supply the gravel that is directly used to build the roads and pads for any oil and gas developments, and are therefore integrally related support facilities. BLM should not unlawfully exclude them from the 2,000-acre limit.

BLM also needs to fully evaluate any gravel mines used to support oil and gas infrastructure on the Coastal Plain as a connected action in the EIS. "Connected actions" are defined as actions that: automatically trigger other actions which may require environmental impact statements; cannot or will not proceed unless other actions are taken previously or simultaneously; or are interdependent parts of a larger action and depend on the larger action for their justification.[838] The entire purpose of these gravel mines would be to supply gravel for any oil and gas infrastructure; they would not be developed but for the need to use them as part of the oil and gas program. Thus, BLM must fully analyze the direct, indirect and cumulative impacts of gravel mining for each action alternative. BLM must conduct this analysis, regardless of whether the gravel mines are ultimately projected to be within or outside the boundaries of the Refuge.

BLM's analysis of the impacts of gravel mining is wholly inadequate for purposes of satisfying BLM's NEPA duties. The draft EIS provides little information on gravel mining beyond an estimated number of cubic yards of gravel needed for each action alternative. The draft EIS anticipates that between 12.7 to 12.4 million cubic yards of gravel will be needed for the Coastal Plain exploration, construction, development, and maintenance.[839] It is seemingly impossible to check the veracity of this number, as the Reasonably Foreseeable Development (RFD) scenario does not provide incremental gravel needs for various elements of potential infrastructure projects (e.g., central processing facilities, anchor pads, and airstrips are all combined).[840] Nor does the RFD scenario adequately explain its estimates for the slight differences in road lengths between alternatives, and assumes that all roads to all satellites would be the same length and width for every alternative.[841] It is entirely unclear whether BLM factors in the need for additional gravel (e.g., for roads that expand in width during use) and river and stream crossings, vehicle turnouts, or storage pads into these estimates. BLM needs to provide far more information about the potential gravel resources necessary for each alternative to adequately analyze potential impacts.

Moreover, gravel mining has very serious impacts that BLM failed to consider in the EIS. Gravel extraction is generally done in large, open pit mines typically located away from major streams and lakes. It is not clear how such mines could be located in a way that protects the sensitive wildlife and biological resources of the Coastal Plain and the EIS appears to assume

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[836] *See supra* Part III.A.3.
[837] DEIS vol. 1 at 1-6.
[838] 40 C.F.R. § 1508.25(a)(1).
[839] DEIS vol. 1 at 3-50.
[840] DEIS vol. 2, Appendix B at B-22.
[841] DEIS vol. 2, Appendix B at B-23.

and allow gravel mining in rivers. Open pit mines require extensive overburden removal — for example, over 50 feet of vegetation and soil needed to be excavated to reach suitable gravel in the mines created for Kuparuk.[842] The resulting overburden stockpile disturbs tundra, and the gravel pit itself causes permanent changes to the area's thermal regime due to "thaw bulbs" forming in the permafrost around the unfrozen water during flooding.[843] Indirect effects such as these have led some researchers to approximate that a one acre (0.4 ha) gravel pit may impact as much as 25 acres surrounding the site.[844]

Despite recognizing that these impacts exist to areas surrounding gravel mines, BLM makes no attempt to quantify that disturbance. BLM only acknowledges the direct footprint of mining itself as being between approximately 308–315 acres,[845] but does not quantify or even discuss the indirect and far broader range of impacts to the sensitive ecosystems surrounding these mines. Additionally, BLM notes that multiple material sources are expected to be used, but does not analyze impacts from multiple gravel mines, which would have a much greater impact on the Coastal Plain than a single mine. There are also likely to be other significant impacts to the surrounding area, such as noise impacts, that have not been fully accounted for in the draft EIS.[846] The draft EIS notes the presence of impacts from the gravel mine, but fails to analyze the potential direct, indirect, and cumulative effects they might have on people and wildlife in the surrounding area.

Finally, BLM entirely fails to consider any lease stipulations or required operating procedures to mitigate these significant impacts from gravel mining. The draft EIS indicates that gravel mining might occur in streams and notes that it might impact stream structure.[847] This should not be permitted. In addition to the fact that BLM should not allow for sand and gravel mining to occur in streams, BLM has also failed to analyze the impacts from such a destructive activity. BLM must explain how allowing gravel mining in streams would be subject to stipulations. Lease Stipulation 1 contained in the draft EIS, which is meant to protect water quality, purports to restrict "permanent oil and gas facilities" within certain setbacks,[848] but BLM has arbitrarily and improperly defined gravel mines as being outside of the definition of oil and gas facilities, so it does not appear that this stipulation would apply to limit gravel mining in NSO areas and river corridors. Though it would seem gravel mining should be considered a "major construction activity" under Lease Stipulation 7,[849] BLM's failure to discuss this or any other stipulation in its analysis for gravel mining in Chapter 3 raises doubt that it would apply. BLM must clarify which, if any, lease stipulations apply to gravel mining, and formulate new

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[842] BENJAMIN SULLENDER, AUDUBON ALASKA, ECOLOGICAL IMPACTS OF ROAD- AND AIRCRAFT-BASED ACCESS TO OIL INFRASTRUCTURE 3 (2017), *available at* http://ak.audubon.org/sites/g/files/amh551/f/road_aircraft_access_report_final_0.pdf (internal citations omitted).

[843] *Id*. (internal citations omitted).

[844] *Id*. (internal citations omitted).

[845] DEIS vol. 1 at 3-50.

[846] *See supra* Part V.C. (describing impacts to the acoustic environment)

[847] DEIS vol. 2 at F-16.

[848] DEIS vol. 1 at 2-4

[849] *See* DEIS vol. 1 at 2-13.

and additional protections that are expressly applicable to gravel mining activities on the Coastal Plain.

F. BLM'S ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON WATER RESOURCES IS INADEQUATE.

"Water is the lifeblood of the Arctic National Wildlife Refuge."[850] It provides the habitat to support fish and the invertebrate species relied upon by arthropods, and in turn, over 100 species of birds found in the Coastal Plain.[851] The Coastal Plain is characterized by large rivers, related stream systems, and some, but not many, lakes, which are mostly concentrated in a few areas. Free flowing water in the Coastal Plain is limited; despite the area being classified as wetlands, most of the ponds and lakes are shallow and cover less than one square mile.[852] There is even less open water available in the winter.[853] Modifications to surface water flow could affect many fish and wildlife species and their habitat.[854] Climate change is modifying water resources and ecology of rivers, lagoons, nearshore estuaries of the Arctic Refuge and its adjacent waters due to melting of Brooks Range glaciers.[855] In 1987, DOI concluded that obtaining water for oil and gas activities in the Coastal Plain "has the potential for major adverse effects."[856] It also noted that there was limited information known about the water resources of the Coastal Plain.

Subsequently, FWS conducted additional investigations of water resources in rivers, streams, lakes, and springs during the late 1980's and 1990's,[857] which further substantiated limited winter water availability and significance of water resources to fish, wildlife, and their habitats.[858] For example, investigations found that during April, 90% of the water was located in

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[850] U.S. Fish & Wildlife Serv., *Water and Water Rights*, https://www.fws.gov/refuge/arctic/water.html (last updated Jan. 14, 2014).

[851] NRC, Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope, 30 (2003).

[852] LEIS at 13.

[853] LEIS at 33.

[854] LEIS at 119.

[855] Nolan, M., R. Churchwell, J. Adams, J. McClelland, K.D. Tape, S. Kendall, A. Powell, K. Dunton, D. Payer, P. Martin. 2011. Pp. 49 in: Observing, Studying, and Managing for Change: Proceedings of the Fourth Interagency Conference on Research in the Watersheds, 26-30 September, 2011: Fairbanks, AK. Ed. By C.N. Medley, G. Patterson, and M.J. Parker. Scientific Investigations Report 2011-5169, USGS. https://pubs.usgs.gov/sir/2011/5169/

[856] LEIS at 111, 113 ("The dedicated industrial use of the limited natural fresh-water sources of the 1002 area would be a major effect.").

[857] Elliott, G.W. 1990. Quantification and distribution of winter water within lakes of the 1002 area, Arctic National Wildlife Refuge, 1989. US Fish & Wildlife Serv., Alaska Fisheries Technical Report Number 7, Anchorage. https://www.fws.gov/alaska/fisheries/fish/Technical_Reports/t_1990_07.pdf; Trawicki, et al 1991; Lyons and Trawicki, 1994.

[858] U.S. Fish & Wildlife Serv., Aug 29, 1995, A preliminary review of the Arctic National Wildlife Refuge, Alaska Coastal Plain Resource Assessment: Report and

just 9 of the 119 lakes surveyed, and in 237 miles of river channels studied, only 9 million gallons of water were estimated — an amount that would be sufficient for only 7 miles of ice roads under current practices.

The CCP states that threats to water resources of the Coastal Plain include oil and gas development, and gravel mining.[859] Despite this, BLM's draft EIS fails to accurately describe the water resources of the Coastal Plain and fails to adequately analyze the impacts of the oil and gas program on the water resources.

1. Affected Environment and Inadequate Baseline Information

The draft EIS fails to include sufficient information regarding the water resources of the Coastal Plain or address existing information. While the lack of water resources in the Coastal Plain available for oil and gas activities has been well documented, BLM fails to acknowledge how limited its information is and did not obtain any new information to inform its EIS. As the USGS explained, "[u]nderstanding water resources in the [Coastal Plain] informs questions related to multiple ecosystems as well as possible infrastructure development."[860] As demonstrated by Table H-4 and H-5 in the draft EIS, BLM's information on the major rivers and drainages in the Coastal Plain is lacking. For many of the rivers, there is no information since 1992. For a few others, the most recent information is 2012 (Canning River) and 2017 (Hulahula River). For all of the rivers, the flow information is only available for three months of the year.[861] New, complete annual information must be obtained for these rivers to inform BLM's analysis. There is a tremendous amount of scientific literature available from the last 30+ years that explores and documents how to quantify and describe hydrology (surficial and subsurface). BLM must take into account all historical water quality and quantity information[862] and also utilize the

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Recommendation to the Congress of the United States and Final Legislative Environmental Impact Statement. Regional Director, Region 7, 20 pp.

[859] CCP vol. 1 at 4-38.

[860] 2018 USGS Report at 20.

[861] DEIS vol. 2 Appendix H at H-6–H-18.

[862] McCart, P.J., ed. July 1974. Classification of Streams in Beaufort Sea drainages and distribution of fish in arctic and sub-arctic drainages, Arctic Gas Biological Report Series Vol. 17; Ward, D. and P. Craig. Catalogue of streams, lakes and coastal areas in Alaska along routes of the proposed gas pipeline from Prudhoe Bay, Alaska to the Alaskan/Canadian border. Arctic Gas, Biological Report Series Vol. 19; Craig, P.C. & P. J. McCart 1975. Classification of Stream Types in Beaufort Sea Drainages between Prudhoe Bay, Alaska, and the Mackenzie Delta, N. W. T., Canada, Arctic and Alpine Research, 7:2, 183-198, *available at* https://www.tandfonline.com/doi/pdf/10.1080/00040851.1975.12003821; Childers, J.M, C.E. Sloan, J.P. Meckel, and J.W. Nauman. 1977. Hydrologic reconnaissance of the Eastern North Slope, Alaska, 1975. USGS Open-File Report 77-492; Garner and Reynolds 1986 Vol. II. Pp.397-404; U.S. Fish & Wildl. Serv. Feb 1983. Proposed oil and gas exploration in the Coastal Plain of the Arctic National Wildlife Refuge, Final EIS and Preliminary Final Regulations. Fig.III -2, Location of icings and springs in the ANWR Coastal Plain; Arcone, S.A., A.J. Delaney, and D.J. Calkins. April 1989. Water detection in the coastal plains of the Arctic

best spatial data and current scientific literature, cited herein, in its description of the water resources and obtain necessary information to do so. Having updated information is particularly important given the impacts that climate change is having on water resources in the Arctic.

The draft EIS states that most streamflow in rivers ceases in December, when rivers freeze,[863] but it fails to identify and address the presence of unique winter water flows that do exist, including springs and taliks, formation of extensive aufeis, presence of isolated deep pools beneath ice mounds or hummocks in braided stretches of major river drainages, and groundwater connections to surface waters, which differ in the Refuge Coastal Plain due to proximity the Sadlerochit Mountains and Brooks Range with limestone outcrops.[864] Kane et al 2013 report groundwater flow is active to springs and icings in the Arctic Refuge Coastal Plain despite previously mapped continuous permafrost; water flow may result from "short, suprapermafrost pathways, or non-local recharge areas travelling through complex subpermafrost pathways" originating on the south side of the Brooks Range. Extensive aufeis forms in rivers with springs and provides both significant winter water storage and habitat for caribou, fish and other animals.

The Arctic Refuge Coastal Plain contains many springs, each of which should be described with baseline information on water quantity and quality components as well as associated fish and wildlife so that they can be adequately protected.[865] The unique Sadlerochit Springs (including Sadlerochit Spring Creek and Itkilyariak Creek) was designated as a special area, protected by regulation from any exploratory activities, including during the prior seismic surveys,[866] and recognized as important by the LEIS.[867] Sadlerochit Spring was recommended for Natural Landmark status in 1974.[868]

The draft EIS fails to provide sufficient maps and accompanying information for water resources in their full diversity, including watershed boundaries and detail for rivers, streams, lakes, springs, river floodplains, and river aufeis (icings, nalads), and coastal lagoons and barrier

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National Wildlife Refuge using helicopter-borne short pulse radar. CREEL Report 89-7. https://apps.dtic.mil/dtic/tr/fulltext/u2/a208908.pdf.

[863] DEIS vol. 1 at 3-51.

[864] Kane et al 2013.

[865] For example, see Wiswar, DW 1994. Summer distribution of Arctic fishes in the 1002 area of the Arctic National Wildlife Refuge, Alaska, 1991, with special emphasis on selected lakes, tundra streams, and the Sadlerochit River Drainage. Alaska Fisheries Technical Report Number 27. https://www.fws.gov/alaska/fisheries/fish/Technical_Reports/t_1994_27.pdf.

[866] 50 C.F.R. 37, Sec. 37.32 Special areas. (g) No exploratory activities shall be conducted by any permittee at any time within \1/2\ mile of the source of the Sadlerochit Spring or within \1/4\ mile on either side of Sadlerochit Spring Creek for a distance of 5 miles downstream from its source

[867] LEIS 1987, Plate 1, US Fish & Wildl. Serv. Maps of archeological and natural areas, fishery, moose, brown bear, and polar bear resources in the 1002 area, Arctic National Wildlife Refuge, Alaska, A. Potential national natural landmarks and archeological and other special sites.

[868] Detterman, RL 1974. The Arctic lowland regional potential landform and lifeform natural landmarks. USGS Adm. Rept. Prepared for the NPS 411 pp.

island systems, river deltas, bays, and shorelines. Current and historical maps and information on aufeis in the Coastal Plain should be provided to detect changes, including those which may be underway due to climate change.

The draft EIS also recognizes that there are many fewer lakes in the Coastal Plain than in the NPRA, that the lakes are not evenly distributed but are instead clustered around three main rivers, and that most lakes are shallow and freeze to the bottom during the winter.[869] This means that there is very little water available on the Coastal Plain during the winter for activities like building ice roads and pads, camp water, and drilling exploration wells, and that it is not available in many parts of the Coastal Plain where BLM is considering leasing. However, BLM fails to account for the lack of water or the distribution of what limited available water there may be in its impacts analysis, or consider how this may dictate where oil and gas activities occur or are concentrated.

Additionally, the draft EIS notes that much of the water resources on the Coastal Plain, in particular lakes, is recharged each year by snow melt.[870] BLM does not analyze how using snow for oil and gas activities, like snow roads, or ice from lakes for ice chipping for road, will impact the recharge rate of the water resources on the Coastal Plain, changes to the water quality of remaining water, and risks from scraping or mining ice which may cause lakes to freeze to the bottom resulting in mortality of fish and benthic organisms. As the FWS notes, temporal and spatial data on the water resources of the Coastal Plain is limited.[871] Additionally, data on precipitation is not tied to information on water resources.[872] This means that BLM's conclusions tying these two pieces together as they may relate to recharge rates are not supported. It is critically important to understand the impact to recharge rates given the limited fresh water resources on the Coastal Plain overall and the specific Refuge purpose of protecting water quantity. Without correlated data, BLM cannot do this.

Additional problems with BLM's description of the Coastal Plain's water resources and missing information are described in detail below. Given the volume of missing or inaccurate information in the draft EIS regarding the water resources of the Coastal Plain, BLM cannot accurately analyze the impacts an oil and gas program.

a. Hydrography network

Due to the resolution of the current USGS National Hydrography Dataset (NHD), which uses a 20—30 m resolution digital elevation model as the input data source, and limited physiographic relief within sections of the CP, the data used to estimate hydrography channel network is inaccurate. The current NHD delineated hydrography network does not provide an accurate assessment of active channel width and floodplain extent for streams within the CP. It is particularly inaccurate throughout the CP in areas with wide braided floodplains and low gradient streams, which are both very common landscape features. High-resolution IfSAR data

[869] DEIS vol. 1 at 3-52–3-53.
[870] DEIS vol. 1 at 3-52–3-53.
[871] CCP vol. 1 at 4-38, 4-41.
[872] CCP vol. 1 at 4-38.

(resolution 2.5—5 m) is currently available for the entire CP (https://www.usgs.gov/news/alaska-mapping-update) and the current NHD hydrography needs to be compared to and updated with the best available DEM data and verified using high-resolution satellite imagery and field techniques in order to accurately quantify the affected environment and evaluate changes in the existing environment in the context of climate change. An example of an improved Arctic stream channel network that incorporates high resolution IfSAR DEM data can be seen at https://netmap-portal.squarespace.com/#map. Section 3.2.10 of the DEIS relies on inaccurate DEM and hydrography data, resulting in an inaccurate and incomplete discussion of the affected environment.

b. Seasonal hydrological flow processes

Information provided in the DEIS is vague, outdated and inadequate to accurately describe seasonal hydrologic flow processes of Arctic rivers and streams within the CP. Hydrological processes within lentic and lotic ecosystems are complex and vary spatially and temporally across the CP. Information provided within the DEIS is too generalized to accurately and sufficiently describe baseline seasonal streamflow processes. A description of hydrological processes, ideally using current empirical hydrological data from the CP, should be completed based on hydrologic classification groups following best available methods (see Olden et al. 2012 for overview and appropriate methodology). Much of the information within the DEIS is drawn from areas outside the CP, which make the description of the seasonal hydrologic processes (e.g., streamflow, flooding, snowmelt) inaccurate. Major differences in physiography, geology and geomorphology are present for watersheds outside the CP, which inhibit references cited from being applicable. For example, information on spring flood dynamics provided within Bowling et al. 2003, which is collected in the Putuligayuk River watershed, cannot be applied broadly for all rivers and streams within the CP, which are within different ecological landscapes and have different hydrological characteristics.

c. Permafrost hydrology

Information provided in the DEIS does not adequately describe permafrost hydrology within the CP. Arctic hydrology (surface and subsurface flow paths) is significantly influenced by permafrost features and dynamics, which vary heterogeneously across the Arctic (Woo et al. 2008; Walvoord et al 2012). Due to documented change in the Arctic permafrost and associated impacts on hydrology (Liljedahl et al. 2016; Walvoord and Kurylyk 2016), recent permafrost thaw impacts on hydrology need to be adequately described within the DEIS for all CP watersheds. Additional efforts, within the DEIS, should be focused on providing a detailed description of various aquifers (i.e., supra-permafrost aquifer, sub-permafrost aquifer, sub-talik aquifer) and flow pathways (i.e., surface runoff, groundwater, taliks, conductivity) across the CP in order the adequately describe the baseline—information that is essential for describing impacts of projected water extraction outlined within the DEIS (Appendix B, B-17).

d. Streamflow

Information provided in the DEIS does not adequately describe streamflow regimes within the CP. The natural flow regime is a critical element that maintains biodiversity and ecosystem integrity in lotic systems and altering the historical flow regime will have negative impacts to aquatic species in rivers and streams (Poff et al. 1997; Bunn and Arthington 2002). New data on seasonal streamflow regimes that quantifies critical components of flow regimes (i.e., magnitude, frequency, duration, timing, rate of change) needs to be collected and new methods should be used to quantify streamflow metrics (see Olden and Poff 2003; Richter et al. 1996) in order the adequately describe the baseline. Historical information on surface water discharge is sufficient for instream flow water reservations but does not provide enough detailed information to describe critical baseline components of flow regimes, which are essential to understand projected water extraction impacts outlined within the DEIS (Appendix B, B-17).

e. Stream temperature

Information provided in the DEIS does not adequately describe baseline stream temperature regimes within the CP. Thermal regimes are another critical element that regulates metabolism in fish and invertebrates, influencing growth, phenology and survival, which in turn influences foodwebs and aquatic species communities (Caissie 2006; Webb et al. 2008; Steel et al. 2017). No information is provided on stream thermal regimes, which is essential and necessary baseline information needed to quantify impacts of habitat alteration, outlined within the DEIS (Appendix B, B-17). Baseline information on temperatures for Sadlerochit Springs and other springs in or upstream from Coastal Plain rivers is lacking in the draft EIS, yet changes could impact unique plants and habitat use by the American dipper, other birds, and fish. Changes in spring water temperature and volumes could also affect formation and melting of aufeis.[873]

f. Water biogeochemistry

Information provided in the DEIS does not adequately describe water biogeochemistry within the CP. Beyond briefly mentioning that the CP water bodies are pristine and oligotrophic, no information is provided on water biogeochemistry in lentic and lotic habitats, which is essential and necessary baseline information to quantify impacts of habitat alteration on water quality. Biogeochemical processes in aquatic ecosystems influence nutrient availability, biofilms, invertebrate abundance, which in turn influence Arctic food webs (see Huryn et al. 2005).

g. Climate change

Information provided in the DEIS does not adequately describe climate change impacts on water resources within the CP. Current and future high-resolution climate data is currently available for the CP including upstream areas within each watershed (see Cai et al. 2018), but is not provided in the DEIS. Baseline long-term and spatially explicit information on hydrology (e.g., streamflow, water temperature, water quantity, surficial and subsurface permafrost flow dynamics) is not shown in the DEIS and therefore impossible to describe or assess the current and future effects of climate change. Due to major differences in physiography, geology, fluvial

[873] Yoshikawa et al. 2007.

geomorphology and climate it is inaccurate to suggest that the information provided in BLM (2018a), which describes lands west of Nuiqsut, is sufficient to describe climate change in the CP. To understand climate change impacts on lotic ecosystems, a suite of information, models and empirical data needs to be collected to quantify thermal and streamflow regime (see Poff et al. 1997; Olden and Poff 2003; Isaak and Rieman 2013; Steel et al. 2018). In addition a geomorphic classification on lotic and lentic habitats within the DEIS has not been completed (see Montgomery and Buffington 1997), which is required and necessary to quantify and adequately analyze climate change impacts to aquatic ecosystems.

2. BLM's analysis of the direct and indirect impacts to water resources is flawed.

Future development activities that will directly and indirectly impact water resources and hydrology are identified in the DEIS.[874] While some of the impacts are discussed, due to inadequate baseline on critical hydrology attributes within the Coastal Plain (i.e., streamflow, stream temperature, water biogeochemistry, and groundwater), the DEIS does not accurately describe the extent or multitude of impacts likely to be associated with the proposed oil and gas program There is a tremendous amount of scientific literature available from the last 30+ years that explores and documents the impacts of various types of development proposed by the DEIS. BLM must consider the scientific literature, which is cited herein, and its relevance to the impacts of oil and gas on water resources of the Coastal Plain. Specific flaws with BLM's analysis of the proposed oil and gas program on water resources and hydrology are described below.

BLM fails to analyze the full scope of methods for obtaining water in light of the paucity of deep lakes compared with North Slope development areas to the west of the Coastal Plain. It fails to address the impacts of so-called "innovative techniques to minimize use of freshwater sources" or identify any additional potential water sources "including naturally deep lakes and pools along rivers" beyond those lakes FWS studies have documented to have limited available water beyond that needed by fish and wildlife. The draft EIS also fails to specifically analyze potential impacts of "creating water reservoirs by excavating deep pools in lakes or along stream channels in conjunction with gravel removal operations," or "desalinating marine water obtained beyond the barrier islands."[875] In fact, such techniques like dredging deep holes in river floodplains for water reservoirs are the opposite of "innovative," given that excavations in river floodplain gravels resulted in myriad negative impacts in the early days of the Prudhoe Bay and Kuparuk oil fields.[876] Gravel mining and creation of deep water reservoirs in river floodplains could change the pathways for deep groundwater sources to perennial springs, temperatures, flooding regime, and ice formation and breakup in the rivers; change predator prey relationships and natural diversity of fish and invertebrate communities; and prevent full upstream use of

[874] DEIS vol. 1 at 3-55.

[875] Draft EIS vol 2, Appendix B, p. B-13.

[876] Wilson, WJ, EH Buck, GF Player, and LD Dreyer. 1977. Winter water availability and use conflicts as related to fish and wildlife in Arctic Alaska – A synthesis of information. FWS/OBS-77/06.

riverine habitats currently utilized.[877] While the draft EIS states that "[g]roundwater aquifers or local lakes and rivers are typically the preferred water sources, . . . those sources may not be sufficient to meet water needs,"[878] it does not provide any quantitative analysis of water needs and availability of water sources assumed to be used nor the sites that would be impacted from other water procurement. Water withdrawals should not be permitted from any rivers or streams.

In short, BLM fails to analyze the full extent and intensity of impact sources to water resources, as it does not quantify total number of water sources, show locations on the Coastal Plain, nor address the full duration of potential use during seismic, exploration, development and production activities. This is aggravated by the fact that the impacts of gravel mining and excavated water "holes" or reservoirs are not assumed to be covered by the (improper) 2,000-acre accounting and therefore are not analyzed or tabulated (see, e.g. Table B-5, Hypothetical projected facilities and estimated surface disturbance), despite the bulldozing and earthmoving required. Nor does BLM address the impacts to hydrology and water resources from snow roads and trails, ice roads, and ice bridges — structures which remain as thickly packed snow and ice after surrounding snow has turned to sheet flow water and can block it like a dam.

a. Streamflow

The assessment of direct and indirect impacts of water resources in Section 3.2.10 of the DEIS is inadequate to evaluate impacts of proposed development on streamflow. The removal and fill of aquatic habitats will have a variety of direct impacts beyond the footprint of the development infrastructure, which may develop differently over time (i.e., days–years) causing numerous short and long-term impacts to surface waters (See Walker et al. 1987; Raynolds et al. 2014; Liljedahl et al 2016; Walker et al. 2019). Roads, bridges, and culverts have been shown to alter surface hydrology through channelization and redistributing of flow to stream crossings (Wemple et al., 1996), which can destroy or create wetlands, alter natural streamflow regimes and impair surface waters and aquatic habitat (Trombulak et al. 2000; Cocchiglia et al. 2012). The impacts and consequences of altering streamflow because of oil and gas activities are not adequately addressed in the DEIS.

b. Stream temperature

The assessment of direct and indirect impacts of water resources in Section 3.2.10 of the DEIS is inadequate to evaluate impacts of proposed development on stream temperature. Industrial road crossings, and modification of aquatic habitat (removal and fill of land within floodplains) will have a variety of direct impacts beyond the described footprint, which will likely affect the instream thermal habitat of rivers and streams by altering the heat exchange processes (Caissie 2006). Due to upstream constriction effects, culverted streams are associated with altered conditions, such as increased turbidity and higher water temperature (MacPherson et al. 2012; Maitland et al. 2016), and impacts will extend hundreds of meters of each culvert (Lachance et al. 2008). Cumulatively these impacts have the potential to alter the thermal

[877] *See* draft EIS vol. 2, p. F-23 & vol 1, p. 3-59.
[878] Draft EIS vol. 2, Appendix B, p. B-16.

regimes across entire rivers. The impacts and consequences of altering stream temperature because of oil and gas activities are not adequately addressed in the DEIS.

c. Aquatic biogeochemistry

The assessment of direct and indirect impacts of water resources in Section 3.2.10 of the DEIS is inadequate to evaluate impacts of proposed development on lentic and lotic biogeochemistry. Industrial road crossings will affect the instream physicochemical habitat of rivers and streams. Due to upstream constriction effects, culverted streams are associated with higher percent fine sediment, water temperature, water depth and turbidity, as well as lower dissolved oxygen and water velocity (MacPherson et al. 2012; Maitland et al. 2016), and sediment impacts will extend hundreds of meters downstream for each culvert (Lachance et al. 2008). Proposed development will likely affect biogeochemical processes in aquatic ecosystems, which in turn influence nutrient availability, biofilms, invertebrate abundance, which in turn influence Arctic food webs (Huryn et al. 2005). Additionally, research has shown that vehicle traffic has the potential to introduce heavy metals, ozone and nutrients to roadside aquatic environments (Leharne et al. 1992; Schuler and Relyea 2018), which is likely to be transported throughout aquatic systems (Gjessing et al.1984; Schuler and Relyea 2018). The impacts and consequences of altering water biogeochemistry because of oil and gas activities are not adequately addressed in the DEIS.

Furthermore, disposal of drilling wastes (drilling muds, hazardous wastes, and other substances) through injection into the subsurface would risk far different impacts in the Refuge Coastal Plain region due to freshwater groundwater reservoirs with flows into deep groundwater springs with complex connections given the highly faulted subsurface (Kane et al 2013). Contamination from injection of hazardous wastes and fracking (especially in the Northwest corner in the Brookian shale) risk irreversible impacts to water quality and quantity and fisheries in the Refuge Coastal Plain's spring-fed systems. Yet these impacts were not evaluated. In the Refuge Coastal Plain, it should be assumed that Safe Drinking Water standards apply, which has not the case for the Prudhoe Bay oil field complex oil fields or in the NPR-A, where oil field development has tapped into saline reservoirs.

d. Groundwater

The assessment of direct and indirect impacts of water resources in Section 3.2.10 of the DEIS is inadequate to evaluate impacts of proposed development on groundwater. Habitat alteration from proposed development in the CP (roads, culverts, bridges, infrastructure pads etc.) is likely to increase permafrost thaw, thermokarsting, erosion into lentic and lotic environments and alter surficial and subsurface flow paths (Walker et al. 1987; Raynolds et al. 2014; Liljedahl et al. 2016; Walker et al. 2019). Minimal description is provided on subsurface water movement with the CP, which is largely unknown for the CP and likely complex due to permafrost dynamics (see Woo et al. 2008; Walvoord et al 2012; Kane et al. 2013; Walvoord and Kurylk 2016). The impacts and consequences of altering groundwater are not adequately addressed in the DEIS. Groundwater quality should be monitored prior to drilling and impact indicators should address ground water quality.

3. *Instream Flow Reservation Applications*

There are many instream flow reservation water right applications pending before the Alaska Department of Natural Resources for waterbodies on the Coastal Plain.[879] During the late 1980's and 1990's, the US Fish & Wildlife Service quantified water resources in the 1002 area with stream gauging and lake elevation and bathymetric studies. Based on these investigations, water rights applications were filed for at least140 lakes and 12 river and stream segments to protect the habitat, migration and propagation of fish and wildlife.[880] The purpose of these water-right reservations is for conservation and they identify the specific water flow necessary to achieve that goal. These reservation applications help meet Refuge purposes including protecting water quantity necessary to support fish and wildlife populations and habitat. These water right applications take precedence over other uses of water from these sources.[881]

Despite the fact that these applications are publicly available and BLM is aware of them and that their existence has a major impact on what water may be available for uses related to oil and gas activities, BLM has not analyzed them in any detail. Protecting these instream flows further reduces the already limited available freshwater resources on the Coastal Plain but is not considered by BLM. A number of the applications likely cover the same waters that BLM identifies as unfrozen in the winter and potentially available for water withdrawals to support oil and gas activities. BLM must analyze the applications, clearly identifying the waters that they are for, the fish, wildlife, and habitat resources that they support, and the impact that they have on potential water withdrawals and usage for oil and gas activities. Without this information, BLM cannot know the available water, the true impacts of oil and gas on water resources and the fish and wildlife that depend on them, or craft necessary protections.

4. *Impacts from Water Withdrawals*

The draft EIS states that freshwater would be used to construct ice road and pads, dust abatement, and to support operations. As outlined in the Reasonable Development Scenario contained in Appendix B, BLM estimates the following regarding water withdrawals:

- One ice pad uses 500,000 gallons of water;
- One mile of ice road uses 1 million gallons of water;
- Drilling and completing one well uses 420,000 to 1.9 millions of gallons of water; and
- Water to maintain daily production of 50,000 barrels of oil a day will require 2 million gallons of water per day.

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[879] DEIS vol. 1 at 3-54 (while the DEIS acknowledges the existence of pending water rights applications generally in Alaska, it fails to address the specific applications for the Coastal Plain); *see also* included Land Administration System summaries from DNR (obtained via search on DNR's website: http://dnr.alaska.gov/projects/las/).

[880] https://www.fws.gov/alaska/water/arctic_water_rights.htm; https://www.fws.gov/alaska/water/arctic/1002m.htm; https://www.fws.gov/alaska/water/arctic/1002rm2.htm (accessed Feb 19, 2019).

[881] AS 46.15.050.

BLM does not include an estimate for the water needed to support seismic exploration, but SAExploration's pending project proposal will use 3,500 gallons per day. It is also not clear if BLM included water supply needs for camps (100 gallons per person per day) and general road and pad maintenance (20% of the initial water used to construct the road and pad for the season), both of which can use significant amounts of water.[882] BLM must be sure that it is including all potential oil and gas program uses of water in order for the agency to be able to evaluate the impacts.

It is hard to discern how much water would be used under each alternative because BLM does not include that clear information. BLM should add a chart to the final EIS that clearly depicts how much water would be used for all phases of oil and gas under each alternative, based on its development scenarios. Regardless, this is an extraordinary amount of water needed. It is unlikely that there is even that quantity of water available for use on the Coastal Plain. For example, BLM estimates that there are only 1.1 billion gallons of water available by the end of the winter season, with 80% of that volume coming from seven lakes in the Canning River Delta.[883] FWS has previously found that there is only enough available water in the winter to construct a few miles of ice roads.[884]

Despite the high volume of water needed to support BLM's proposed oil and gas program, and the limited water available in winter from a very limited geographic area to do so, BLM concludes that there are not expected to be impacts on water quantity from water withdrawals, relying only on its analysis for the NPRA.[885] However, BLM does not explain or support this conclusion, particularly in light of its recognition that the hydrology and water regime is very different in the NPRA from the Coastal Plain.[886] This conclusion is also at odds with DOI's conclusion in 1987 that industrial use of water resources would be a major effect.

BLM also assumes that permitted withdrawal rates would not exceed recharge rates. It is not clear what this assumption is based on given that BLM lacks considerable information about both precipitation and water resources for the Coastal Plain as previously explained and given FWS explanation that existing information on these topics is not correlated. BLM must explain this conclusion and provide the basis for it.

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[882] NPR-A IAP/EIS vol. 1 at 196, vol. 2 at 19, 21, 36.

[883] DEIS vol. 1 at 3-52.

[884] *See* U.S. Fish & Wildlife Serv., *Potential Impacts of Proposed Oil and Gas Development on the Arctic Refuge's Coastal Plain: Historical Overview and Issues of Concern* (Jan. 17, 2001) [hereafter "FWS 2001 Report"] (noting that the amount of water available in the winter in the Coastal Plain is only enough to maintain ten miles of ice roads); NRC Report, *supra*, at 210 (noting that "exploration will be hampered by the reduced availability of water during the winter" and that use of ice roads may not be feasible to access all areas).

[885] DEIS vol. 1 at 3-58.

[886] DEIS vol. 1 at 3-52.

5. *BLM Measures Fail to Protect Water Resources*

None of the action alternatives appear to prohibit water withdrawals or excavation of gravel mines for any lands in the program area, whether available for leasing or not, nor for areas subject to No Surface Occupancy. Gravel mines and water withdrawal operations in their entirety should be considered prohibited from areas not available for leasing and also in No Surface Occupancy zones during any season because they alter hydrological flows, impair water quality, and alter natural fisheries diversity as well as riparian and stream bank vegetation. Seismic operations would also have impacts on hydrological and water resources, and should not be allowed under any alternative in the areas unavailable for leasing or subject to No Surface Occupancy.

Additionally, the lease stipulations do not protect water resources from over withdrawal. Lease Stipulation 1 protects water quality, not water quantity. Lease Stipulation 2 purports to protect water quantity, but because its requirements are the same as ROP 9, they are insufficient for the reasons described below. Also, both Lease Stipulation 2 and 3 are limited in the geographic area or specific resources that they would apply to. This leaves much of the water resources on the Coastal Plain without protections. Lease Stipulation 9 is aimed at protecting coastal areas. While this will protect some aspects of water resources of the Coastal Plain, it does not ensure protection of water quantity or limit water withdrawals. BLM must consider lease stipulations to protect water quantity.

BLM also states that required operating procedures 3, 4, 9, 10, 12, 13, 17, 20, 24, and 26 would minimize impacts to water resources.[887] These measures are inadequate to protect water quantity from the impacts of water withdrawals for oil and gas activities. ROP 3 is aimed at water quality, not quantity. ROPs 4 and 10 are for polar bears and do not address water resources. ROP 9 allows water withdrawals of a percentage of unfrozen or available water based on fish species, but BLM does not explain or justify how it arrived at the percentages.[888] Without that critical information, it is unclear if the ROP will in fact protect water resources generally and water quantity in particular. It also makes modeling and monitoring completely discretionary, further limiting BLM's ability to understand the impacts of water use and regulate it effectively. ROP 12 protects water drainage patterns by limiting how components are constructed but does not otherwise protect water quantity or ensure there will not be adverse impacts from water withdrawals. ROP 13 addresses fish and aquatic habitat, but not water quantity. ROP 17 prohibits the construction of a gravel road for exploratory drilling. While this should be required, we also note that that means that ice or snow roads will be used, which will lead to impacts on water resources, not lessen them. This ROP, therefore, does not provide protections for water quantity. ROP 20 is geared at maintaining fish passage by prohibiting development in various areas and habitats. This does not ensure that sufficient water quantity will be available in rivers and streams sufficient for fish passage. ROP 24 concerns the location of gravel mines to protect various resources, but again, it does not directly ensure protection of water quantity. ROP 26 concerns birds and is unrelated to water resources.

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[887] DEIS vol. 1 at 3-60.
[888] DEIS vol. 1 at 2-19–2-10.

G. BLM'S ANALYSIS OF AN OIL AND GAS PROGRAM ON FISH AND AQUATIC SPECIES IS INADEQUATE.

1. Summary of Arctic Coastal Plain Fish Species, Important Aquatic Habitat and Subsistence Fisheries — Diversity of fish species within the Coastal Plain and habitat use

Freshwater, estuary and nearshore marine waters of the Coastal Plain (CP) of the Arctic National Wildlife Refuge contain numerous Arctic fish species (17–21 estimated species; U.S. Fish and Wildlife Service 2015). The two most abundant anadromous fish species, Dolly Varden (*Salvelinus malma*) and Arctic Cisco (*Coregonus autumnalis*; Craig 1984) extensively utilize areas within the CP. Arctic Cisco has not been documented using estuary and delta habitat within the CP, but mainly use nearshore habitat within the Beaufort Seas as important foraging habitat between their spawning migration to the Mackenzie River and overwintering location in the Colville River Delta (Reist and Bond 1988; Brown 2008). Therefore, impacts to Arctic Cisco in the nearshore environment could impact species presence or abundance as fish migrate between important habitats. Dolly Varden have two major life forms which include freshwater resident (dwarf, lake and spring forms) and anadromous forms that are present in freshwater, nearshore and marine habitats (Ward and Craig 1974; Brown et al. 2014; Brown et al. 2019). Both Chum salmon (*Oncorhynchus keta*) and Pink Salmon (*O. gorbuscha*) have historically been documented within the Canning and Staines rivers as well as CP nearshore marine areas (Craig et al 1984; Craig and Haldorson 1985), but little information exists on populations or on spawning, rearing and foraging habitat used. Other fishes within the CP freshwater habitat include Lake Trout (*Salvelinus namaycush*), Burbot (*Lota lota*), Ninespine Stickleback (*Pungitius pungitus*), and Slimy Sculpin (*Cottus cognatus*; U.S. Fish and Wildlife Service 2015), and while not much is known about the distribution of each species it is likely that they inhabit a variety of habitat types extensively throughout the CP.

2. Summary of Arctic Coastal Plain Fish Species, Important Aquatic Habitat and Subsistence Fisheries — Important fish habitat within the Coastal Plain

Lotic and lentic habitat within the CP contains extensive important fish habitat necessary for reproduction, foraging and survival of Arctic fish. While historical research has only documented a snapshot of habitat use in space and time, it is likely that fish populations use extensive habitat across large areas (100's km) in order to fulfill necessary life history requirements such as spawning, refugia and foraging (Schlosser 1991). Distinct overwintering areas are located at areas that do not freeze solid during the winter (i.e., perennial springs, deep sections of rivers and deep-water lakes; Craig and McCart 1974; Viavant 2009; Brown et al. 2014; Brown et al. 2019) and are necessary for survival. Another type of important fish habitat, spawning areas, are located upstream of the CP and many post-spawned Dolly Varden either migrate downstream and overwinter near perennial springs within the CP or nearby watersheds (Brown et al 2014; Brown 2019). Rearing and foraging areas for both adult and juvenile Dolly Varden likely occur throughout watersheds within the entire CP, in habitats specific for each life stage, though data documenting habitat use across spatial and temporal scales is limited (e.g., Ward and Craig 1974; McCart 1980; Underwood et al. 1996). Limited information also exists on the abundance and distribution of salmon (Pink and Chum salmon) within the CP, due to their

generally low abundance in the Arctic, but species likely use spring-fed rivers for spawning along with delta, tributaries, side channels and nearshore areas for rearing. Arctic Grayling (*Thymallus arcticus*) occur in freshwater habitats within the CP and, based on previous research (West and Smith 1992) and habitat suitability requirements, it is likely that populations extensively use the vast majority of CP streams and connected lakes at some point in their lives, for reproduction, foraging and survival.

3. *Summary of Arctic Coastal Plain Fish Species, Important Aquatic Habitat and Subsistence Fisheries — Importance of fish species as a subsistence resource for Arctic Coastal Plain communities*

Nonsalmon fish species are important subsistence resources for the Arctic community of Kaktovik. In addition to marine mammals and large land mammals, fish resources are the third most utilized wild food resource for the community of Kaktovik and represent 13% of total wild resources harvested (Kofinas et al. 2016). The annual mass of fish harvest within the subsistence fishery is significant and fishers harvest 12,468 kg of fish annually, of which the vast majority (99 %) are nonsalmon fish (Kofinas et al. 2016). Fish species with the greatest harvest quantities include Dolly Varden (ca. 9,478 kg), Broad Whitefish (ca.1,691 kg) and Arctic Cisco (ca.762 kg), which are harvested in both nearshore marine and freshwater habitats. In addition to being directly consumed by Kaktovik residents, a large proportion of subsistence catch is shared within a food sharing network between Arctic coastal plain communities (Kofinas et al. 2016).

4. *Summary of Arctic Coastal Plain Fish Species, Important Aquatic Habitat and Subsistence Fisheries — Ecosystem based management and importance of connected heterogenous habitat*

Ecosystem-based management strategies that allow for natural disturbance and portfolio concepts to occur are essential for sustaining Arctic fish populations in the CP and need to be considered in the DEIS. Disturbance processes across space and time create a mosaic of habitat types (Resh et al. 1988), which provides a diversity of habitat for fish species and creates a variety of options available across changing environmental conditions (i.e., a shifting habitat mosaic; Stanford et al. 2005) — buffering populations from both climate and anthropogenic impacts (Schindler et al. 2015). Due to displaced resources, movement by anadromous and freshwater fish is extensive, and it is likely that a large majority of Arctic fish currently utilize entire watersheds (e.g., Waldman et al. 2016), from headwater streams to estuaries, to meet basic biological life requirements of reproduction, foraging and survival. The variation in environmental conditions and heterogeneity in habitats across the CP has likely, as seen in other systems, created a diversity of life-history strategies, phenotypes and genetic diversity among fish, which helps maintain and sustain current populations (Schindler et al. 2015). As seen in other watersheds and similar to the proposed development contemplated in the DEIS, fragmentation of connected habitat or disruption of natural disturbance processes, from roads, culverts, bridges and development pads will reduce habitat heterogeneity and increase fish populations vulnerability to long-term persistence (Penaluna et al. 2018). The homogenization and fragmentation of habitat will likely lead to loss of local populations and reduction of local genetic and life-history diversity, leading to less resilient Arctic fish populations.

5. *Affected Environment — Summary of fish and aquatic species habitat section and major deficiencies of baseline data related to fish habitat and species occurrence*

Overall the DEIS assessment of baseline aquatic habitat within the CP is generally incomplete and an inaccurate assessment of the affected environment. The baseline assessment does not provide accurate estimates on the location, quantity or type of fish habitat including rivers, streams, lakes and tundra ponds within the CP. The DEIS fails to consider the affected environment for aquatic invertebrates and plants, two important habitat attributes that provide food and physical habitat for various life stages of fish. There is a tremendous amount of scientific literature available from the last 30+ years that explores and documents how to quantify and describe aquatic habitat and species occurrence across large riverscapes — rivers, streams, lakes, wetlands, groundwater flow pathways, within a terrestrial landscape from the headwaters to the ocean (see Fausch et al. 2002; Naiman et al. 2005). BLM must utilize the best spatial data and current scientific literature, cited herein, in its description of the affected aquatic environment. If information is outdated or missing, BLM must address that.

6. *Affected Environment — Major deficiencies of baseline data related to fish habitat and aquatic species occurrence*

a. Accuracy of hydrography network

Due to the resolution of the current USGS National Hydrography Dataset (NHD), which uses a 20–30 m resolution digital elevation model as the input data source, and limited physiographic relief within sections of the CP, the data used to estimate hydrography channel network is inaccurate. The current NHD delineated hydrography network does not provide an accurate assessment of active channel width and floodplain extent for streams within the CP or correctly represent proposed stream buffers. It is particularity inaccurate throughout the CP in areas with wide braided floodplains and low gradient streams, which are very common landscape features. High-resolution IfSAR data (resolution 2.5–5 m) is currently available for the entire CP (https://www.usgs.gov/news/alaska-mapping-update) and the current NHD hydrography needs to be updated with this best available DEM data and verified using high-resolution satellite imagery and field techniques in order to accurately quantify the affected environment. An example of an improved Arctic stream channel network that incorporates high resolution IfSAR DEM data can be seen at https://netmap-portal.squarespace.com/#map. Section 3.3.2 of the DEIS uses inaccurate DEM and hydrography data, resulting in an inaccurate and incomplete discussion of the affected environment.

b. Lake network classification, stream-lake connection inaccurate

The assessment of lakes and stream-lake connections is inaccurate within the DEIS. To understand the distribution of lake types, stream-lake connectivity and lake sensitivity to climate change and water withdrawal across the CP, an extensive lake-based database needs to be created and lakes must be classified based on a suite of attributes following methods outlined in Jones et al. (2017). First, IfSAR digital surface model, high resolution satellite imagery along with field data should be collected for all lakes and tundra ponds within the entire CP. Then additional data layers such as surficial geology, lake surface area change, stream connection and

landcover vegetation should be collected, and then finally a lake classification should be completed. Without a detailed understanding of lakes types across the CP, it is impossible to quantify or accurately describe the baseline of the affected environment. Currently, within the DEIS section 3.3.2 affected environment, information is missing, and the provided data is likely inaccurate to quantify lentic fish habitat.

c. Accuracy of anadromous fish habitat and species occurrence

The information on fish habitat within the CP program area (Table 3-17; DEIS 2018) is inaccurate and needs to be updated. Fish distribution and habitat use information does not provide a reliable estimate of species-specific habitats for freshwater, anadromous and marine species that inhabit waters within the CP. As stated in Johnson and Blossom (2017), information from the anadromous water catalog (AWC) only reflects the extent of fish surveys or known anadromous fish use in a particular water body (e.g., stream, river, lake) and does not represent species occurrence or habitat use. A variety of habitat variables (e.g., water clarity, river size and depth), sampling methods (e.g., weir, gillnet) and other factors (e.g., remoteness) influence the detection of fish species, which the AWC does not take into account. The data from the AWC is not an accurate assessment of freshwater, anadromous or marine species habitat use. A systematic survey should be conducted to estimate species abundance (see Borcher et al. 2002 for methods) and identify important habitat for reproduction, foraging and survival based on empirical relocation data (e.g., radio tracking), eDNA and intrinsic habitat models that use habitat suitability parameters to estimate habitat use across large spatial extents (e.g. Burnett et al. 2007; Bidlack et al. 2014; Matter et al. 2018). Current estimates of fish-bearing and anadromous streams are incorrect and recent modeled data for a subset of the CP suggest that anadromous fish habitat is much greater (*see* https://netmap-portal.squarespace.com/#map). While data and scientific methods exist to develop accurate assessments of fish habitat, Section 3.3.2 of the DEIS uses inaccurate and limited data to poorly quantify the affected environment.

7. Affected Environment — Deficiencies/data gaps by habitat type section

a. Estuaries, lagoons and nearshore marine waters

Estuaries, lagoons and nearshore marine waters are critical habitat features for a variety of aquatic species at various life-stages and seasonal periods (See Craig et al. 1981; Craig et al. 1984; Craig and Haldorson 1985; Craig 1989; West et al. 1992; Underwood et al. 1996; Dutton et al. 2012; Courtney et al. 2018). In addition to serving as important habitat for various fish species, these areas are also designated Essential Fish Habitat (EFH) for Arctic Cod (*Boreogadus saida*), Saffron Cod (*Eleginus gracilis*) and Snow Crabs (*Chionoecetes opilio*). Section 3.3.2 of the DEIS does not provide accurate and detailed information on the landscape features in relation to habitat use to quantify the baseline affected environment.

b. Rivers, streams and springs

River, stream and karst-spring locations are not accurately identified, delineated or described by Section 3.3.2 of the DEIS. The current NHD stream hydrography network provides an inaccurate estimation of channel location, length and extent for CP lotic environments. Data

on karst springs is limited, and new methods, including satellite imagery and empirical data collection, should be used to quantify physical and biological features of habitat (e.g., Pavelsky and Zarnetske 2017). The limited existing information on streamflow regimes is inadequate for quantifying seasonal flow regimes, and new data must be collected and methods used to quantify streamflow metrics to describe streamflow regime characteristics adequately (see Olden and Poff 2003). No information exists for stream thermal regimes, which is essential and necessary baseline information (see Steel et al. 2017). No channel reach morphology attribute information is documented to classify and quantify lotic habitat, which is essential to quantify the baseline habitat information for rivers, streams and springs and understand the response for human and natural disturbance (see Montgomery and Buffington 1997).

c. Lakes and tundra ponds

Information on lakes and tundra ponds attributes within Section 3.3.2 of the DEIS is inadequate to quantify the baseline. Given the potential importance of lakes as overwintering fish habitat and the significant foreseeable impacts from water withdrawal, detailed and unique information needs to be compiled for all lakes within the CP using methods by Jones et al. (2017).

8. Affected Environment — Deficiencies/data gaps in fish species occurrence

Information on fish species habitat use and occurrence within Section 3.3.2 of the DEIS is inadequate to quantify baseline information on fish species. The DEIS significantly underestimates fish species presence, occupancy and habitat use. A rigorous and systematic survey for fish populations abundance, occurrence and seasonal habitat use has not been collected to document how fish species use the CP for reproduction, foraging and survival. Numerous methods that combine eDNA data, intrinsic potential models and radio tracking currently exist which are both feasible and appropriate for the CP (see Falke et al. 2013; Fraley et al. 2018; Matter et al. 2018). Application of such methods to the CP is necessary to adequately describe the affected environment and conduct the required impacts analysis.

9. Affected Environment — Deficiencies/data gaps in aquatic invertebrate species occurrence

Information on aquatic invertebrate habitat use and occurrence within Section 3.3.2 of the DEIS is inadequate to quantify baseline information on aquatic species. No site-specific information is provided to quantify the distribution, occupancy or abundance of invertebrate species in relation to channel morphology of aquatic habitat. Using the river continuum concept (Vanote et al. 1980), the serial discontinuity concept (Ward and Stanford, 1995), and theory on the tributary influences on network patterns (Fisher 1997), an invertebrate community assessment should be completed that incorporates site-specific information across all streams within the CP. Additionally, references cited in the DEIS are not specific to the CP, are over 18 years old, and do not provide an accurate assessment of the baseline for invertebrate communities. Further, there is no mention of other aquatic species beyond fish and aquatic invertebrates (e.g., plants).

10. Affected Environment — Deficiencies/data gaps in climate change impacts

Information on climate change impacts within Section 3.3.2 of the DEIS is inadequate. Current and future high-resolution climate data is currently available for the CP including upstream areas within each watershed (see Cai et al. 2018), but is not provided in the DEIS. Baseline long-term and spatially explicit information on hydrology (e.g., streamflow, water temperature, water quantity, surficial and groundwater permafrost flow dynamics) is not shown in the DEIS and therefore impossible to describe or assess the current and future impacts of climate change. Necessary information is needed to understand the baseline information of Arctic lakes, along with appropriate methodology documented by Arp et al. (2016). While Stuefer et al. (2017) provides a synthesis and analysis of observational data for three watersheds to the west of the CP it does not provide a reliable estimate of climate impacts for watersheds that flow into the CP. To understand climate change impacts on lotic ecosystems, a suite of information, models and empirical data needs to be collected to quantify thermal and streamflow regime (see Poff et al. 1997; Olden and Poff 2003; Isaak and Rieman 2013; Steel et al. 2018). No current geomorphic classification data on lotic and lentic habitats to quantify habitat types and anticipate future change (Montgomery and Buffington 1997) is documented within the DEIS, which is necessary to quantify and adequately analyze climate change impacts to aquatic ecosystems.

11. Direct and Indirect Impacts to Fish and Aquatic Species

a. Summary of Direct and Indirect Impacts

Overall the DEIS assessment of direct and indirect impacts to fish and aquatic species is scant, inaccurate and does not sufficiently analyze the impacts of an oil and gas program. The DEIS fails to incorporate accurate baseline information, current scientific knowledge on habitat use and behavioral impacts to fish species. The associated impacts from development (physical, chemical and biological) outlined in the DEIS have a high potential to cause numerous other impacts not described. There is a tremendous amount of scientific literature available from the last 30+ years that explores and documents the impacts of various types of development proposed by the DEIS on fish and aquatic species. BLM must consider that scientific literature, which is cited herein.

Due to the limited amount of available winter liquid water, extraction of water from rivers and lakes for construction of ice roads, pads, and other infrastructure could lead to significant short and long-term impacts on fish populations. As the U.S. Fish & Wildlife Service recognized in a 2001 report, “since winter exploration requires ice roads and ice pads to be built across the water-poor Coastal Plain, exploration activities may also impact fish habitats in rivers and lakes by removing massive amounts of water from the rare areas where water is available in the winter.” (USFWS 2001). Impacts could include direct loss of overwintering habitat, reduced dissolved oxygen concentrations, and increased stress and mortality of Dolly Varden or other Arctic fishes (e.g., Gaboury and Patalas 1984; Evans 2007; Cott et al. 2008). Seismic exploration through noise or instantaneous pressure change has the potential to cause short term, but severe impacts to overwintering fishes and could include negative behavioral changes (e.g., fleeing, herding), hearing loss and direct mortality of fish and embryos (McCauley et al. 2003; Popper et

al. 2005).[889] Construction of gravel and ice roads, pipelines, and other infrastructure associated with river or stream crossings would mobilize sediment (Maitland et al. 2016), causing associated impacts to rearing, spawning, and overwinter habitat (e.g., Robertson et al. 2007; Chapman et al. 2014), as well as the health and behavior of fishes (e.g., Newcombe and Macdonald 1991; Reid et al. 2003; Robertson et al. 2006; Chapman et al. 2014). Within floodplain channels, infilling and various types of stream and river crossing structures (e.g., ice-bridges, culverts, concrete bridges) have the potential to cause long-term changes to the natural flow regime, and restrict channel movement and fish passage, causing negative impacts to fish populations (Wemple et al. 1996; Cocchiglia et al. 2012; Maitland et al. 2016). Additionally, with the construction and maintenance of a gravel road network, numerous other minor to severe impacts may occur such as hydrocarbon and sump contamination (Schein et al. 2009; Kanigan and Kokelj 2010), introduction of non-native species and increased fishing pressure all of which would have both short and long-term impacts to fish populations (Schindler 2001).

If realized, these foreseeable adverse impacts on CP fish will likely have corresponding adverse impacts on subsistence uses. The major deficiencies in BLM's impacts analysis for fish and aquatic species likewise renders BLM's analysis of impacts on subsistence uses and corresponding findings under ANILCA Section 810 inadequate.[890]

b. Major deficiencies in analysis of direct and indirect impacts to fish and aquatic species

Information on direct and indirect impacts to fish and aquatic species within Section 3.3.2 of the DEIS is inadequate to evaluate the foreseeable significant impacts of proposed development. Direct effects of a proposed action are those that are caused by the action and occur at the same time and place, while indirect effects are defined as those that are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable. For the DEIS to accurately assess the direct and indirect impacts of the proposed development it is necessary for the DEIS to demonstrate, in a quantatively rigorous manner, that enough is known about the habitats to be impacted and the associated direct impacts to aquatic ecosystems and species. In certain instances impacts may take years to develop in order to be fully quantified and realized (e.g. Walker et al. 1987; Raynolds et al. 2014). The current DEIS is lacking accurate information on stream hydrology (surficial and groundwater), climatology, hydrography channel network and floodplain distributions, channel morphology and distribution and abundance of fish and aquatic species, which are all necessary baseline information to evaluate impacts. BLM must correct the following deficiencies in the analysis to ensure the required hard look at reasonably foreseeable impacts required by NEPA.

[889] *See also* January 20, 2019 comment letter submitted by Dennis M. Higgs, PhD (detailing best available science and specific deficiencies in DEIS analysis of acoustic impacts on fish).

[890] *See infra* Part V.O & VI.

c. Direct and indirect impacts from loss or alteration of aquatic habitat

The assessment of the direct and indirect impacts from loss of aquatic habitat (both lotic and lentic) from development within the DEIS is not robust and does not accurately describe the impacts. The removal and fill of aquatic habitats will have a variety of direct impacts beyond the described footprint of the development infrastructure (i.e., gravel roads, gravel pads, airstrips, pipelines, culverts, bridges, docks, barge landing zones, gravel mines), which may develop differentially over time (i.e., days–years) causing numerous short and long-term impacts (e.g., Walker et al. 1987; Raynolds et al. 2014). Classification of aquatic habitat based on climate, physiography, geology, fluvial morphology using accurate spatially explicit data (e.g., Benda et al. 2015) is essential to understand the foreseeable impacts, which is lacking in the DEIS. A complete understanding of the surficial hydrology through long term data and hydrologic models is also necessary to understand direct impacts. Alteration of aquatic habitats, which rest above permafrost, will alter surficial and subsurface flow paths, directly impacting streamflow, stream temperature and water quality (Liljedahl et al 2016; Walker et al. 2019). Changes in water quantity and quality will also have numerous negative direct, indirect and cumulative impacts on the amount of physical habitat in areas, as well as the quality of habitat used for foraging, reproduction and survival, which will cause impacts to aquatic species behavior, physiology, and fitness. Contrary to the DEIS statement (Chapter 3, section 3.3.2, page 3-80), there is not sufficient scientific evidence to support the claim that gravel reservoirs, created through gravel mines, provide biologically beneficial overwintering habitat for fish.

d. Direct and indirect impacts from industrial roads and road crossings

The assessment of the direct and indirect impacts from industrial road crossings within the DEIS is not robust and does not accurately describe impacts. Roads, bridges and culverts have been shown to alter surface hydrology through channelization and redistributing of flow to stream crossings (Wemple et al., 1996), which can destroy or create wetlands, reduce fish movement (Warren and Pardew, 1998; Trombulak et al. 2000) and restrict access to seasonally important habitat (Brown and Hartman, 1988). Additionally, previous research has shown that vehicle traffic has the potential to introduce heavy metals, ozone and nutrients to roadside aquatic environments (Leharne et al. 1992; Schuler and Relyea 2018), which has the potential to be transported throughout aquatic systems (Gjessing et al.1984; Schuler and Relyea 2018) and harm aquatic biota. Industrial road crossings will also affect the instream physicochemical habitat of rivers and streams. Due to upstream constriction effects, culverted streams are associated with higher percent fine sediment, water temperature, water depth and turbidity, as well as lower dissolved oxygen and water velocity (MacPherson et al. 2012; Maitland et al. 2016), and sediment impacts will extend hundreds of meters downstream for each culvert (Lachance et al. 2008). Road culverts also have the potential to block or restrict fish passage at critical periods (see Morris and Winters, 2008 for Alaska specific example), which could add additional stress on populations during periods when resources are limited (Furniss et al., 1991; Warren and Pardew, 1998). Bridge crossings also contribute to increased sediment inputs from erosion at exposed road crossings; while over time stabilization can occur, storm or flood events (common in the CP) can continually reactivate erosional processes (Maitland et al. 2016). Changes in aquatic habitat quality can directly and adversely impact fish and aquatic species and, by increasing instream sediment (suspended and deposited), will likely impact Arctic fish species

in the CP over different time periods (days—years) by reducing embryo survival, altering feeding behavior, and changing species abundance and richness (Chapman et al. 2014) in CP rivers and streams. The indirect impacts of road crossings in the CP will likely include at least some mortality, reduced fitness, and changes in population abundance in impacted areas, and may also impact population genetic and life-history diversity over the long term. This must be accounted for in the DEIS.

e. Direct and indirect impacts from water use and seasonal redistribution of water

The assessment of the direct and indirect impacts from water extraction and redistribution on fish and aquatic species within Section 3.3.2 of the DEIS is inadequate to evaluate direct and indirect impacts of proposed development. In order to quantify the potential impacts of industrial water consumption (e.g., ice roads, drilling, camp facilities) and redistribution on fish and aquatic species, several analyses need to be completed for the CP including: a specific lake network classification following methods in Jones et al. (2017); a physically-based 3D hydrology model to model water movement; a systematic survey of aquatic habitat, in combination with seamless digital layers, to develop hierarchical habitat information (see CHaMP 2015); and finally systematic fish surveys across the CP in combination with fish habitat models to quantify fish habitat at the species level. Industrial water use in winter and summer will extract water and ice from lakes, rivers, springs and groundwater, which is hydrologically connected to a variety of features, and has the potential to reduce habitat and redistribute water in patterns that may negatively impact fish and aquatic species. For example, removing water or ice from lakes and rivers during winter has the potential to impacts fish and aquatic species by reducing dissolved oxygen, decreasing overwintering and littoral habitat, fracturing migration corridors, and freezing sediments in littoral areas, which may kill fish eggs and invertebrates or cause physiological stress, which can affect growth, reproduction or survival (Cott et al. 2008; Cott et al. 2015). The DEIS estimates that a tremendous amount of water (420,000 to 1,900,000 gallons) would be required to complete each well and another 2,000,000 gallons per day would be required to maintain each well during production. Extraction of water in this quantity from industry preferred water sources on the CP (groundwater aquifers, lakes and rivers) is likely to cause major changes in groundwater and surficial flow paths affecting water quantity across all hydrologically connected habitats. Subsurface groundwater movement in the CP is largely unknown and likely complex due to permafrost (see Kane et al. 2013; Walvoord and Kurylk 2016). If current groundwater hydrological connectivity is altered by water extraction, there could be severe impacts to biologically important aquatic landscape features fed by groundwater (i.e., karst springs, lakes or rivers). The biological impacts and consequences of altering streamflow or water quantity for fish (particularity Dolly Varden and Arctic Grayling) and aquatic species are not adequately addressed in the DEIS.

f. Direct and indirect impacts from habitat alteration; change in streamflow, water temperature and water biogeochemistry

The assessment of direct and indirect impacts of habitat alteration within Section 3.3.2 of the DEIS is inadequate to evaluate impacts of proposed development on fish and aquatic species. Limited information exists on streamflow regimes and is inadequate for quantifying direct and

indirect impacts to fish and aquatic species. The natural flow regime is a critical element that maintains biodiversity and ecosystem integrity in lotic systems, and altering the historical flow regime will have negative impacts to aquatic species in rivers and streams (Poff et al. 1997). New data on seasonal streamflow regimes that quantifies critical components of flow regimes (i.e., magnitude, frequency, duration, timing, rate of change) needs to be collected and methods should be used to quantify streamflow metrics (see Olden and Poff 2003). Thermal regimes are another critical element that regulates metabolism in fish and invertebrates, influencing growth, phenology and survival, which in turn influences foodwebs and aquatic species communities (Caissie 2006; Webb et al. 2008; Steel et al. 2017). No information is provided on stream thermal regimes, which is essential and necessary baseline information to quantify impacts of habitat alteration on aquatic species. Development will likely impact thermal regimes by reducing the quantity of water in certain habitats. Those foreseeable impacts have not been considered in the DEIS. Last, biogeochemical processes in aquatic ecosystems influence nutrient availability, biofilms, invertebrate abundance, which in turn influence Arctic food webs (Huryn et al. 2005). Habitat alteration from proposed development in the CP (roads, culverts, bridges, infrastructure pads etc.) is likely to increase permafrost thaw, thermokarsting, erosion into lentic and lotic environments and alter surficial and groundwater flow paths (Walker et al. 1987; Raynolds et al. 2014; Liljedahl et al. 2016; Walker et al. 2019), which, through changes in the habitat is likely to have negative impacts on the behavioral ecology (i.e., foraging, antipredation, reproduction, survival) of Arctic fish as well as the distribution and abundance of aquatic invertebrates (Cocchiglia et al. 2012).

12. Cumulative impacts

Information on cumulative impacts within Section 3.3.2 of the DEIS is scant and inadequate to assess the cumulative impacts. The DEIS section on cumulative impacts should include an extensive review of the peer-reviewed scientific literature on the cumulative impacts to fish and aquatic species within CP watersheds including both short-term (1–10 years) and long-term impacts (i.e., 10–100 years) on the following topics:

- Roads including snow, ice and gravel surfaces
- Development infrastructure (permanent and temporary)
- Stream crossings infrastructure (ice bridges, culverts, bridges)
- Water and ice extraction from groundwater, rivers streams, lakes and tundra ponds
- Seismic surveys
- Exposure to chemicals from development
- Climate change impacts to cryosphere (permafrost, glaciers, snow), hydrology (groundwater, streamflow, stream temperature, biogeochemistry) and aquatic ecosystems (lotic and lentic) Cumulative impacts to subsistence use of CP fish species

13. Failure to assess and consult on impacts to Essential Fish Habitat

Under the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 et seq.), the North Pacific Fishery Management Council drafts and revises the Fishery Management Plan (FMP) for Fish Resources of the Arctic Management Area, which designates

particular areas as Essential Fish Habitat (EFH).[891] EFH is defined as those waters and substrate necessary to fish designated under a federal fishery management plan for spawning, breeding, feeding, or growth to maturity. The EFH components of FMPs should be reviewed and revised by the Council and the National Marine Fisheries Service (NMFS) as warranted based on available information, but at least once every 5 years.[892] The five-year review ensures that NMFS and the Councils incorporate the most recent and best science available into the management of EFH. The most recent 5-year EFH review for the Arctic Management Area was conducted in 2015 for the preceding five years.[893] There is Pink and Chum Salmon EFH in the lower reaches of the Staines and Canning Rivers within the program area for the Coastal Plain oil and gas leasing EIS, as well as Arctic and Saffron Cod EFH in the coastal lagoon next to the program area, which may also extend into the lower reaches of rivers within the program area during summer months.

Section 305(b) of the Magnuson-Stevens Act provides that federal agencies must consult with NMFS when doing work that may adversely affect EFH.[894] The action agency must draft an EFH Assessment that includes a description of the action, analysis of potential adverse effects of the action on EFH and the managed species, the action agency's conclusion regarding the effects of the action on EFH and a description of proposed mitigation.[895] The consultation requirement can be satisfied through the NEPA process to avoid duplication, with the action agency including and clearly identifying its EFH Assessment in the EIS.[896] If an ongoing NEPA process is used to fulfill the consultation requirement, the comment deadline for that process should apply to the submittal of NMFS's EFH Conservation Recommendations under 305(b)(4)(A) of the Magnuson-Stevens Act, unless a different deadline was separately agreed to by the parties.[897]

There is no indication that the DEIS includes the required EFH Assessment, or that NMFS has had the ability to weigh in during the comment period, given the government shutdown. The DEIS section on EFH merely identifies that EFH of salmon and cod exist in the program area and cites to BLM's 2012 EIS for the Integrated Activity Plan for the National Petroleum Reserve Alaska (NPRA). This is problematic in at least two respects. First, the 2012 NPRA EIS was completed prior to the most recent NMFS 5-year review of the Arctic Management Area. Thus, BLM is relying on an outdated EFH Assessment that is not based on the best and most recent available data. Second, while the NPRA EIS did analyze the impacts to salmon and cod EFH, that assessment covered a different geographic area and addressed

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[891] Arctic FMP 4.1.3, available at https://www.npfmc.org/wp-content/PDFdocuments/fmp/Arctic/ArcticFMP.pdf.

[892] 50 C.F.R. § 600.815(a)(10).

[893] The portion of the 5-year review that focuses on the impacts to EFH from non-fishing activities in Alaska was published in May of 2017. Limpinsel, D. E., Eagleton, M. P., and Hanson, J. L,. 2017. Impacts to Essential Fish Habitat from Non-Fishing Activities in Alaska. EFH 5 Year Review: 2010 through 2015. U.S. Dep. Commerce NOAA Tech. Memo. NMFS-F/AKR-14, 229p.

[894] 50 C.F.R. § 600.920(a)(1).

[895] 50 C.F.R. § 600.920(e)(3).

[896] 50 C.F.R. § 600.920(f)(1).

[897] 50 C.F.R. § 600.920(f)(2).

different EFH locations. It thus cannot satisfy the consultation requirement for the Coastal Plain oil and gas leasing EIS. BLM must prepare an EFH Assessment and consult with NFMS.

14. Major deficiencies in lease stipulations and required operating procedures

The articulation of lease stipulations (LS) and required operating procedures (ROPs) in Chapter 2 of the DEIS terminology and operationalization/implementation. Without that detail, BLM cannot assess their efficacy and the LS/ROPs are unlikely to meet their stated objectives of protecting fish and aquatic species. BLM must precisely describe relevant terms and the scientific methodologies for implementing each LS/ROP. The following terms in LS 1, 2, 3, 4 and ROP 8, 12, 16, 19, 20, 22 are not adequately or scientifically defined for each river or stream where LS or ROPs apply:

- Active floodplain
- Floodplain
- River delta
- 50, 100, 200 year flood for CP rivers
- Ordinary high-water mark
- Essential pipeline/road crossings
- Natural flow of rivers
- Disrupt flow from perennial springs
- Free passage for anadromous fish
- Maintain natural runoff processes

a. Lease stipulation and required operating procedures deficiencies

Lease stipulations and ROPs do not meet objectives with allowable exceptions in alternatives B, C, D. If exceptions within the following LS and ROPs are implemented, the action of the exception will negate the overall objective of the ROP because there are no defined limits associated with each exception action.

1. Lease stipulation 1: No defined parameters associated with the allowable exception to building pipelines, roads or facilities in river deltas. Permeant pipelines, roads or industrial facilities within the flood plain will negate the objective of the LS.
2. Lease stipulation 3: The requirement/standard is not possible and will be ineffective since karst spring source water has a long residence time and short-term studies will not ensure drilling would not disrupt perennial springs.
3. Required operating procedure 8: No defined parameters associated with the allowable exception to remove ice from rivers. Due to no limit on river ice extraction, the ROP's exception negates the objective. Without first defining terminology and then conducting long term hydrologic monitoring, is not possible to quantify whether the objective can be met.
4. Required operating procedure 9: Optional water level and quality monitoring does not allow for adequate or scientific assessment of impacts.

5. Required operating procedure 11: No defined limitations on the surfaces on which roads and industrial operations can operate. Terrain with high erosion potential due to slope and surficial geology is necessary to include within the ROP or objective will not be met.
6. Required operating procedure 12: Requirement/standard described will not necessarily meet the ROP objective. The listed procedures only provide some necessary protective measures and do not cover the suite of crossing structure impacts. Need to also require annual at-site monitoring or there will be no way to determine impacts.
7. Required operating procedure 16: No defined parameters associated with the allowable exception of BLM authorized drilling in floodplains of fish-bearing rivers and streams will negate the ROP objective. Drilling will change water quality due to the quantity of water required for drilling and discharged water.
8. Required operating procedure 19: No scientific evidence documented in the DEIS to support adequacy of 500ft buffer to meet its objective.
9. Required operating procedure 20: Appropriate entities not defined (e.g., USWFS, NMFS) and expertise not defined. Lack of clarity on the ROP could negate the ROP from meeting its objective.
10. Required operating procedure 22: No defined parameters associated with the culvert installation potentially void ROP objective. Terms within the DEIS such as "necessary", "smaller streams", "fish", "restricting fish passage", "natural flow" and "adversely affecting natural flow" need to be defined and detailed methodology needs to be described. Stream crossing methods are out of date (20+years old) and new information on impacts of culverts on fish and aquatic species needs to be considered (e.g., Maitland et al. 2016).
11. Required operating procedure 28: Lacustrine and riverine geomorphic and ecological classification need to be included in the ROP in order to identify and protect important habitat for aquatic invertebrates and all fish species.

b. Major data gaps relating to lease stipulations and required operating procedures

The DEIS fails to include any scientifically justified rationale, backed by empirical data, to explain the proposed width of stream buffers. Within the DEIS there are major scientific data gaps revolving around the width of stream buffers, and extensive scientific evidence needs to be provided to described why values where chosen and why certain rivers and streams were not included. To adequately support its stream buffers, BLM must provide peer-reviewed scientific evidence to demonstrate the following:

- How was river buffer width determined and what scientific evidence was used to determine appropriate width to meet lease stipulation objective?
- Why do certain rivers not have buffers and what scientific evidence was used to determine river buffer width necessary to meet lease stipulation objectives?
- Why do all lower order streams not have a buffer and what scientific evidence was used to determine the appropriateness of this decision?

- Does the lack of stream buffers on lower order streams negate protective objectives of higher order streams due to the fact that they are connected hydrologically?
- How was aufeis/karst spring buffer width determined and what scientific evidence was used to determine appropriate width to meet objective?
- What is the state of science around aufeis flow paths, habitat use of fish and invertebrates across seasons?

In short, BLM's proposed lease stipulations and ROPs appear arbitrary, lack scientific support and necessary detail, and will likely be ineffective in preventing or mitigating adverse impacts to fish and aquatic species.[898]

H. BLM'S ANALYSIS OF AN OIL AND GAS PROGRAM ON BIRDS IS INADEQUATE.

More than 150 species of birds have been documented on the Coastal Plain, many of which find vital habitat for foraging, nesting, migratory staging, and overwintering.[899] The Coastal Plain of the Arctic Refuge lies within a designated Important Bird Area that is globally important for American Golden-plover, Buff-breasted Sandpiper, and Pectoral Sandpiper; continentally important for Snow Goose, Red Phalarope, Whimbrel, and Dunlin; and important at a state level for Golden Eagle, Red-necked Phalarope, Red-throated Loon, Ruddy Turnstone, Semipalmated Plover, Semipalmated Sandpiper, and Stilt Sandpiper.[900]

The DEIS fails to address the important data gaps related to the scientific understanding of Arctic Refuge Coastal Plain avifauna and the potential impacts of oil and gas development on birds. The data on bird species densities in the Coastal Plain area are broadly incomplete and existing, completed surveys are restricted in statistical power as a result of limited spatial scope and temporal scale.[901] New, additional surveys should be designed specifically for the project being considered and should be a mandatory component of any robust environmental impact assessment. For breeding waterbirds specifically, there is a need to better understand those species' distributions and abundances within the Coastal Plain in relation to varying habitat

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[898] A list of references cited in this section is appended to the letter.

[899] CCP EIS at Appendix F.

[900] Audubon Alaska, 2014. Important Bird Areas of Alaska, v3. Audubon Alaska, Anchorage, AK. Accessed online at http://databasin.org/datasets/f9e442345fb54ae28cf72f249d2c23a9.

[901] See John M. Pearce, et al., U.S. Department of the Interior, U.S. Geological Survey, Summary of Wildlife-Related Research on the Coastal Plain of the Arctic National Wildlife Refuge, Alaska, 2002-17, Open-File Report 2018-1003 [2018 USGS Report] (2018), at 14 ("only about one-third of the 1002 Area is currently surveyed, and what is surveyed falls within the low-density strata. Surveys within the low-density strata have far fewer transects that are farther apart and thus have little power to detect and determine trends of breeding and non-breeding migratory birds.").

types.[902] Relatedly, while populations of Snow Goose and Black Brant appear to be increasing on the North Slope,[903] studies on any new resulting patterns in the distribution of these species during nesting and migratory staging have yet to be completed. Shorebirds are another species guild that requires more study of a variety of limiting factors, particularly the cumulative effects of oil and gas development,[904] and the potential for shifting habitats due to coastal erosion, shifting river deltas, and the loss of lagoons and barrier islands[905]. Coastal change rates along the coast of the Arctic Refuge vary dramatically, between an erosion (loss) rate of 20 meters/year and an accretion (addition) rate of 11 meters/year. These extremes will have spatially heterogeneous effects on marine, lagoon, and coastal ecology and this topic must be studied in the context wildlife habitat in the Coastal Plain, as well as cumulative effects across the North Slope. Finally, the issue of phenology, or migratory mismatch, is an area of needed study, particularly in the project area. While some migratory birds are displaying some plasticity to changing seasonal patterns,[906] it is not known how the shifts in resource availability or migratory timing will reverberate through a species' life history; nor is it known whether the flexibility seen in other parts of Alaska are applicable to the Coastal Plain of the Arctic Refuge. The agency must address these areas of missing information prior to moving ahead with a leasing program.

In addition to failing to address these data gaps, BLM's draft EIS downplays the importance of the Coastal Plain to birds, is missing important information, and conducts a poor analysis of the impacts that oil and gas development will have on birds. Moreover, the DEIS

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[902] See John Pearce, USGS 2018-2019 Activities in the North Slope Borough: Presentation to the North Slope Borough Planning Commission November 29th, 2018, Utqiagvik (powerpoint presentation), at slide 22.

[903] But see James S. Sedinger, Thomas V. Riecke, Alan G. Leach, and David H. Ward, The Black Brant Population is Declining Based on Mark Recapture, The Journal of Wildlife Management, DOI: 10.1002/jwmg.21620 (2018).

[904] See "primary conservation objectives" *in* Alaska Shorebird Group. 2019. Alaska Shorebird Conservation Plan. Version III. Alaska Shorebird Group, Anchorage, AK

[905] Gibbs, A. E. and B. M. Richmond. 2017. National Assessment of Shoreline Change - Summary Statistics for Updated Vector Shorelines and Associated Shorelines Change Data for the North Coast of Alaska, U.S.-Canadian Border to Icy Cape. Reston, VA.

[906] Craig R. Ely, Brian J. McCaffery, and Robert E. Gill Jr., Shorebirds adjust spring arrival schedules with variable environmental conditions: Four decades of assessment on the Yukon–Kuskokwim Delta, Alaska, *in* Trends and traditions: Avifaunal change in western North America (W. D. Shuford, R. E. Gill Jr., and C. M. Handel, eds.), pp. 296–311, Studies of Western Birds 3. Western Field Ornithologists, Camarillo, CA; doi 10.21199/SWB3.16; Weiser, E. L., Brown, S. C., Lanctot, R. B., Gates, H. R., Abraham, K. F., Bentzen, R. L., Bêty, J. , Boldenow, M. L., Brook, R. W., Donnelly, T. F., English, W. B., Flemming, S. A., Franks, S. E., Gilchrist, H. G., Giroux, M. , Johnson, A. , Kendall, S. , Kennedy, L. V., Koloski, L. , Kwon, E. , Lamarre, J. , Lank, D. B., Latty, C. J., Lecomte, N. , Liebezeit, J. R., McKinnon, L. , Nol, E. , Perz, J. , Rausch, J. , Robards, M. , Saalfeld, S. T., Senner, N. R., Smith, P. A., Soloviev, M. , Solovyeva, D. , Ward, D. H., Woodard, P. F. and Sandercock, B. K., Effects of Environmental Conditions on Reproductive Effort and Nest Success of Arctic-Breeding Shorebirds, Ibis 160: 608-623. DOI:10.1111/ibi.12571 (2018).

section on birds is extremely poorly organized, and presents information specific to certain birds directly alongside information on birds in general, forcing the public to try to piece together a narrative of the baseline and impacts.

1. *The descriptions and baseline information of birds are misleading, inaccurate, and incomplete.*

The DEIS does not provide adequate descriptions and baseline information for the birds found within the Coastal Plain. Throughout the DEIS, the document appears to downplay the importance of birds with the status "uncommon." The FWS defines "uncommon" as "[o]ccurs regularly, but not always observed either because of lower abundance or secretive behaviors." Although a bird may be "uncommon" according to FWS, the species is still regular in the project area. For birds and other species that have regular but dispersed populations, there can be major biological significance for a smaller number of individuals, even if the numbers do not constitute high densities. The DEIS should not, therefore, dismiss "uncommon" bird species. Yet the DEIS seems to downplay uncommon birds, saying that "Many of the 156 species recorded are uncommon or rare."[907] Elsewhere, the DEIS makes special note of birds that are "fairly common, common, or abundant," but does not include birds that are "uncommon"[908] despite the fact that this means that they occur regularly. By overlooking the uncommon birds, the overall effect of these different interpretations is to downplay the importance of the project area for birds.

The DEIS also does not always provide accurate names and citations for the bird species it purports to analyze. The DEIS is sloppy in the presentation of bird names, with incorrect names and typos (e.g. "red-neck phalarope;"[909] "*Calidris pugnaC*;"[910] "Gyrfaon," "Peregrine Faon," and indeed every "*Fao*" species in the *Falco* genus[911]). These glaring errors underscore the rushed approach the agency took in developing this DEIS. The DEIS also does not provide sufficient citation for the public to follow its logic or review its analysis. For instance, when describing populations and locations of Snow Geese, the DEIS references "USFWS and BLM 2018,"[912] which appears to be an internal report entitled Rapid-Response Resource Assessments and Select References for the 1002 Area of the Arctic National Wildlife Refuge in Anticipation of an Oil and Gas Exploration, Leasing and Development Program, per the Tax Act of 2017, Title II Sec. 20001.[913] The DEIS appears to be referring to a source that is a compilation of other select references. The DEIS should not cite to internal compilations, but instead should cite to original data and reports that the public may access and ensure that the primary reports are in fact publically accessible through the agency. Using inaccessible references deters the public from understanding how the agency came to its conclusions. Another example is that the DEIS cites to the "USFWS and BLM 2018" source to say "[u]p to 325,000 snow geese of the Western Arctic

[907] DEIS vol. 1 at 3-85.
[908] *See* DEIS vol. 1 at 3-86.
[909] DEIS vol. 1 at 3-88.
[910] DEIS vol. 2 at J-15.
[911] DEIS vol. 2 at J-18.
[912] DEIS vol. 1 at 3-88.
[913] DEIS vol. 1 at References-47.

Population use the ARCP as a staging area for fall migration."[914] But later the DEIS says that "[a]s many as 325,760 snow geese have been documented using the ARCP, including the program area and east to the Canadian border, for several weeks…"[915] These two numbers are similar, but not the same, and it is possible that BLM is underestimating snow geese population. Without identifying the source of the information, the public is not able to check on the agency's analysis to discover which piece of data is correct.

In addition to providing inadequate and incomplete descriptions of birds, the DEIS does not adequately account for changes to bird habitat due to changes in phenology and coastal erosion. For example, the DEIS notes that "[w]aterbirds arrive in late May and June and begin nesting from late May through June,"[916] but does not provide any analysis of changes in phenology and its impacts. Broadly across the bird section, the DEIS lacks sufficient description and information on potential changes in phenology and the potential for resulting impacts.[917] The

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[914] DEIS vol. 1 at 3-88.

[915] DEIS vol. 1 at 3-98.

[916] DEIS vol. 1 at 3-87.

[917] *See e.g.* Bjorkman, A. D., S. C. Elmendorf, A. L. Beamish, M. Vellend, and G. H. R. Henry, 2015, *Contrasting effects of warming and increased snowfall on Arctic tundra plant phenology over the past two decades*, Global Change Biology 21:4651-4661; Khorsand Rosa, R., S. F. Oberbauer, G. Starr, I. Parker La Puma, E. Pop, L. Ahlquist, and T. Baldwin, 2015, *Plant phenological responses to a long-term experimental extension of growing season and soil warming in the tussock tundra of Alaska*, Global Change Biology 21:4520-4532; Stone, R. S., E. G. Dutton, J. M. Harris, and D. Longenecker, 2002, *Earlier spring snowmelt in northern Alaska as an indicator of climate change*, Journal of Geophysical Research: Atmospheres 107; Barichivich, J., K. R. Briffa, R. B. Myneni, T. J. Osborn, T. M. Melvin, P. Ciais, S. Piao, and C. Tucker, 2013, *Large-scale variations in the vegetation growing season and annual cycle of atmospheric CO2 at high northern latitudes from 1950 to 2011*, Global Change Biology 19:3167-3183; Doiron, M., G. Gauthier, and E. Lévesque, 2015, *Trophic mismatch and its effects on the growth of young in an Arctic herbivore*, Global Change Biology 21:4364-4376; Dawson, A, 2008, *Control of the annual cycle in birds: endocrine constraints and plasticity in response to ecological variability*, Philosophical Transactions of the Royal Society B: Biological Sciences 363:1621-1633; Kumar, V., J. C. Wingfield, A. Dawson, M. Ramenofsky, S. Rani, and P. Bartell, 2010, *Biological clocks and regulation of seasonal reproduction and migration in birds*, Physiological and Biochemical Zoology 83:827-835; Liebezeit, J. R., K. Gurney, M. Budde, S. Zack, and D. Ward, 2014, *Phenological advancement in arctic bird species: relative importance of snow melt and ecological factors*, Polar Biology 37:1309-1320; Gauthier, G., J. Bêty, M.-C. Cadieux, P. Legagneux, M. Doiron, C. Chevallier, S. Lai, A. Tarroux, and D. Berteaux, 2013, *Long-term monitoring at multiple trophic levels suggests heterogeneity in responses to climate change in the Canadian Arctic tundra*, Philosophical Transactions of The Royal Society B Biological Sciences 368:20120482; *see also* Sullender, B. K., 2018, *Alaska's Beaufort Coastal Corridor: Persistence of Ecological Values in a Changing Landscape*, Audubon Alaska, Anchorage, AK (for analysis and references to other Arctic wildlife that may be experiencing changes in phenology).

DEIS also notes that coastal habitats may change due to erosion and thawing, but cites to older data[918] that is better replaced with updated data from USGS.[919]

The DEIS also fails to accurately describe the extent of impacts to bird habitat. The 2,000-acre "limit" that allows reclamation to exceed the cap will cause more than 2,000-acres of impacts to birds. The DEIS explains that the agency would allow the 2,000-acre "cap" to be exceeded if disturbed acres are "reclaimed."[920] We question whether areas can be effectively reclaimed following oil and gas development. Regardless, shorebirds and passerines do not use reclaimed acres in the same way they use non-disturbed areas.[921] Furthermore, the DEIS itself notes that "[h]abitat alteration caused by fugitive dust, thermokarsting, and water impoundments intensifies with time,"[922] without explaining how remediation will undo these indirect impacts. Therefore, the DEIS must explain that the impacts to birds would go above and beyond the 2,000 acres, and must address how this impact exceeding 2,000 acres conforms with the law.

The DEIS fails to adequately describe and consider migratory birds. Migratory birds in the Arctic can face problems finding migratory and wintering habitat outside of the project area. The impacts from beyond the project area can in some cases be more severe than impacts in the Arctic,[923] and must be considered in the context of impacts within breeding ranges. For example, some species that breed in the Coastal Plain are long distance migrants that are experiencing impacts along their migratory pathway and merit special consideration and analysis.[924] Pacific

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[918] DEIS vol. 1 at 3-92 (current rates of loss along the Beaufort Sea coastline is 6.5 to 59 feet per year (see Martin et al. 2009 for review.).

[919] Gibbs, A.E., and Richmond, B.M., 2017, National assessment of shoreline change—Summary statistics for updated vector shorelines and associated shoreline change data for the north coast of Alaska, U.S.-Canadian border to Icy Cape: U.S. Geological Survey Open-File Report 2017–1107, 21 p., https://doi.org/10.3133/ofr20171107.

[920] DEIS vol. 2 at B-9 ("the reclaimed acreage of Federal land formerly containing production and support facilities would no longer count towards the 2,000-acre limit.").

[921] Rebecca Bentzen, Joe Liebezeit, Martin Robards, Bill Streever, Samantha Strindberg, and Steve Zack, *Bird use of northern Alaska oilfield rehabilitation sites*, 71 Arctic 422 (2018).

[922] DEIS vol. 1 at 3-95.

[923] Weiser, E. L., R. B. Lanctot, S. C. Brown, H. R. Gates, R. L. Bentzen, J. Bêty, M. L. Boldenow, W. B. English, S. E. Franks, L. Koloski, E. Kwon, J.-F. Lamarre, D. B. Lank, J. R. Liebezeit, L. McKinnon, E. Nol, J. Rausch, S. T. Saalfeld, N. R. Senner, D. H. Ward, P. F. Woodard, and B. K. Sandercock, 2018, *Environmental and ecological conditions at Arctic breeding sites have limited effects on true survival rates of adult shorebirds*, The Auk:29-43.

[924] *See* Sarah E. McCloskey, Brian D. Uher-Koch, Joel A. Schmutz, and Thomas F. Fondell, *International migration patterns of Red throated Loons (Gavia stellata) from four breeding populations in Alaska*, PLOS ONE (January 10, 2018), *available at* https://doi.org/10.1371/journal.pone.0189954 (Red-throated Loons breeding on the Arctic Coastal Plain fly to winter in East Asia, where they may encounter toxic contaminants); C.P. Dau, The fall migration of Pacific Flyway Brent Branta bernicla in relation to climatic conditions, 80 Wildfowl 80 (1992) (Pacific Brant migration brings them to areas with environmental impacts); Austin Reed, Robert Stehn, and David Ward, Autumn Use of Izembek

Brant are also experiencing changes to their wintering habitats, which may be changing nesting and survival of Brant on their Arctic breeding grounds.[925] The DEIS must analyze migratory pathway data[926] and consider these transboundary effects in conjunction with impacts from oil and gas activity.

2. The description and baseline for cliff-nesting raptors is inadequate.

The DEIS does not provide an adequate baseline for cliff-nesting raptors found in the project area. Several raptor species found in the project area (including Golden Eagle, Peregrine Falcon, Gyrfalcon, and Rough-legged Hawk) are cliff-nesting raptors.[927] But the DEIS concludes "the overall abundance of nesting raptors generally was found to be low"[928] without citing to adequate data. The DEIS cites to the 2015 CCP, but the CCP only provided a summary of past survey information for the Canning, Hulahula, and Kongakut Rivers.[929] It was reasonable for the CCP to summarize data because the CCP was not analyzing impacts to cliff-nesting raptors from oil and gas activity. BLM's DEIS, however, should provide the public with a citation to the original survey data. The DEIS should also include other sources in its baseline description of cliff-nesting raptors in the project area, including Johnson and Herter (1989),[930] Young et al. 1995,[931] and analogous habitat and natural history information from the western Arctic[932] to extrapolate where cliff-nesting raptors may be present. The DEIS should also acknowledge that surveys for cliff-nesting raptors can be subject to error.[933]

Lagoon, Alaska, by Brant from Different Breeding Areas, 53 The Journal of Wildlife Management 720 (1989).

[925] Ward, D. H., A. Reed, J. S. Sedinger, J. M. Black, D. V. Derksen, and P. M. Castelli, 2005, *North American Brant: effects of changes in habitat and climate on population dynamics*, Global Change Biology 11:869-880; Leach, A. G., D. H. Ward, J. S. Sedinger, M. S. Lindberg, W. S. Boyd, J. W. Hupp, and R. J. Ritchie, 2017, *Declining survival of black brant from subarctic and arctic breeding areas*, The Journal of Wildlife Management 81:1210-1218..

[926] E.g. Robert E. Wilson, Craig R. Ely, and Sandra L. Talbot, Flyway structure in the circumpolar greater white-fronted goose, 8 Ecology and Evolution 8490 (2018) (which uses data on the migratory pathway for this goose species).

[927] DEIS vol. 1 at 3-90.

[928] DEIS vol. 1 at 3-90.

[929] CCP EIS vol. 1 at 4-85.

[930] Johnson, S. R., and D. R. Herter. 1989. The Birds of the Beaufort Sea. Anchorage, Alaska: BP Exploration (Alaska), Inc.

[931] Young, D. D., Jr., C. L. McIntyre, P. J. Bente, T. R. McCabe, and R. E. Ambrose. 1995. "Nesting by golden eagles on the North Slope of the Brooks Range in northeastern Alaska." *Journal of Field Ornithology* 66 (3): 373–379.

[932] Bureau of Land Management, National Petroleum Reserve-Alaska Integrated Activity Plan (2013) vol. 1 at 270-275.

[933] *See* Travis L. Booms, Philip F. Schempf, Brian J. McCaffery, Mark S. Lindberg and Mark R. Fuller "Detection Probability of Cliff-Nesting Raptors During Helicopter and Fixed-Wing Aircraft Surveys in Western Alaska," Journal of Raptor Research 44(3), (1 September 2010). https://doi.org/10.3356/JRR-09-70.1.

3. The description and baseline for shorebirds is inadequate.

The description of shorebirds, their habitat, and their threats is incomplete and inadequate. The DEIS establishes that some shorebird species are more common in the east and near the Canning River,[934] but does not list which species and cites to an internal Conoco report not available to the public. More broadly, the DEIS should have provided maps of where shorebirds and used habitat suitability data to depict where shorebirds are found in the project area during breeding[935] and during postbreeding time periods and migratory staging.[936] It is important to note that studies on migratory staging in shorebirds describe the importance of river deltas *other* than the Canning, that staging densities vary annually, and that it is more appropriate to treat these several deltas as a habitat complex that is collectively important to shorebirds at a critical stage in their life history.[937]

Furthermore, the DEIS fails to describe the threatened status of shorebirds worldwide,[938] and does not address impacts to migratory shorebirds in their stop-over and wintering habitat beyond the project area. For example, shorebirds flying along the East Asian-Australasian Flyway are facing pressure from development in vital stop-over habitat in the Yellow Sea. At a minimum, the DEIS should describe the life-histories (and the accompanying threats) of the shorebirds of special conservation concern, including American Golden-Plover, Whimbrel,

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[934] DEIS vol. 1 at 3-89.

[935] Sarah T. Saalfeld Richard B. Lanctot Stephen C. Brown David T. Saalfeld James A. Johnson Brad A. Andres Jonathan R. Bart, Predicting breeding shorebird distributions on the Arctic Coastal Plain of Alaska, 4 Ecosphere 1 (2013), available at https://doi.org/10.1890/ES12-00292.1.

[936] Audrey R. Taylor, Richard B. Lanctot, Abby N. Powell, Falk Huettmann, Debora A. Nigro, and Steven J. Kendall, Distribution and Community Characteristics of Staging Shorebirds on the Northern Coast of Alaska, 63 Arctic 451 (2010); Audrey R. Taylor, Richard B. Lanctot, Abby N. Powell, Steven J. Kendall, and Debora A. Nigro, Residence time and movements of postbreeding shorebirds on the Northern coast of Alaska, 113 The Condor 779 (2011); Audrey Taylor, Postbreeding Ecology of Shorebirds on the Arctic Coastal Plain of Alaska, Ph.D. dissertation, University of Alaska Fairbanks (2011).

[937] Stephen Brown, Steve Kendall, Roy Churchwell, Audrey Taylor, and Anna-Marie Benson, Relative Shorebird Densities at Coastal Sites in the Arctic National Wildlife Refuge, 35 Waterbirds 546 (2012); Audrey R. Taylor, Richard B. Lanctot, Abby N. Powell, Steven J. Kendall, and Debora A. Nigro, Residence time and movements of postbreeding shorebirds on the Northern coast of Alaska, 113 The Condor 779 (2011); Roy T. Churchwell, Steve Kendall, Stephen C. Brown, Army L. Blanchard, Tuula E. Hollmen, and Abby N. Powell, the First Hop: Use of Beaufort Sea deltas by hatch-year Semipalmated Sandpipers, Estuaries and Coasts (2017), DOI 10.1007/s12237-017-0272-8.

[938] *See e.g.* Scott Weidensaul, *Losing Ground: What's Behind the Worldwide Decline of Shorebirds?*, Living Bird (Autumn 2018), *available at* https://www.allaboutbirds.org/losing-ground-whats-behind-the-worldwide-decline-of-shorebirds/.

Hudsonian Godwit, Bar-tailed Godwit, Red Knot, Sharp-tailed Sandpiper, Dunlin, Buff-breasted Sandpiper, Pectoral Sandpiper, Western Sandpiper, Wandering Tattler, Lesser Yellowlegs.

Instead, the DEIS provides descriptions of shorebird migrations that are vague, confusing, and insufficient. The DEIS mentions perfunctorily that "[i]n late July through September, shorebirds stage on the ARCP river deltas for the fall migration to wintering areas in the Americas and Asia,"[939] but does not explain which species migrate along which flyway nor describe the threats those birds face along those migratory pathways. The DEIS is also confusing and conclusory when it notes that "[t]he data from birds marked with radio transmitters indicate that individuals migrate via the Central Flyway use multiple river deltas as they gradually migrate eastward across the ARCP,"[940] but does not clarify whether this information refers to spring or fall migration, and does not cite to the data it references. These brief and conclusory statements, without reference to data[941] and without a deeper discussion of shorebird migration is wholly inadequate.

4. The descriptions and baselines for waterbirds are inadequate.

The DEIS does not sufficiently describe or provide a baseline for waterbirds. The DEIS should describe the life histories and threats of waterbirds of conservation concern, including Brant, Spectacled Eider, Steller's Eider, Yellow-billed Loon, and Black Scoter. For example, according to new estimates the overall population of Black Brant appears to have declined steadily over the past two decades,[942] making survival in the Arctic Coastal Plain increasingly important for this potentially stressed species.

The description of the fall-staging Snow Goose baseline in the DEIS appears incomplete. The DEIS uses survey data from 2004 to describe the location of fall-staging Snow Geese in the project area.[943] The DEIS also notes that the breeding population of Snow Geese across the North Slope has "increased dramatically" and suggests that "[i]f trends in staging reflect population trends in breeding areas, the number of geese staging in the program area was likely higher in recent years."[944] But the DEIS fails to consider this potential increase in staging birds

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[939] DEIS vol. 1 at 3-89.

[940] DEIS vol. 1 at 3-89.

[941] See e.g. Stephen Brown, Cheri Gratto-Trevor, Ron Porter, Emily L. Weiser, David Mizrahi, Rebecca Bentzen, Megan Boldenow, Rob Clay, Scott Freeman, Marie-Andree Giroux, Eunbi Kwon, David B. Lank, Nicolas Lecomte, Joe Liebezeit, Vanessa Loverti, Jennie Rausch, Brett K. Sandercock, Shiloh Schulte, Paul Smith, Audrey Taylor, Brad Winn, Stephen Yezerinac, and Richard B. Lanctot, Migratory connectivity of Semipalmated Sandpipers and implications for conservation, 119 The Condor 207 (2017) (using spatial data showing the migration pathways of Semipalmated Sandpipers).

[942] James S. Sedinger, Thomas V. Riecke, Alan G. Leach, David H. Ward, *The Black Brant Population is Declining Based on Mark Recapture*, Journal of Wildlife Management (December 2018).

[943] DEIS vol. 2 Appendix A at Map 3-20.

[944] DEIS vol. 1 at 3-88.

in relation to the possibility that Snow Geese are staging in areas *beyond* where they were found up to 2004.[945] The DEIS should use a habitat suitability model to predict where the increased population of breeding geese are now staging in the project area, or at least acknowledge this potentiality in its analysis. The DEIS also fails to note that Snow Goose staging may vary over time.[946] In turn, the DEIS would need to update its conclusions that the protective measures for caribou would be directly applicable to Snow Geese.

The DEIS also appears to downplay the importance of the project area to the Spectacled Eider. The DEIS describes the Spectacled Eider as an "uncommon breeder," and refers to unpublished nesting data, which are not available to the public, to create Map 3-14. But the status of "uncommon" means that the species "[o]ccurs regularly, but not always observed either because of lower abundance or secretive behaviors," according to FWS.[947] The DEIS also notes that "Low numbers of spectacled eiders are expected to occur in the program area during the pre-nesting period, where suitable habitat is available."[948] But analysis in the EIS should note that breeding surveys for eiders require careful interpretation.[949] Moreover, although the occurrence of Spectacled Eider breeding in the Coastal Plain is uncommon, the coastal plain as an eco-region is prime breeding habitat for Spectacled Eiders,[950] models project an increase in

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[945] *See also* John M. Pearce, et al., U.S. Department of the Interior, U.S. Geological Survey, Summary of Wildlife-Related Research on the Coastal Plain of the Arctic National Wildlife Refuge, Alaska, 2002-17, Open-File Report 2018-1003 [2018 USGS Report] (2018), at 12 ("There is uncertainty regarding current population status of snow geese staging within the 1002 Area.").

[946] Robertson, D. G., A. W. Brackney, M. A. Spindler, and J. W. Hupp. 1997. Distribution of Autumn-Staging Lesser Snow Geese on the Northeast Coastal Plain of Alaska (Distribución De Chen Caerulescens a Través De Su Congregación Otonal). Journal of Field Ornithology:124-134.

[947] See CCP EIS, Appendix F.

[948] DEIS vol. 1 at 3-86; DEIS vol. 2 at Map 3-14.

[949] Between 1986 and 2006, the ACP Waterfowl Breeding Population Survey collected data during late June and early July and may have missed observations of the early-nesting eiders; data from the North Slope Eider Survey beginning in 1992 implemented earlier surveys to more accurately capture eider presence, but used a smaller survey area; data beginning in 2007 to the present now combine the broad survey area and the more appropriate timing. The agency should consider this complex data history which may have hidden population declines in the 1990s. See Larned, W. W., R. S. Stehn, and R. M. Platte, Waterfowl breeding population survey, Arctic Coastal Plain, Alaska 2011, Unpublished report, U.S. Fish and Wildlife Service, Waterfowl Management Branch, Soldotna and Anchorage, AK (2012); Stehn, R. A., W. W. Larned, and R. M. Platte, Analysis of aerial survey indices monitoring waterbird populations of the Arctic Coastal Plain, Alaska, 1986-2012, Unpublished report, U.S. Fish and Wildlife Service, Division of Migratory Bird Management, Anchorage, AK (2013).

[950] Sexson, M. G., J. M. Pearce, and M. R. Petersen, Spatiotemporal distribution and migratory patterns of Spectacled Eiders, BOEM 2014-665, Bureau of Ocean Energy Management, Alaska Outer Continental Shelf Region, Anchorage, Alaska (2014).

"fundamental niche" habitat for Spectacled and Steller's Eiders in the 1002 Area,[951] and the DEIS should consider impacts even to potentially currently unoccupied habitat. The agency should use a habitat suitability model to anticipate where in the project area eiders may be nesting or occurring at different stages, or where they could occur in the future upon increasing recovery. The agency should also consider whether climate change and development impacts will reduce habitat availability in the Arctic Refuge for both species of Threatened eiders.[952]

5. The description and baseline for passerines is inadequate.

The DEIS does not adequately describe the passerine bird guild in the project area. The DEIS notes that "passerines are the most abundant guilds of nesting birds on the ACP,"[953] and that "landbirds on the ARCP include a diversity of species that are strongly dominated in abundance by passerines and ptarmigan."[954] But the DEIS does not go further to describe what habitat types the different species of passerines are using, does not describe which passerines are species of concern, and does not provide a life history for those species of concern.

6. The description and baseline for seabirds is inadequate.

The DEIS notes in passing that seabirds and pelagic birds are present in low numbers in the project area, that "seabirds occur along the marine vessel route to Dutch Harbor, Alaska,"[955] and describes the numbers and groups of these birds,[956] but does not expand upon these brief statements to explain any of the life histories of these birds or the threats facing them. For instance, Ivory gulls, a Red list species on Audubon Alaska's 2017 Alaska WatchList,[957] could be devastated by an oil spill from increased industrial activity in the nearshore marine environment The DEIS also fails to provide an adequate baseline for the vessel traffic that seabirds (and other marine species) currently face along the proposed barge route,[958] and therefore cannot accurately analyze the likely increase in vessel traffic along this marine route.

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[951] Fuller, T., D. P. Morton, and S. Sarkar, Incorporating uncertainty about species' potential distributions under climate change into the selection of conservation areas with a case study from the Arctic Coastal Plain of Alaska, Biological Conservation 141: 1547-1559 (2008).

[952] Fuller, T., D. P. Morton, and S. Sarkar. 2008. Incorporating Uncertainty About Species' Potential Distributions under Climate Change into the Selection of Conservation Areas with a Case Study from the Arctic Coastal Plain of Alaska. Biological Conservation 141:1547-1559.

[953] DEIS vol. 1 at 3-85.

[954] DEIS vol. 1 at 3-90.

[955] DEIS vol. 1 at 3-85.

[956] DEIS vol. 1 at 3-91.

[957] Nils Warnock, *The Alaska WatchList 2017*, Audubon Alaska, Anchorage AK (2017).

[958] *See analysis, citations, and data in* B. Sullender, *Vessel Traffic*, pp. 285-293 *In* Smith, M.A., M.S. Goldman, E.J. Knight, and J.J. Warrenchuk, 2017, *Ecological Atlas of the Bering, Chukchi, and Beaufort Seas*, 2nd edition, Audubon Alaska, Anchorage AK; B. Sullender, *A Closer Look: Unimak Pass and Bering Strait Vessel Traffic*, pp. 294-295 *In* Smith, M.A., M.S. Goldman, E.J. Knight, and J.J. Warrenchuk, 2017, *Ecological Atlas of the Bering, Chukchi, and Beaufort Seas*, 2nd edition, Audubon Alaska, Anchorage AK.

In sum, BLM's description and information regarding the baseline for birds is insufficient. The information and description must be updated to ensure that BLM is accurately evaluating the impacts of an oil and gas program on birds. Without this information, BLM's analysis will be inadequate.

7. The DEIS's impacts analysis for birds is inadequate, misleading, and erroneous.

BLM's analysis of the impacts of an oil and gas program on the birds that use the Coastal Plain is inadequate and must be revised. The DEIS contains almost no discussion about which species will be most impacted. For instance, the DEIS provides some minimal analysis on the shorebird guild, but does not note impacts to specific shorebirds that rely on the habitat found in the Arctic Refuge Coastal Plain. Where the DEIS does provide some analysis on the impacts to birds, the review is brief, lacks scientific justification, and is overall inadequate.

a. The impacts analysis on birds from road impacts is inadequate.

The DEIS uses the wrong method and information for estimating the indirect impacts of roads on bird habitat. Gravel roads can cause profound change to bird habitat due to dust, gravel spray, thermokarsting, and the creation of impoundments. Yet the DEIS provides only negligible mention of how dust could invert habitat productivity and thus affect productivity of nesting birds. Further, the DEIS estimates that these indirect impacts on bird habitat will extend out up to 328 feet (about 100 meters) on either side of a gravel road in the project area,[959] and in a different section in the DEIS cites to Myers-Smith et al. (2006) and Walker and Everett (1987) as support for this figure. But Myers-Smith et al. (2006) concluded that "significant disturbance may have occurred in a 200-m-wide [656 feet] corridor adjacent to the roadway."[960] The older study by Walker and Everett (1987) only notes that snowmelt from dust is evident out to 100 meters (328 feet), but that dust was indeed found out to 1000 meters, was heavier in the Prudhoe Bay region, was heavier in winter, and that the methods of the time made it difficult to measure dust effects beyond 30 meters.

These are important caveats not made clear in the DEIS, which simply concludes, without a scientific basis, that the indirect impact will extent out to 328 feet. Indeed, more recently other researchers have found "zones of impact" of windblown dust as far as 3,280 feet from a road.[961] This indicates that the DEIS is not only wrong, but may be off by an order of magnitude in its analysis of indirect impacts on bird habitat. The agency must re-run its calculations, use updated data, explain the assumptions and drawbacks of the studies it is using, and expand upon its analysis of impacts from roads and their indirect effects.

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[959] DEIS vol. 1 at 3-93 (referencing Section 3.3.1)

[960] Myers-Smith, I. H., B. K. Arnesen, R. M. Thompson, and F. S. Chapin, III. 2006. "Cumulative impacts on Alaskan arctic tundra of a quarter century of road dust." *Ecoscience* 13(4): 503–510.

[961] Kumpula, T., A. Pajunen, E. Kaarlejärvi, B. C. Forbes, and F. Stammler. 2011. Land Use and Land Cover Change in Arctic Russia: Ecological and Social Implications of Industrial Development. Global Environmental Change 21:550-562.

The DEIS also lacks analysis on the potential for increased subsistence activity along roads built to support the oil and gas infrastructure. It is not clear whether subsistence users would have access to use roads, but the potential for increased use could increase subsistence harvest of certain species. Harvest of shorebirds, eiders, and loons could be significant and would need consideration and analysis.

b. The impacts analysis on birds from oil spills is inadequate.

The DEIS analysis of oil spill impacts on birds is inadequate, incomplete, and lacks reference to studies or articles. First, the bird impacts section in the DEIS ignores relevant spill data. Within the four paragraphs on spills of oil and other contaminants in the bird section, the DEIS references Section 3.2.11 on Solid and Hazardous Waste.[962] This section references Appendix I, which contains only spill data for "Areas near Kaktovik, Alaska."[963] The area near Kaktovik and within the Arctic Refuge is an inappropriate source for data on oil spills when analyzing the impacts of an oil and gas program on birds. The relevant data are from the entire North Slope, particularly the industrial area to the west, including Prudhoe Bay, state and corporate land, and the National Petroleum Reserve-Alaska. The agency must amend its oil spill table to include oil spill data from these areas. When the DEIS presents these more relevant data, it will become more apparent that the DEIS's supposition that spills of 10,000 gallons are extremely rare,[964] is wrong. There have been more than 16 spills of over 10,000 gallons of various toxic materials in the last 19 years, including a spill of over 200,000 gallons of crude by BP in 2006.[965] Presentation of this data is also necessary to test the DEIS's conclusion that small spills on land will be "short term and of several acres" because these types of spills "are usually contained on gravel pads and roads."[966] Without these or other data, the DEIS does not have an adequate basis to make these conclusions.

Second, the DEIS does not conduct a cumulative impacts analysis of oil spills on birds across the North Slope. Using up-to-date spill data from the North Slope, the agency could estimate the cumulative spills, how industrial activity under the different alternatives could add to spill impacts, and whether any bird species may be particularly impacted. The proposed development only increases the odds that the North Slope and its biological landscape will experience a major spill, with inadequate response capabilities. However, the DEIS fails to conduct this analysis.

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[962] Note that the DEIS section on bird impacts does not reference the DEIS section 3.2.6 on Petroleum Resources; for analysis of the inadequacy of this DEIS section 3.2.6 see content above on "Oil and Gas Releases (Spills, Blowouts, Venting and Flaring)".

[963] DEIS vol. 2 at I-3.

[964] DEIS vol. 1 at 3-99.

[965] Alaska Department of Environmental Conservation, Spill Prevention and Response, PPR Spills Database Search, available at http://dec.alaska.gov/Applications/SPAR/PublicMVC/PERP/SpillSearch (accessed 1/24/2019).

[966] DEIS vol. 1 at 3-99.

Third, the DEIS does not adequately explain or analyze what a spill of oil or other industrial materials could do to birds or their habitat, and contains no reference to scientific articles or studies, or indeed any other sources, despite an unfortunate wealth of such information.[967] The DEIS states that salt-water spills would not be toxic to birds,[968] but does not provide a reference. The DEIS notes that larger spills could "contaminate birds, nests, and eggs or their habitat and forage"[969] but provides no reference to the physiological effects from oil or other toxic materials. The DEIS downplays the volume of marine spills and dismisses the likelihood of large spills in the marine environment,[970] but again provides no reference, data, or modeling of this potentiality.

Fourth, the DEIS does not explain or analyze where oil spills may occur, and therefore which bird species are likely to be most impacted. An oil spill in nearshore waters could be devastating to waterfowl, particularly molting and flightless Long-tailed Ducks, coastal staging shorebirds, and gulls. The DEIS does not analyze the likelihood of oil spills against the reasonably foreseeable development scenario, nor against the different alternatives, nor with any modeled scenarios. Instead, the DEIS analyzes spills generally, without spatial information. The DEIS says that larger spills "could reach streams or lakes"[971] but provides no trajectory, directionality, or estimation of where and how far this impact could occur. The DEIS posits that "containment at strategic points on waterways would likely keep oil from flowing downstream into lagoons"[972] but does not explain where this would occur. The DEIS mentions the potential for spills in docking areas or along shipping lanes, but does not provide more specificity that would allow for further analysis on bird and habitat impacts. The DEIS also notes that the cleanup of large spills "could pose contamination risk to large numbers of molting, feeding, or migrating birds,"[973] but does not explain where the spill or the cleanup could occur.

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[967] *See e.g.* Piatt, J. F., C. J. Lensink, W. Butler, M. Kendziorek, and D. R. Nysewander. 1990. *Immediate impact of the 'Exxon Valdez' oil spill on marine birds*, Auk 107:387–397; NOAA, *Final Restoration Plan and Environmental Assessment for the M/V Kuroshima Oil Spill*, National Oceanic and Atmospheric Administration Damage Assessment Center, Seattle, WA; Munilla, I., J. M. Arcos, D. Oro, D. Álvarez, P. M. Leyenda, and A. Velando. 2011, *Mass mortality of seabirds in the aftermath of the Prestige oil spill*, Ecosphere 2:1–14; among many others; *see also analysis and references in* B. Sullender, *Vessel Traffic*, pp. 285-293 *In* Smith, M.A., M.S. Goldman, E.J. Knight, and J.J. Warrenchuk, 2017, *Ecological Atlas of the Bering, Chukchi, and Beaufort Seas*, 2nd edition, Audubon Alaska, Anchorage AK; see also references in Audrey R. Taylor, Richard B. Lanctot, Abby N. Powell, Steven J. Kendall, and Debora A. Nigro, Residence time and movements of postbreeding shorebirds on the Northern coast of Alaska, 113 The Condor 779 (2011).

[968] DEIS vol. 1 at 3-99.

[969] DEIS vol. 1 at 3-99.

[970] DEIS vol. 1 at 3-99.

[971] DEIS vol. 1 at 3-99.

[972] DEIS vol. 1 at 3-99.

[973] DEIS vol. 1 at 3-99

c. The impacts analysis on birds from acoustic impacts is inadequate.

The DEIS lacks any analysis of acoustic impacts on birds.[974] Noise from all stages of industrial activity can impact birds including causing stress, fright or flight, avoidance, changes in behavioral habits like nesting and foraging, changes in nesting success, modified vocalizations, or interference with the ability to hear conspecifics or predators.[975] The DEIS should catalog the existing noise in the planning area, explain the changes in noise that will occur with the development of an oil and gas program, describe impacts that will occur for birds, and provide a method for addressing and monitoring this issue.

d. The cumulative impacts analysis on birds is inadequate.

The DEIS does not contain an adequate cumulative impacts analysis for birds. The sections below describe inadequate cumulative impacts analysis for specific birds and guilds, but more generally the "Cumulative Impacts" section within the "Birds" section of the DEIS[976] is wholly inadequate. This small section essentially consists of an incomplete list of the individual indirect or direct impacts. The list includes increased predation, terrestrial transportation activities, boat and air traffic disturbance, subsistence harvest of birds, recreation, air-based sightseeing, adventure cruise ships, and community development projects. But the list of impacts misses impacts like seismic activity's effects to hydrology and oil spills; the list also completely misses impacts from beyond the project area including melting sea ice; marine boat traffic impacts to marine birds along the marine traffic route; and impacts to migratory birds in other parts of their life history, at stop-over and wintering habitat. The list is also too vague, and does not expand upon the impacts of barge and boat traffic to mention the effects from screeding.

In addition to missing many of the individual impacts that can accumulate or become exacerbated, the cumulative impacts section simply does not analyze these impacts as accumulating or exacerbating. The section both misses habitat loss from infrastructure as an impact and furthermore entirely lacks any accounting of the accumulating infrastructure on the North Slope, including activity in land owned by private corporations or by the State of Alaska, and activity in the National Petroleum Reserve-Alaska in the western Arctic.

Finally, this cumulative impacts section only mentions climate change in a single sentence: "The effects of climate change described under Affected Environment above, could influence the rate or degree of the potential cumulative impacts."[977] This fails to analyze and explain the many and intertwining cumulative impacts that will stem from climate change, including exacerbated habitat loss, changes in phenology, invasive species, and changes to

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[974] While the DEIS provides a section on the acoustic environment, DEIS vol. 1 at 3-17, it does not link that section to analysis on birds.

[975] Catherine P. Ortega, Effects of noise pollution on birds: A brief review of our knowledge, 74 Ornithological Monographs 6 (2012).

[976] DEIS vol. 1 at 3-102–3-103.

[977] DEIS vol. 1 at 3-103.

hydrology, erosion rates, and other physiological aspects of Arctic ecosystems.[978] Earlier parts of the birds section make the same error. For example, following a confusing description of how gravel infrastructure could directly and indirectly reduce habitat for spectacled eiders (and the DEIS appears to expand these impacts to all birds), the DEIS mentions the same sentence found in the later section, that "The effects of climate change described under Affected Environment above, could influence the rate or degree of the potential cumulative impacts."[979] But again, this conclusory sentence does not actually analyze how climate change could modify the assumptions on how gravel infrastructure may impact bird habitat. In sections below, the inadequacies of the cumulative impacts analysis for specific bird species and guilds are described in more detail.

e. The impacts analysis on cliff-nesting raptors from oil spills is inadequate.

The analysis of the impacts to cliff-nesting raptors is inadequate. The DEIS describes development activity that would remove gravel from rivers[980] and explains the action alternatives would remove gravel and sand from "alluvial deposits of larger rivers" and "streams and topographic high points."[981] Within Appendix A, the reasonably foreseeable development scenario includes a section on gravel mines but does not provide more specificity, noting that gravel pits will likely occur near the facilities they are supplying.[982] But the section on birds does not use this information to explain where gravel mining may overlap with cliff-nesting raptor habitat, thus limiting the analysis on the extent of this impact. The DEIS therefore does not specify where removal of gravel from rivers will occur under the reasonably foreseeable development scenario and under the different alternatives, and therefore does not adequately assess the impact to cliff-nesting raptors.

The stipulations for protecting cliff-nesting raptors are arbitrary, insufficiently analyzed, and unlikely to achieve the intended result. The DEIS notes that raptors are more easily disturbed by human activities than other birds, concluding that "falcons, hawks, and eagles . . . reacted at greater distances [than 656 feet]."[983] But the DEIS does not contain a mitigation measure that directly addresses impacts to cliff-nesting raptors from human disturbance. Lease Stipulation 1 comes closest and includes the objective to "[m]inimize the loss of raptor habitat" by limiting infrastructure along rivers within 2, 1, or 0.5 miles of various rivers in the project area.[984] But the DEIS only describes the buffer for raptors as more than 656 feet, without providing more specific information. It is therefore impossible to analyze whether these distances are adequate to

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[978] See e.g. KENDALL, S., D. PAYER, S. BROWN, AND R. CHURCHWELL. 2011. Impacts of climate change and development on shorebirds of the Arctic National Wildlife Refuge. Pages 91–100 in R. T. Watson, T. J. Cade, M. Fuller, G. Hunt, and E. Potapov (Eds.). Gyrfalcons and Ptarmigan in a Changing World, Volume I. The Peregrine Fund, Boise, Idaho, USA. http://dx.doi.org/10.4080/gpcw.2011.0109.

[979] DEIS vol. 1 at 3-93.

[980] DEIS vol. 1 at 3-49.

[981] DEIS vol. 1 at 3-50.

[982] DEIS vol. 2 at B-22.

[983] DEIS vol. 1 at 3-97.

[984] DEIS vol. 1 at 2-4.

protect cliff-nesting habitat or to protect raptors from disturbance without a clearer understanding of the buffer distance these raptors need. Furthermore, the exceptions to Lease Stipulation 1 will swallow the rule, as pipelines and roads are allowed on a case-by-case basis.[985]

An ROP intended to protect cliff-nesting raptors from gravel mining is arbitrary and lacks adequate explanation. ROP 30 has the objective to "[p]revent or minimize the loss of nesting habitat for cliff-nesting raptors" by prohibiting the removal of "greater than 100 cubic yards of bedrock outcrops, sand, or gravel from cliffs displaying evidence of raptor nests."[986] This differs slightly from a similar mitigation measure in the 2013 IAP for the NPRA, which holds that "Removal of greater than 100 cubic yards of bedrock outcrops, sand, and/or gravel from cliffs shall be prohibited"[987] without requiring evidence of nesting. The ROP does not explain how operators would determine whether there is evidence of raptors, or whether a trained biologist would be necessary to make such a determination. This ROP also runs afoul of the buffer mentioned elsewhere in the DEIS,[988] given that approaching the cliffs to assess gravel resources could disturb raptors.

ROP 30 further requires a "hydrological study that indicates no potential impact on the integrity of river bluffs" prior to "extraction of sand or gravel from an active river or stream channel,"[989] but does not explain whether this activity would itself disturb nesting raptors. The agency apparently designed ROP 30 to protect cliff-nesting raptors but this ROP will risk causing disturbance and does not provide enough evidence that it will limit the destruction of nesting habitat.

The ROP designed to mitigate aircraft disturbance to raptors similarly does not explain how operators will identify raptor nests. ROP 34 requires aircraft to maintain at least 1,500 feet altitude when within half a mile of identified raptor nesting sites. But neither the ROP nor analysis elsewhere in the DEIS explain how crews or operators will identify raptor nests, nor whether a trained biologist is needed to properly identify sites. None of these mitigation measures are included in the DEIS's analysis of impacts to cliff-nesting raptors. Nor does the DEIS analyze the varying levels of impacts to cliff-nesting raptors under the different alternatives.

f. The impacts analysis on overwintering birds is inadequate.

The DEIS fails to analyze where and how winter activity could impact American Dippers or other winter birds in the program area. The DEIS notes that winter birds remain in the

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[985] DEIS vol. 1 at 2-4.

[986] DEIS vol. 1 at 2-29.

[987] Bureau of Land Management, National Petroleum Reserve-Alaska Integrated Activity Plan (2013) vol. 1 at 71 (Required Operating Procedure E-15).

[988] DEIS vol. 1 at 3-97 ("falcons, hawks, and eagles . . . reacted at greater distances [than 656 feet]."

[989] DEIS vol. 1 at 2-30.

program area year-round, including "dippers near open running water."[990] Appendix J indicates that wintering birds are not rare (American Dippers are uncommon, meaning regular but not always observed; Willow Ptarmigan are uncommon; and Rock Ptarmigan are common).[991] Later, the DEIS mentions that "[t]raffic and machinery related to winter construction could cause disturbance, behavior alterations, and displacement to resident wintering birds."[992] But the DEIS does not go on to mention American Dippers or other wintering birds in the short section on "Landbirds."[993] There are no lease stipulations or ROPs related to the issue of winter activity impacts on American Dippers or other overwintering birds.[994] Without a basis for its conclusions, the DEIS simply states that development activity would "affect few species and low numbers of year-round residents,"[995] and that "only small numbers of only a few bird species are resident during winter, and none are breeding. Winter construction therefore would potentially affect small numbers of non-breeding birds during the construction phase of a development project."[996] This constitutes insufficient actual analysis of impacts to wintering birds from industrial winter activity.

g. The impacts analysis on shorebirds is inadequate.

The DEIS mentions impacts to shorebirds generally, but does not look specifically at shorebird species that rely on the habitat within the Arctic Refuge Coastal Plain. American Golden-plover and Pectoral Sandpiper are two species that are declining, are of high concern in the U.S. Shorebird Plan,[997] and high percentages the North American populations for these species breed in the 1002 Area.[998] The *articola* subspecies of Dunlin and the population of Ruddy Turnstones that migrate to Asia are also found within the Coastal Plain and these populations are also declining.[999] Yet the DEIS does not mention these species and populations

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[990] DEIS vol. 1 at 3-85.

[991] DEIS vol. 2 at J-18–J-19.

[992] DEIS vol. 1 at 3-96.

[993] DEIS vol. 1 at 3-90.

[994] Lease Stipulation 3 involves springs but not during winter; ROPs 10-15 involve seismic winter activity, but do not address winter birds or their habitat needs.

[995] DEIS vol. 1 at 3-92.

[996] DEIS vol. 1 at 3-96.

[997] U.S. Shorebird Conservation Plan Partnership, U.S. Shorebirds of Conservation Concern ─ 2016 (2016), available at http://www.shorebirdplan.org/science/assessment-conservation-status-shorebirds/; Warnock, N, The Alaska WatchList 2017, Audubon Alaska, Anchorage (2017).

[998] Brown, S., Bart, J., Lanctot, R.B., Johnson, J.A., Kendall, S., Payer, D. and Johnson, J., Shorebird abundance and distribution on the coastal plain of the Arctic National Wildlife Refuge, Condor 109:1-14 (2007); Bart, J., S. Brown, B. A. Andres, R. Platte, and A. Manning, North Slope of Alaska. Pp. 37-96 in J. Bart and V. Johnston (Eds.), Arctic shorebirds in North America: a decade of monitoring, Studies in Avian Biology (no. 44), University of California Press, Berkeley, CA (2012).

[999] U.S. Shorebird Conservation Plan Partnership, U.S. Shorebirds of Conservation Concern ─ 2016 (2016); Clemens, R.S., Rogers, D.I., Hansen, B.D., Gosbell, K., Minton, C.D.,

and provides no analysis on the impacts of oil and gas infrastructure on these particular shorebirds.

The DEIS does not adequately analyze or mitigate the impacts to shorebird habitat from winter work and the subsequent shifts in hydrology. The DEIS briefly notes that winter activities, such as seismic machinery and ice roads, can harm vegetation and change spring runoff, and that more damage occurs in well-drained areas of the tundra, which are areas favored by some shorebirds like Whimbrel and American Golden-plover.[1000] But the DEIS never takes the next step to make the connection to shorebirds or their natural history. Nor does the DEIS connect the dots to explain that most of the high oil potential area in Coastal Plain is comprised of that habitat type. While the Canning River and Sadlerochit River have patchy wetlands, the rest of the high oil potential area is comprised of well-drained tundra, which provides habitat for shorebirds like American Golden-plover. Moreover, Lease Stipulations 1, 4, and 9,[1001] which involve purported protections to shorebirds and their habitat do not apply to winter work,[1002] when seismic activity and ice roads impact vegetation and hydrology.

The mitigation measures to address impacts to shorebirds in river deltas are inadequate and arbitrary. The DEIS notes that shorebirds in river deltas could be impacted from development. For example, when discussing road disturbance, the DEIS says "Fall migration-staging flocks may also be subject to disturbance and displacement, such as shorebirds in river deltas."[1003] The DEIS then appears to rely on the lease stipulations riparian setbacks to address any impacts to shorebirds and other birds.[1004] But these setbacks appear inadequate for protecting shorebirds. Lease Stipulation 1 applies generally to protecting wildlife habitat and prohibits roads and pipelines in riparian areas, but allows exceptions on a case-by-case basis.[1005] Any rehabilitation of gravel infrastructure may be beneficial for waterbirds,[1006] but these efforts are not likely to mitigate impacts to shorebirds.[1007] The broad exception in Lease Stipulation 1 that would apply across the alternatives therefore belies the conclusions that the larger setbacks in

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Straw, P., Bamford, M., Woehler, E.J., Milton, D.A., Weston, M.A. and Venables, B, Continental-scale decreases in shorebird populations in Australia, Emu 116:119-135 (2016).

[1000] DEIS vol. 1 at 3-94.

[1001] DEIS vol. 1 at 2-4, 2-7, 2-15.

[1002] DEIS vol. 1 at 3-117, 3-119, 3-120.

[1003] DEIS vol. 1 at 3-97.

[1004] *See e.g.* DEIS vol. 1 at 3-101 ("The coastal and riparian setbacks in Alternative C would protect important bird habitat, although as described above, future roads and pipelines would be allowed, including docking pads and the STP in the coastal setback.").

[1005] DEIS vol. 1 at 2-4.

[1006] DEIS vol. 1 at 3-94–3-95.

[1007] *See* Rebecca Bentzen, Joe Liebezeit, Martin Robards, Bill Streever, Samantha Strindberg, and Steve Zack, *Bird use of northern Alaska oilfield rehabilitation sites*, 71 Arctic 422 (2018).

Alternatives C and D make these options more protective.[1008] The DEIS fails to analyze impacts to shorebirds in river deltas and the mitigation measure will not address these impacts.

Furthermore, the cumulative impacts analysis for shorebirds does not connect climate and oil and gas infrastructure. The DEIS mentions climate-related changes that could affect shorebirds, saying that "[i]ncreases in shrubs and trees have been documented (Sturm et al. 2001b; Tape et al. 2006) and are expected to continue with increasing summer temperatures. . . . tundra nesting birds (. . . shorebirds. . .) may decline."[1009] But the DEIS does not go into the potential for increased storms and vulnerable coastlines to experience inundation, which could lead to displacement of staging shorebirds.[1010] Moreover, the DEIS does not link this change to the potential hydrological changes from winter oil and gas activities. Nor does the DEIS connect the climate-induced change, or the winter-activity hydrological changes to the water drawdown, which "may affect shorelines, degrading habitat for a variety of waterbirds and shorebirds."[1011] The DEIS must not only address individual impacts to shorebirds and other species, but must analyze these impacts collectively as cumulative effects, that could add or exacerbate the individual impacts.

h. The impacts analysis for Snow Geese is inadequate.

The DEIS does not adequately examine the impacts from air traffic to snow geese and other non-nesting birds. Non-nesting birds are sensitive to aircraft overflights, from a distance of 1.2 to 2.5 miles from the aircraft pathway.[1012] But in 2002, the USGS recommended more restrictive buffers, including limiting aircraft east of the Hulahula River.[1013] The DEIS must reconcile these recommendations with its analysis. Moreover due to the narrowness of the coastal plain, the buffer of 2.5 miles could cover a large percentage of the total area. The DEIS should depict this impact spatially. Without an acknowledgement and depiction of how far-reaching air traffic impacts will be on the narrow coastal plain, the DEIS has not fully grappled with the extent to which aircraft could impact non-nesting birds.

The DEIS arbitrarily uses the lease stipulations for caribou to apply supposed mitigation measures to Snow Geese. The DEIS notes that "Air traffic could disturb and displace staging snow geese that visit the eastern coastal plain of the North Slope in large numbers in late August

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[1008] *See e.g.* DEIS at 3-102 ("Alternative D includes some larger setbacks than Alternatives B or C for riparian areas and is, therefore, somewhat more protective of avian habitats in riparian areas.").

[1009] DEIS vol. 1 at 3-92.

[1010] See e.g. Stephen Brown, Steve Kendall, Roy Churchwell, Audrey Taylor, and Anna-Marie Benson, Relative Shorebird Densities at Coastal Sites in the Arctic National Wildlife Refuge, 35 Waterbirds 546 (2012).

[1011] DEIS vol. 1 at 3-94.

[1012] DEIS vol. 1 at 3-98.

[1013] USGS, J. W. Hupp, D. G. Robertson, and A. W. Brackney. 2002. Size and Distribution of Snow Goose Populations, In Arctic Refuge Coastal Plain Terrestrail Wildlife Research Summaries. D. C. Douglas, P. E. Reynolds, and E. B. Rhode eds. USGS.

and September of most years."[1014] The DEIS further claims that NSO areas for caribou under Alternative C, and no leasing areas for caribou under Alternative D,[1015] would also result in less air traffic.[1016] But the DEIS does not explain that areas of NSO or no leasing would not prohibit air traffic, but instead that air traffic may be less likely given the prohibitions on development on the terrestrial areas below. Furthermore, the DEIS explains that "potential disturbance and displacement of staging snow geese also would occur during fall in areas north and west of protected calving habitat."[1017] Using stipulations for caribou to apply to snow geese is inappropriate and arbitrary. In comparison, FWS adopted regulations applicable to the Arctic National Wildlife Refuge specifically to protect snow geese.[1018]

i. The analysis on impacts to waterbirds from barging and screeding is inadequate.

First, the DEIS does not explain where and when barging and screeding would occur. The DEIS notes that screeding (scraping the seafloor) could impact waterbirds feeding in lagoons and coastal areas.[1019] The DEIS notes that these activities could occur in Camden Bay,[1020] but does not limit barging and screeding to this one location. The DEIS offers a conclusory statement that "impacts from screeding are expected to be of short duration and would occur in localized areas."[1021]

Second, the DEIS further downplays the impacts of screeding on birds and their food web. The DEIS notes that screeding will cause a "sediment plume that could disrupt feeding by non-breeding, post-breeding, and staging birds."[1022] But the DEIS dismisses this as "short-term" and does not acknowledge that a sediment plume could present long-term impact of disrupting the foot web. Moreover, the analysis completely lacks any mention of climate change and whether habitat impacts from screeding will be exacerbated by climate-change-induced erosion.

[1014] DEIS vol. 1 at 3-98.
[1015] DEIS vol. 1 at 2-13 (Lease Stipulation 7)
[1016] DEIS vol. 1 at 3-101.
[1017] DEIS vol. 1 at 3-102.
[1018] 50 C.F.R. § 37.32(d) ("Snow goose staging special areas. Whenever he deems it necessary or appropriate to ensure that exploratory activities do not significantly adversely affect staging snow geese, the Regional Director shall designate within the general area bordered on the east by the Aichilik River, on the north by the mainland coastline, on the west by the Hulahula River, and on the south by the southern boundary of the coastal plain, specific snow goose staging special areas which shall be closed to all exploratory activities during such periods between August 20 and September 10 of each year as those areas are determined by the Regional Director to be used for snow goose staging. No exploratory activities shall be conducted in such designated areas during such periods.").
[1019] DEIS vol. 1 at 3-95.
[1020] DEIS vol. 1 at 3-97.
[1021] DEIS vol. 1 at 3-95–3-96.
[1022] DEIS vol. 1 at 3-95.

j. The impacts analysis on loons is inadequate.

Loons in the project area may be impacted by a reduction in fish from the loss of deep-water lakes on the Coastal Plain, but the DEIS does not analyze this issue. The area of high-oil potential occurs on a part of the landscape dominated by non-wetland tundra. The DEIS does not explain where and how oil and gas development activities will obtain the water necessary for building ice infrastructure and supporting production phases. One potential area is from deep-water lakes, but this poses a risk to the fish species found in these lakes, which in turn could have "potential population consequences for loons, primarily for Pacific and red-throated loons".[1023] But the DEIS draws this conclusion without any further explanation or analysis of the status of loon populations in the project area, without describing which deep-water lakes may be at risk, and without noting which species of fish may be impacted and whether these fish species are in fact the forage species needed by loons. This analysis is wholly inadequate. The DEIS also neglects to analyze cumulative impacts to loons in areas outside of the project area.[1024]

k. The analysis on impacts to eiders is arbitrary and inadequate.

The DEIS uses an arbitrary buffer zone as a way to protect eiders. The DEIS ascribes a buffer of 656 feet (about 200 meters) in order to "[a]void and reduce temporary impacts on productivity from disturbance near Steller's or spectacled eider nests."[1025] The DEIS also appears to use this same buffer to analyze impacts to *all* bird species.[1026] But the DEIS does not explain why this buffer is appropriate specifically for eiders, nor does the DEIS explain why this buffer is appropriate for all species.

The DEIS does not use complete and appropriate science to determine an appropriate buffer for eiders. The DEIS relies on Livezey et al. (2016) to support the idea that a buffer of 656 feet is appropriate for eiders and for all birds in the program area. But Livezey et al. (2016) is a compilation of data on the disturbance threshold for 49 species of nesting birds and 650 species of nonnesting birds. While this is one place to start the analysis on how disturbance could impact birds in the project area, it is not enough to rely on this compilation to apply specifically to eiders or even to all birds. First, it is not clear whether the data presented in Livezey et al. (2016) is applicable to Arctic birds; the agency should have used the database offered in this publication

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[1023] DEIS at 3-94.

[1024] Red-throated Loons that breed on the Arctic Coastal Plain undergo a long-distance migration to winter in East Asia, which makes this population potentially vulnerable to contaminants on their stopover and wintering grounds. McCloskey, S. E., B. D. Uher-Koch, J. A. Schmutz, and T. F. Fondell, *International Migration Patterns of Red-Throated Loons (Gavia Stellata) from Four Breeding Populations in Alaska*, PLoS ONE 13:e0189954 (2018), av*ailable at* https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0189954.

[1025] DEIS vol. 1 at 2-30 (Required Operating Procedure 32).

[1026] *See e.g.* DEIS at 3-96 ("As discussed previously, for assessment of potential effects of disturbance and displacement by future road traffic, the area was calculated within 656 feet of roads, pads, and pipelines as a conservative estimate of the area affected by disturbance and displacement for all species of birds.").

and conducted a new analysis using only Arctic species. Second, the DEIS additionally references disturbance studies on Arctic birds that indicate a zone of disturbance that is larger than 656 feet.[1027] The DEIS cites to Monda et al. (1994)[1028] which documented a buffer of 1640 feet for Tundra Swans; to Johnson et al. (2003) which documents a buffer of 4224 feet (0.8 miles) for unknown Arctic birds;[1029] and to Liebezeit et al. (2009)[1030] which documents a buffer of more than 16,000 feet (3.1 miles) for nesting Arctic passerines. But the DEIS does not explain why it arbitrarily chose 656 feet as the appropriate buffer for eiders and for all birds in the project area.

l. The analysis of impacts to passerines is incomplete and insufficient.

The DEIS briefly notes that climate change could increase shrub- and tree-nesting passerines,[1031] but does not provide any reference.[1032] The DEIS also notes in passing that vegetation damage from winter work is most severe in areas that support higher densities of passerines,[1033] and that passerines experience decreased nest survival within 3.1 miles of oilfield facilities,[1034] but neglects to connect these individual impacts to the cumulative impacts of a changing habitat and climate change. Instead the DEIS only concludes that because Alternative C has larger setbacks, it will be more protective of passerines,[1035] lacking any further analysis of how the development scenario and the different alternatives will impact passerines in different ways and at different levels.

[1027] DEIS vol. 1 at 3-97.

[1028] Monda, M. J., J. T. Ratti, and T. R. McCabe. 1994. "Reproductive ecology of tundra swans on the Arctic National Wildlife Refuge, Alaska." *Journal of Wildlife Management* 58: 757–773.

[1029] Note that Johnson et al. (2003) is an internal industry report that is not readily available to the public. Johnson, C. B., R. M. Burgess, B. E. Lawhead, J. Neville, J. P. Parrett, A. K. Prichard, J. R. Rose, A. A. Stickney, and A. M. Wildman. 2003. Alpine Avian Monitoring Program, 2001. Fourth annual and synthesis report for ConocoPhillips Alaska, Inc., and Anadarko Petroleum Corporation, Anchorage, Alaska, by ABR, Inc., Fairbanks, Alaska.

[1030] Liebezeit, J. R., S. J. Kendall, S. Brown, C. B. Johnson, P. Martin, T. L. McDonald, D. C. Payer, C. L. Rea, B. Streever, A. M. Wildman, and S. Zack. 2009. "Influence of human development and predators on nest survival of tundra birds, Arctic Coastal Plain, Alaska." *Ecological Applications* 19: 1628–1644.

[1031] DEIS vol. 1 at 3-92

[1032] E.g. Natalie T. Boelman Laura Gough John Wingfield Scott Goetz Ashley Asmus Helen E. Chmura Jesse S. Krause Jonathan H. Perez Shannan K. Sweet Kevin C. Guay, Greater shrub dominance alters breeding habitat and food resources for migratory songbirds in Alaskan arctic tundra, 21 Global Change Biology 1508 (2014), available at https://doi.org/10.1111/gcb.12761.

[1033] DEIS vol. 1 at 3-94.

[1034] DEIS vol. 1 at 3-97.

[1035] DEIS vol. 1 at 3-101.

m. The analysis and mitigation of impacts to seabirds is inadequate and incomplete.

The DEIS contains almost no analysis on impacts to seabirds. The DEIS notes that "low levels of disturbance and displacement of seabirds could occur along the marine vessel route between the ARCP and Dutch Harbor, Alaska."[1036] But the analysis on impacts to seabirds in the coastal areas is focused on Long-tailed Ducks, rather than on seabirds in the coastal areas,[1037] and the DEIS does not contain any additional analysis of the impacts to seabirds from increased vessel traffic.[1038]

The description of the barge "route" referenced in the DEIS[1039] is wholly inadequate for analyzing the impacts of marine vessel traffic on seabirds and other marine animals. Barges are very likely to be a big component of any oil and gas development in the project area, and the DEIS completely fails to analyze this potential for a very large increase of vessel traffic along the route and in the coastal zone of the project area. More vessels along the route will mean more risk of oil spills, more noise introduced into the marine environment, more ship strikes on marine wildlife, and more hazards for marine birds.[1040] The DEIS completely lacks the information necessary for the public to understand impacts to seabirds and other marine wildlife along the vessel traffic route.

Moreover, the mitigation measures for seabirds are missing, inadequate, or arbitrary. Lease Stipulation 9 would purportedly protect coastal zones to varying degrees, but under Alternative B would only require a mitigation plan but would not actually prevent any infrastructure in the coastal area, and Alternatives C and D would allow for barges, docks, spill response areas, and pipelines.[1041] This stipulation would therefore not address impacts that occur on the vessel route from Dutch Harbor.

In sum, BLM's description and analysis of an oil and gas program on birds is insufficient and inadequate. BLM must ensure that has the necessary information regarding the myriad

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[1036] DEIS vol. 1 at 3-98.

[1037] *See e.g.* DEIS vol. 1 at 3-97.

[1038] Information, data, and analysis relevant to this topic can be found in the *Birds* and *Mammals* chapters of Smith, M.A., M.S. Goldman, E.J. Knight, and J.J. Warrenchuk, 2017, *Ecological Atlas of the Bering, Chukchi, and Beaufort Seas*, 2nd edition, Audubon Alaska, Anchorage AK.

[1039] *See* DEIS vol. 2 at Appendix A, Figure 3-6.

[1040] *See analysis, citations, and data in* B. Sullender, *Vessel Traffic*, pp. 285-293 *In* Smith, M.A., M.S. Goldman, E.J. Knight, and J.J. Warrenchuk, 2017, *Ecological Atlas of the Bering, Chukchi, and Beaufort Seas*, 2nd edition, Audubon Alaska, Anchorage AK; B. Sullender, *A Closer Look: Unimak Pass and Bering Strait Vessel Traffic*, pp. 294-295 *In* Smith, M.A., M.S. Goldman, E.J. Knight, and J.J. Warrenchuk, 2017, *Ecological Atlas of the Bering, Chukchi, and Beaufort Seas*, 2nd edition, Audubon Alaska, Anchorage AK.

[1041] DEIS vol. 1 at 2-15.

species that use the Coastal Plain to actually evaluate the impacts to birds. Doing do requires substantial revision of the DEIS.

I. BLM'S ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON CARIBOU IS INADEQUATE.

1. Resource Summary

Caribou (*Rangifer tarandus*) are the most abundant large terrestrial herbivore in the circumpolar arctic.[1042] Known as reindeer in some countries, caribou populations stretch across North America, Europe, and Asia.[1043] Movement is central to life for barren-ground caribou (*R. t. granti*),[1044] such as those that live on the North Slope of Alaska. Barren-ground caribou are renowned for their long-distance migrations, covering thousands of kilometers each year in some of the longest overland movements in the world.[1045] These migrations allow caribou to take advantage of resources that change over space and time, such as moving to areas with greater winter food availability and shelter and then returning to calving grounds with lower densities of predators.[1046] In addition to long-range migration, barren-ground caribou rely on unimpeded local movements, especially after calves are born, to optimize changing nutrient availability and to avoid predators and harassing insects.[1047] As a Canadian report stated, "[u]nhindered movement is the key to how caribou adapt to annual variations in forage availability and insect harassment."[1048] Integration of both long-range and local movement strategies enable barren-ground caribou to achieve large population levels in arctic regions.

The Arctic National Wildlife Refuge is used, with varying frequency, by three of the four caribou herds that calve on the North Slope of Alaska. Portions of the Central Arctic Herd (CAH) use the Arctic Refuge year-round, and the Coastal Plain primarily during summer[1049] and in small numbers during winter.[1050] The Teshekpuk Caribou Herd (TCH) uses parts of the Arctic Refuge as winter range, including occasional use of the Coastal Plain.[1051] The Porcupine Caribou Herd (PCH) uses the Arctic Refuge throughout the year,[1052] with the Coastal Plain providing essential calving,[1053] post-calving, insect relief, and other summer habitat.[1054] The Coastal Plain

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[1042] Bråthen et al. 2007. (Materials cited in this section are referenced in full at the end of the comment letter.)
[1043] Festa-Bianchet et al. 2011.; Mallory and Boyce. 2018.
[1044] Photo 1 in Appendix B.
[1045] Fancy et al. 1989.; Bergman et al. 2000.; Schaefer and Mahoney. 2013.
[1046] Dau. 2011.; Joly. 2012.; Person et al. 2007
[1047] Griffith et al. 2002.
[1048] Russell and Gunn. 2019 at 91.
[1049] Arthur and Del Vecchio. 2009.; Lenart. 2015.
[1050] Clough et al. 1987 at 26.
[1051] Person et al. 2007.
[1052] *See* Figure 1 in Garner and Reynolds. 1986 at 212.
[1053] Photo 2 in Appendix B.
[1054] Garner and Reynolds. 1986.; Clough et al. 1987.; Caikoski. 2015.

also provides a refuge from predators, with lower predator densities than in the foothills to the south.[1055]

Due in large part to its importance for caribou and corresponding subsistence values, three of the four ANILCA purposes for the Arctic Refuge are related to conserving the PCH.[1056] These purposes, along with the original purpose of the Refuge to preserve unique wildlife, wilderness, and recreational values and the 1987 International Agreement on the Conservation of the Porcupine Caribou Herd, impose substantive duties on the Department of the Interior to preserve and protect caribou and its habitat. Unfortunately, the DEIS fails to demonstrate compliance with those obligations, or with procedural obligations under NEPA, as they relate to caribou.

a. Importance of post-calving habitat

While the post-calving period has traditionally received less attention than the calving period in the scientific literature and in environmental impact analyses, it is also very important for caribou. The International Porcupine Caribou Board ranked both calving and post-calving habitat of equally high importance for the PCH.[1057] The post-calving period is crucial to providing nourishment for growing calves and replenishing depleted body reserves. Caribou rely on stored body fat and energy reserves to get them through the long, difficult winter.[1058] They then use these reserves to fuel their spring migration. This can be costly in terms of energy requirements, with one study showing that pregnant females in the PCH may lose about 4 kg of body fat during spring migration.[1059] Female caribou with new calves continue to rely on their body reserves to fuel lactation.[1060] Calving ground habitats are also important for nursing caribou to meet the energetic demands of lactation and allow calves to gain weight and increase their probability of survival.[1061] After calving, female caribou have to replenish their depleted body stores during the brief summer growing season. This doubles their energy and protein demands during this period.[1062] Failure to do so can have strong consequences, as summer weight gain influences the probability of conceiving in the subsequent fall[1063] and of successfully carrying that calf to birth the next spring.[1064] Unimpeded access to a diversity of high-quality forage is important during this period to enable caribou to regain body condition and provide sufficient milk production for their new calves.[1065] The Coastal Plain is critical for caribou post-calving when the animals are at the low point of their annual energy cycle, with the energy reserves of

[1055] Fancy and Whitten. 1991.
[1056] ANILCA § 303(2)(B); *See also supra*.
[1057] International Porcupine Caribou Board. 1993.
[1058] Gerhart et al. 1996.; Barboza and Parker. 2008.; Taillon et al. 2013.
[1059] Fancy. 1986.
[1060] Taillon et al. 2013.
[1061] Griffith et al. 2002.
[1062] Griffith et al. 2002.
[1063] Cameron et al. 2005.
[1064] Veiberg et al. 2017.
[1065] Klein. 1990.; Russell and Gunn. 2019.

parturient cows especially low.[1066] The Coastal Plain provides greater concentrations and prolonged availability of plant nitrogen compared to the nearby Brooks Range.[1067] This nitrogen is a limiting resource for caribou that allows them to gain weight during the brief summer months, increasing winter survival and subsequent-year reproduction.[1068] Furthermore, key limiting minerals needed by caribou also appear to be more available on the Coastal Plain than in other seasonally-used areas.[1069] The importance of this area is reinforced by records showing that even in years in which the PCH primarily calved in Canada, the herd has travelled to the Arctic Refuge Coastal Plain for food and insect relief during the post-calving period.[1070] The USGS points out that "essentially the entire 1002 Area was eventually used by late June or early July."[1071] This is also evident from location records that show use of the entire Coastal Plain over time, especially during the post-calving period.[1072]

Insect activity, primarily that of mosquitoes and oestrid flies, has a strong influence on caribou space use in July and August, leading caribou to seek areas of relief from insects, such as the windy coastline, gravel bars and elevated areas.[1073] They may also rely upon patches of perennial snow and ice, including aufeis, for insect relief.[1074] During this period, caribou gradually gather together into large aggregated groups.[1075] Some of these have occurred in the western areas of the Coastal Plain,[1076] including over 80,000 caribou in a single group near Camden Bay in 1972,[1077] as well as multiple years with large groups all the way to the Canning River.[1078] Large aggregations continue to form and to use the western parts of the Coastal Plain for insect relief, such as a group estimated at around 121,000 individuals that spent time just south of Camden Bay in 2014 and a slightly smaller group of around 100,000 animals that used a similar area in 2017.[1079] A recent report prepared for the Canadian government notes: "Although in any given year the movement patterns of large aggregations are unpredictable, aggregations, for the four years considered [2014-2017], were most concentrated in the western portion of 1002, south of Camden Bay."[1080]

[1066] Clough et al. 1987 at 25.
[1067] Barboza et al. 2018.
[1068] Barboza et al. 2018.
[1069] Oster et al. 2018.
[1070] Griffith et al. 2002.
[1071] Griffith et al. 2002 at 20.
[1072] Animation 1 in Appendix B.; *See also* Figure 3.11 in Griffith et al. 2002 at 16.
[1073] Pollard et al. 1996.; Photo 3 in Appendix B.
[1074] Rosvold. 2016.; Photos 4–5 in Appendix B.
[1075] Photos 6-7 in Appendix B.
[1076] Photo 8 in Appendix B.
[1077] Garner and Reynolds. 1986 at 230; Map 1 in Appendix B.
[1078] Ken Whitten (ADF&G PCH caribou biologist, retired) pers. comm.
[1079] *See* Figure 19 in Russell and Gunn. 2019 at 40.
[1080] Russell and Gunn. 2019 at 42.

Harassment due to insects can have a negative effect on caribou populations,[1081] leading to lower rates of calves being born in years following high insect activity.[1082] It can also threaten the ability of caribou to replenish depleted body stores, as prolonged exposure to insects can shift lactating female caribou from positive to negative energy balance.[1083] This makes it very important that caribou be able to access insect relief habitat and move between insect relief areas and quality forage habitat as conditions change.

2. *Deficiencies in the DEIS Analysis of Caribou*

We appreciate the general review and inclusion of content related to caribou. A number of important points have been raised in the DEIS. For example, we appreciate the recognition that the Coastal Plain is used at times by the PCH, CAH, and TCH; that most years the PCH calves within the Coastal Plain; and that both the PCH and CAH use the Coastal Plain for insect relief.[1084] However, we feel that there remain numerous issues that must be more adequately addressed. These are specified in the following sections.

a. Ignoring the larger Rangifer context

The DEIS fails to place the discussion of the PCH and CAH in the context of the global condition of *Rangifer*. Caribou and reindeer (both *Rangifer tarandus*) stretch across North America, Europe, and Asia.[1085] Although widely distributed in the Arctic, most caribou and wild reindeer (*R. t. tarandus*) populations have faced strong declines, likely influenced in part by global changes in climate and anthropogenic landscape change.[1086] The recent Arctic Report Card released by the National Oceanic and Atmospheric Association (NOAA) reported global declines of more than 50% of migratory caribou and reindeer over the past two decades, with some herds declining more than 90%.[1087] While caribou herds naturally fluctuate,[1088] the NOAA report notes that several herds show no sign of recovery after drastic declines and some are at record low levels since reliable recording began.[1089] Canada especially has seen drastic declines in its caribou herds, leading it to recently recognize barren-ground caribou as nationally "Threatened."[1090] Two eastern migratory Canadian herds are now listed as "Endangered."[1091] This comes at a time when the contiguous United States just had the last of its known wild caribou removed.[1092] While the PCH currently is a notable exception to the declining trend seen

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[1081] Dau. 1986.
[1082] National Research Council. 2003.
[1083] Fancy. 1986.
[1084] DEIS vol. 1 at 3-104.
[1085] Festa-Bianchet et al. 2011.; Mallory and Boyce. 2018.
[1086] Vors and Boyce. 2009.; Russell et al. 2015.; Mallory and Boyce. 2018.
[1087] Russell et al. 2018.
[1088] Ferguson et al. 1998.; Zalatan et al. 2006.
[1089] Russell et al. 2018.
[1090] COSEWIC. 2016.
[1091] COSEWIC. 2017.
[1092] Moskovitz. 2019.

in many caribou populations, the prevailing observations across much of the globe should lead to caution regarding assumptions that the PCH will remain at high population size, especially in light of additional pressures that would be placed on the herd by industrial development and climate change. This is of special concern in light of recent research suggesting that a caribou herd's population size can strongly influence the effect of development on that herd's future population dynamics.[1093] The BLM should update the Affected Environment description of caribou to better situate the PCH in their species' global context to fully consider potential risks of the proposed action.

b. Factors that hinder adequate review of the DEIS caribou content

There are several factors that hinder the ability of the public to review and determine the adequacy of the discussion of impacts to caribou in the DEIS. First, no justification is given for the caribou use percentages by which the DEIS analyzes development and human activity impacts on caribou. This prevents a clear evaluation of whether the measures reported in the DEIS actually reflect expected impacts. Second, the lack of transparency in the caribou data sources used in the DEIS means that even if the caribou use categories are accepted as being reasonable, it is impossible to evaluate how representative of impacts they really are. Third, the methods used to determine impacts based on the data are not the best-available scientific methods. These are all critical issues that prevent the full analysis of impacts expected under NEPA. In the following sections we elaborate on each of these problems.

i. Lack of justification for caribou use percentages

Repeatedly throughout the DEIS, caribou use is depicted using the percentage of years that caribou are present, broken into four categories: < 20%, 20-30%, 30-40%, > 40%.[1094] As a minor point, it is unclear exactly where the bounds lie. Using < 20% as the first category implies that 20% occurs in the next category, where it is the lower bound, while using > 40% as the final category implies that 40% occurs in the previous category, where it is the upper bound. If both the lower and upper bounds are included in the bins, where does 30% lie, which is listed in both the 20-30% category and the 30-40% category? Either 30% is being double counted, which presents problems, or it occurs in one category or the other, in which case the two categories are of uneven size. This should be clarified by BLM.

A much more important issue is the lack of justification that is given for using these percentages to define caribou use. The DEIS "defines important calving grounds as the high-use PCH calving area (area used in greater than 40 percent of years)"[1095] and apparently uses a similar definition for post-calving.[1096] No justification is given for why only areas used in more than 40% of years are important. A clear biological rationale, grounded in the best-available science, must be stated. As is noted below, such a determination of "important" habitat neglects the value of more occasionally used calving and post-calving areas for the PCH, including those

[1093] Russell and Gunn. 2019.
[1094] E.g., Maps 3-21, 3-23, E-1, Tables J-12 and J-13.
[1095] DEIS vol. 2 at E-8.
[1096] DEIS vol. 1 at 2-14.

where large concentrations have occurred less frequently but in large numbers outside of the areas depicted as "high use" in Map 3-21 and Map E1. BLM must explain why an area used lightly in more than 40% of years is considered more important than an area used heavily in 35% or even 20% of years. Furthermore, explanation of each of the percentage use categories and their biological importance needs to be provided by BLM since these categories are used as the key impact indicators for analyzing road, pipeline, air traffic, noise and human activity impacts on caribou.[1097] They also represent the main quantitative indication of impact to caribou in the DEIS: acres with differing levels of use during calving and post calving that overlap with varying lease restriction categories.[1098] In light of this, it is crucial that BLM be clear on why these are biologically-meaningful and sufficient for demonstrating impact or lack thereof.

ii. Lack of transparency in caribou data sources

Transparency is a hallmark of robust scientific analysis because it enables replication. It is also essential to enable proper public review of NEPA documents. The DEIS suffers greatly from a lack of transparency with regards to its caribou data. Location information is a key component of both the description of the affected environment for caribou and of the environmental and subsistence consequences of the proposed development alternatives. As is pointed out above, the "proportion of years areas are used by PCH per season" is the key impact indicator used in the DEIS for analyzing road, pipeline, air traffic, noise and human activity impacts on caribou.[1099] Similarly, the "proportion of CAH caribou using the program area alternatives by season (based on percent of seasonal use density from kernel density)" is used to evaluate impacts of roads and pipelines to the CAH.[1100] Caribou location data are also used to calculate the acreages and percentages of use by caribou.[1101] Because this information underlies the analyses of impact, it is crucial that the data sources be specified in such a way that any member of the public could evaluate the quality of the data. This includes providing clear citations to publicly available publications/reports that describe and visualize the data sources or, for original telemetry data, providing detailed information on the timeframe of data, sample size (both in terms of number of individuals and frequency and duration of locations), type of technology used to obtain locations, methods used to depict location data, and more. This is not done for caribou in the DEIS.

No source documentation for caribou locations is given in Chapter 3. Some additional information is given regarding data sources in the DEIS appendices, but this is still insufficient to evaluate data quality. Maps 3-21, 3-23, and E-1 — all depicting the seasonal distribution of the PCH in various forms — reference BLM GIS 2018 and Yukon Environmental GIS 2018. Map 3-22, depicting the seasonal distribution of the CAH, references BLM GIS 2018, Prichard et al. 2018, and ABR GIS 2017. The BLM GIS 2018 dataset is the same source that is cited for

[1097] DEIS vol. 2 at F-27 – F-28.
[1098] Tables J-12 and J-13.
[1099] DEIS vol. 2 at F-27 and F-28.
[1100] DEIS vol. 2 at F-27 and F-28.
[1101] DEIS vol. 2, Tables J-12 to J-15.

potential fossil yield classification in program area geological bedrock units,[1102] polar bear denning habitat,[1103] cultural resource site information,[1104] basic acreage calculations,[1105] and more. It is thus apparent that it is an extensive dataset, containing a variety of information. The precise contents of this information, however, are unclear as the reference given for it simply states "GIS data used in the Coastal Plain Oil and Gas Leasing Program EIS alternatives, affected environment, and impact analysis. Alaska Bureau of Land Management."[1106] That conveys no information about the actual sources of data within this massive dataset. Similarly, Yukon Environmental GIS 2018 is referenced as "GIS data provided by Yukon Environmental, Mike Suitor, July 2018."[1107] Again, this gives no clarity as to the actual contents of this dataset. ABR GIS 2017 is referenced as "GIS data of the Central Arctic Herd caribou, data provided by Alaska Biological Research."[1108] Here, at least, the contents of the GIS dataset are specified — CAH data — but this still gives none of the crucial details needed to evaluate the quality of the maps made from those data. Unfortunately, Prichard et al. 2018 is not included in the references of either DEIS volume, so it is impossible for the reader to evaluate what data might have been contributed from this source. BLM has posted some geospatial data on its Arctic Refuge Coastal Plain Oil and Gas Leasing EIS ePlanning page,[1109] but this does not include any caribou data. Instead, there is a statement that "[d]ata from sources external to BLM will not be distributed." The ReadMe file on the ePlanning page lists CAH and PCH among the "Other Affected Environment GIS Data" but simply says to contact ADF&G and Yukon Department of Environment, respectively. This is insufficient. BLM needs to correct these omissions by providing an appendix that clearly specifies all data sources contained within BLM GIS 2018, Yukon Environmental GIS 2018, ABR GIS 2017, Prichard et al. 2018 and any other GIS databases used in the EIS process in such a way that the quality and information above about sample sizes and methods can be ascertained. Without this information, proper review and evaluation of the claims made by BLM are impossible. We note that any information BLM relies on in its decision should be included in the record as well.

Clarity about data sources is important because different types of animal location data may lead to various biases in datasets and resulting depictions. For example, Russell and Gunn point out that satellite collar data can underestimate use of the program area each year.[1110] The DEIS makes no such acknowledgement. VHF collars may show extensive use of the program area for calving even when satellite collars show little use.[1111] It is important that BLM is clear about which types of information are used in the DEIS.

[1102] DEIS vol. 1 at 3-42.
[1103] DEIS vol. 1 at 3-145.
[1104] DEIS vol. 1 at 3-158.
[1105] E.g., DEIS vol. 1 at 3-218.
[1106] DEIS vol. 1 at References-9.
[1107] DEIS vol. 1 at References-51.
[1108] DEIS vol. 1 at References-1.
[1109] https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=152115.
[1110] Russell and Gunn. 2019 at 25.
[1111] *See* Figure 8 in Russell and Gunn. 2019 at 26.

The lack of clear information about data sources for Maps 3-21, 3-22, 3-23 and E-1 combines with a complete lack of description about how the figures were made to make it difficult to evaluate how well they represent seasonal distributions of caribou. The PCH distribution figures in Map 3-21 state the number of years of data going into each depiction, but not what those years are or how many individuals are represented in each. Furthermore, they do not specify whether the years included were consecutive or if some years were omitted. Nor do they make it clear how they account for changing scientific research methods and technology over time. It is also notable that Map 3-23 lists a different number of years depicted for the calving period with cows and calves than that shown in Map 3-21 (37 years in 3-21 versus 34 years in 3-23). No explanation is given for why this is different.

In addition, no statement is made about what depiction of data is used in Map 3-21. For example, if a kernel density estimate is used, that should be stated and the percentage contour used to depict use should be shown. This is not clear from the information as conveyed. Also, if the USGS and USFWS kernel analyses of calving distribution[1112] were used, this should be made clear. These were based on the locations where collared PCH caribou gave birth. Such depictions are useful for displaying variation in birth locations across years, but underestimate use of areas during calving as PCH cows continue to move after calves are born, often moving westward toward and within the program area.[1113] Only using birth sites to represent calving can thus bias the depiction of calving-season use away from the more western portions of the Coastal Plain, resulting in an incomplete evaluation of impacts. It is also possible that the DEIS did not use previously published kernel density estimates but rather created new depictions based on original telemetry records. Whatever data sources were used, these need to be made very clear and the methods of depiction presented in greater detail.

For the CAH seasonal use depictions in Map 3-22, it is stated in the legend that kernel density isopleths are depicted. However, no indication is given of the time period represented by the data going into the kernel density analysis, nor the sample size nor age and sex information of the depicted animals. All of this information can influence the resulting depictions of space use and the way visualizations should be interpreted. It is essential that BLM provide detailed information about the data being represented in the DEIS to enable adequate review and assessment of impacts. Furthermore, BLM needs to explain why different depictions of use are presented for the PCH and the CAH maps and in the analyses of impacts described in Appendix F,[1114] what data gaps may exist, and why these represent reasonable and biologically meaningful depictions of caribou use.

Specifying the years of data used and showing their sources is important for a robust analysis. To our knowledge, the last kernel density depictions made publicly available for the PCH were presented in the Arctic Refuge Revised CCP[1115] and spanned 1983–2010. Coarse

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[1112] Griffith et al. 2002; USFWS. 2015.
[1113] Ken Whitten (ADF&G PCH caribou biologist, retired) pers. comm.
[1114] DEIS vol. 2 at F-27 and F-28.
[1115] USFWS. 2015. Map 4-9.

polygon data showing general calving and wintering areas for 2011–2017 were displayed in a newsletter by the Alaska Department of Fish and Game (ADF&G),[1116] but without documentation of methods or use of kernel density estimates or other depictions showing relative use by collared animals. The public thus has no clear way of knowing what the full extent of Coastal Plain or relative use by the PCH has been since 2010. Nor is it clear what data were collected post-2010, or if any of these data were included in the information used in the DEIS maps and Appendix J. The description of background caribou information described the percentage of time PCH females calved in the 1002 Area between 1983–2001.[1117] This, however, is only 19 years of data and Map 3-21 says there are 37 years of calving data depicted. This suggests that 2002–2018 are included (bringing the total to 36 years), but also requires at least one older year of data. Maps of caribou calving stretch back at least until 1961,[1118] and include the period of 1972 through 1986.[1119] Some of this historic information may have been used, but this is not specified. Also, previous depictions of caribou calving habitat have often included both annual calving grounds and annual concentrated calving areas. BLM acknowledges such distinctions in the DEIS but does not specify which representation of calving is being depicted in Map 3-21. The note on Lease Stipulation 7 states that "PCH primary calving habitat area was defined as the area with a higher-than-average density of cows about to give birth during more than 40 percent of the years surveyed."[1120] Mention of "more than 40 percent of the years surveyed" makes this statement seem relevant to the depiction in Map 3-21. Mention of "the area with a higher-than-average density" makes it likely that the statement is referring to concentrated calving areas, rather than annual calving grounds, though notably the definition given in the DEIS for an annual concentrated calving area only calls it "an area of relatively high use,"[1121] not "higher-than-average density," so this is not certain. It is thus possible that Map 3-21 only depicts overlap in concentrated calving, which would not present a full picture of the important areas for PCH calving (see below for more details). It is also possible that annual calving ground overlap is displayed in Map 3-21, and that the "PCH primary calving habitat area" as defined in Stipulation 7 is not depicted. Either way there is a problem. Representations of space use by caribou will look very different depending on whether the extent of calving or extent of concentrated calving are being depicted. The various forms of uncertainty raised above make it impossible to adequately review the information presented. An EIS must present clarity, not require guesswork. BLM needs to clarify its data sources, with all necessary details, and present annual depictions of the input data used in its analyses for any years that are not already publicly available, including all years post-2010.

Greater clarity is needed in the definition used for "calving" as the definition quoted above from Lease Stipulation 7 leaves several ambiguities. For example, what does "about to give birth" mean and how is it determined when female caribou are about to give birth? Calving should cover both the birth site and movements thereafter. While Maps 3-21 and 3-23 list the

[1116] McFarland et al. 2017.
[1117] DEIS vol. 1 at 3-106.
[1118] Skoog et al. 1963.
[1119] Clough et al. 1987.
[1120] DEIS vol. 1 at 2-13.
[1121] DEIS vol. 1 at 3-106.

calving period as May 26–June 10, no biological justification is given for this definition. While peak calving is likely to be over by June 10, calves will continue to be born past this date,[1122] suggesting that the calving period should be extended. Notably, Map 3-22 for the CAH shows an unlabeled map just prior to the map labelled "Post-calving," which stretches from May 30-June 15. BLM needs to explain and scientifically support how it is defining its various seasonal periods.

A final issue with the lack of clarity as to data sources in Map 3-21 regards the differences in what is being compared between the various time periods. The pre-calving, early summer, and mid-summer depictions reflect the distribution of all collared animals, according to the text in Map 3-21 (though with different numbers of years of data for each, ranging from 27-34). The calving period map depicts both cows and calves (for 37 years of data), while the post-calving map represents the distribution of just cows (with only 22 years of data). No explanation is given for why these different depictions are used or how the varying number of years of data were selected. One concern is that habitat use patterns are different for male and female caribou throughout much of the year, so distribution maps based on all animals versus those for just cows (or cows and calves) may be very different. Another concern is that locations of calves are likely biased due to a lack of random selection. Some calves have been collared along with their mothers for use in nutrition studies.[1123] The locations of these calves will not be independent from those of their mothers, thus over-representing the importance of those cows. Other calves were collared in high-density and low-density calving areas to compare survival rates.[1124] These also would lead to over-representing some use areas and under-representing others. It is unclear whether data were derived from one, both, or neither of these sets of studies. Furthermore, it is possible that only parturient cows were depicted in the calving data but all cows, including those that did not have a calf in a given year, were included in the post-calving group. This is not specified. Without sample size information and other details, it is impossible to know how these data choices might affect the results. There are biological reasons to focus on the distribution of cows during the calving and post-calving seasons and to show all animals at other times of the year, as well as logistic reasons such as the greater number of collars that have been deployed on cows compared to bulls. Any such depictions, however, should be presented in two sets of maps: one with just cows each season and the other with all animals in each season. Both sets of maps should specify the sample size broken down by sex, age, and parturition status and should clearly state the specific years of data depicted, with their sources. Doing this will enable adequate evaluation of the contribution of bulls, cows and calves to the seasonal distribution representations and will allow a more robust consideration of use of the Coastal Plain. The BLM should include such maps in a revised EIS.

iii. Failure to Use the Best Available Science in Quantifying Development Impacts to Caribou Habitat

[1122] Ken Whitten (ADF&G PCH caribou biologist, retired) pers. comm.
[1123] Ken Whitten (ADF&G PCH caribou biologist, retired) pers. comm.
[1124] Ken Whitten (ADF&G PCH caribou biologist, retired) pers. comm.

The DEIS states that "BLM has relied on the best available science to inform its consideration of the environmental impacts surrounding an oil and gas leasing program in the Coastal Plain."[1125] This standard has not been met, however, when it comes to quantification of development impacts to caribou and their habitat. The quantitative metrics of development impact on caribou reported in the DEIS consist of simple overlay analyses that report percentages of habitat types overlapping different lease restriction categories[1126] and percentages of seasonal use overlapping lease restriction and oil potential areas.[1127] These percentages are simply reported and no robust analysis of their potential consequences for the PCH or CAH are presented. Such a basic approach to evaluating impact stands in stark contrast to the wide array of available quantitative analytic techniques for considering the impacts of development and climate change on wildlife that exist in the scientific literature and reports. A number of these techniques have specifically been applied to caribou, even in Alaska. For example, Wilson et al.[1128] perform a quantitative analysis of the relative impacts to caribou calving habitat and passerine nest survival under different development alternatives in the NPR-A. This is done in a manner that takes into account the uncertainty inherent in pre-exploration oil and gas development planning, uses scientific understanding of caribou response to development, and looks at use not just of caribou but of other wildlife species to provide a more comprehensive view of development impacts. It is thus very surprising that having relied upon the approach to inform the NPR-A IAP, [1129] BLM does not cite Wilson et al.[1130] anywhere in the DEIS. Appendix E points out that "the precise location of infrastructure, and thus the extent of overlap between surface disturbance and the high-use PCH calving area, is unknown"[1131] and concludes that "[i]t is likely that there would be no or very little surface disturbance within the high-use PCH calving area, given that the hypothetical development scenario suggests that future development would move from west to east, would be concentrated along the coast, and that lessees would attempt to minimize lengthy travel from coastal and existing infrastructure, and between CPFs."[1132] Such a conclusion appears to be more of a hope, rather than any kind of analytical result. It is especially called into question as the description of the hypothetical development scenario in Appendix B points out that "[e]stimating the level of future oil and gas activity in this area is difficult at best"[1133] and that "[t]he petroleum-related activities projected in this hypothetical development scenario is [sic] useful only in a general sense. This is because the timing and location of future commercial-sized discoveries cannot be accurately predicted until exploration drilling begins."[1134] In light of these admissions, as well as the failure of the DEIS to adequately incorporate all available research on oil and gas potential, its geographic extent and intensity

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[1125] DEIS vol. 1 at 3-2.

[1126] E.g., DEIS vol. 1 at 3-118 through 3-121.

[1127] E.g., DEIS vol. 2 Tables J-12 and J-13.

[1128] Wilson et al. 2013.

[1129] BLM. 2013. For an example of the use of earlier forms of this model to describe the environmental consequences of proposed alternatives, see BLM 2013 vol. 3 at 44.

[1130] Wilson et al. 2013.

[1131] DEIS vol. 2 at E-9.

[1132] DEIS vol. 2 at E-9.

[1133] DEIS vol. 2 at B-1.

[1134] DEIS vol. 2 at B-2.

with respect to potential prospects and plays, and economic factors,[1135] it is unreasonable for the analysis of impacts to caribou to rely so heavily upon the assumptions of the hypothetical development scenario and to conclude that there would be little impact from development as a result, especially when other options are available.

To meet the standards of the best-available scientific approaches to evaluating impact while accounting for uncertainty, BLM should conduct scientific analyses that quantify impact across various aspects of potential development effects. This includes, but is not limited to, quantifying and mapping caribou habitat selection and the relative value of habitat across different seasons,[1136] using energetics models[1137] to estimate energy consequences of displacement away from prime forage areas, identifying the range of uncertainty in habitat loss under different alternatives,[1138] calculating population-level consequences of displacement,[1139] and considering cumulative effects of climate change on caribou.[1140] Inclusion of a suite of analyses will better represent impacts to caribou from the array of potential threats posed by the proposed alternatives and the cumulative effects of other proposed and ongoing projects compared to the simplistic approach included in the DEIS.

The recent analyses conducted at the request of the Canadian government and submitted as comments on the DEIS[1141] demonstrates that it is feasible for BLM to conduct a more rigorous and quantitative analysis that considers multiple aspects of impact on caribou and compares between the proposed alternatives. The so-called Caribou Cumulative Effects (CCE) model was developed by Don Russell and Anne Gunn, long-time caribou researchers with a wealth of experience and publications relating to caribou in Canada and the United States. The model was created to conduct a science-based risk assessment of PCH vulnerability to proposed Arctic Refuge Coastal Plain Development by using a computer simulation model to quantify expected population-level consequences for the PCH and implications for subsistence hunters under baseline conditions, the DEIS action alternatives, and full Coastal Plain development. Three linked submodels represented caribou movement and environmental (including development) exposure, energy and protein consequences of environmental exposure for individual caribou, and population dynamics based on the previous two models. This allowed quantification of population consequences expected under each development scenario and a range of variable climatic conditions.

The CCE presents an important step forward in analyzing impacts to caribou under the DEIS alternatives and yields key conclusions regarding the effects of Coastal Plain

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[1135] *See supra* (hypothetical development section).
[1136] E.g., Wilson et al. 2012.
[1137] E.g., Russell et al. 2004.
[1138] E.g., Wilson et al. 2013.
[1139] E.g., Griffith et al. 2002.
[1140] E.g., Tews et al. 2007.
[1141] Russell and Gunn. 2019.

development.[1142] In addition to adopting the CCE approach or preparing a comparable analysis in a revised DEIS, BLM must also build upon the CCE approach, including the following aspects:

1. Population simulations in the CCE were conducted over a 10-year period, from 2017-2027.[1143] Ultimately, oil and gas impacts are predicted by the DEIS to last up to 130 years.[1144] Thus, population consequences of development should also be modelled across a similarly long time span.
2. More robust modeling of caribou movement is needed. The movement submodel in the CCE does not truly model caribou movement, but rather uses 414 movement paths from satellite collared caribou between 1985-2017 to reflect realistic movement patterns.[1145] These were overlaid on the environment as a way to sample environmental data from movement paths, including whether the individual was within the zone of influence of development on a given day. Use of existing movement paths, however, means that while the energetics of movement and costs to foraging were altered in the presence of development, distribution was not. As is described below, many records indicate alteration in caribou distribution in the presence of development. These are not reflected in the CCE. Options exist for modeling animal movement, with the opportunity to parameterize movement models based on telemetry data.[1146] Movement models have previously been used to examine development impacts including diversion and delay of caribou in northern Alaska.[1147] These should be improved upon by parameterization with caribou telemetry data or other available techniques should be used and integrated into a quantitative approach like that of the CCE.
3. The influence of edge effects that extend across lease restriction categories needs to be included in the model. We describe in detail below the importance of recognizing that development impacts may extend across lease restrictions boundaries into no surface occupancy and no leasing areas. In the rationale given for Map Designation 5 in Table 13, Russell and Gunn note that displacement and disturbance will occur across boundaries from adjacent development,[1148] but do not penalize this in their model. Absent a realistic spatial development buildout, the DEIS should apply an approach that simulates locations of development[1149] to assess where edge effects will intrude across lease restriction boundaries or assume an overly cautious approach and include penalties along all lease restriction edges in light of the potential for adjacent development.
4. The model needs to rigorously address all operations and activities that may occur under each alternative and not be prohibited by mitigation measures.[1150] For example, this may

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[1142] See Russell and Gunn. 2019 for details.
[1143] Russell and Gunn. 2019 at 56.
[1144] DEIS vol. 2 at B-11.
[1145] Russell and Gunn. 2019 at 51.
[1146] E.g., Morales et al. 2004.; Patterson et al. 2008.; Bartoń et al. 2009.; Patterson et al. 2009.; Avgar et al. 2015.
[1147] BLM. 2014 at 353 – 354.
[1148] Russell and Gunn. 2019 at 77.
[1149] E.g., Wilson et al. 2013.
[1150] *See* reasonably foreseeable development section above and caribou comments below.

include aircraft takeoffs and landings, water withdrawals, seismic exploration, gravel mining, construction of water reservoirs, exploratory drilling, and more.

5. Climate variability was considered in the CCE in three categories – poor conditions, average conditions, and good conditions – represented by the first quartile, mean, and third quartile of climate indicator records from 1979–2016.[1151] Examining impacts to caribou under varying climate conditions is an important step in a quantitative analysis and an improvement on the approach taken in the DEIS (see below). However, it is also important to include conditions that go beyond the historic range of variability in climate in recognition of the rapid and unprecedented changes happening in the arctic, that are often without analog. Climate projection models that predict future conditions, even when those are novel with respect to the past, should be analyzed along with consideration of the historic range of variability. In particular, such climate projections need to be applied to the evaluation of impacts under the proposed alternatives. While the CCE was run under different climate conditions for the baseline and full-development conditions, the analysis of DEIS action alternatives was run only under average climate conditions.[1152] For a robust analysis of impacts under the proposed alternatives, the influence of climate variability — shown to matter in the baseline and full development scenarios — must be considered.
6. The CCE model was only run for the PCH. BLM must perform its quantitative analyses for both the CAH and the PCH as both herds regularly use the Coastal Plain. This will allow a more accurate consideration of impacts to the CAH, rather than just asserting without support that "potential impacts on CAH caribou are expected to be low" for each alternative.[1153]

In developing quantitative analyses of development impacts on caribou, whether following a framework like that of the CCE or other published approaches, it is important that season-specific impacts be analyzed across the full annual ranges and cycles of the PCH and CAH. It also is important that while such models may at times rely upon the best-available caribou telemetry data, validation of the models be conducted using the full range of historic records of caribou habitat use, including those collected using field observations, telemetry and aerial surveys. This is important to ensure that model results conform with caribou behavior and space use over the longer timeframes considered in the DEIS (e.g., up to 130 years[1154]). To ensure robust analyses, proposed methods should be reviewed and approved by a qualified group of independent scientists prior to conducting the analyses. Similarly, the results of any quantitative analyses should be made available at a draft stage for review and comment by the same independent group and by the public prior to being used to compare between proposed alternatives or to develop new alternatives. Upon completion of the analyses results should be made publicly available. We note that while the discussion above has focused on caribou, the application of a more robust set of quantitative analyses cannot be constrained to any one species and also should be applied to other important species in the Arctic Refuge to understand the comprehensive impacts of oil and gas development on Coastal Plain resources and wildlife. A

[1151] Russell and Gunn. 2019 at 55.
[1152] Russell and Gunn. 2019 at 76.
[1153] DEIS vol. 2 at E-3.
[1154] DEIS vol. 2 at B-11.

comprehensive approach is lacking in the DEIS but is necessary to understand and accurately describe the impacts of oil and gas development.

3. Mapping Historic Use of the Coastal Plain by the PCH

In light of the lack of clarity in the caribou telemetry data used to represent seasonal habitat use by the PCH and CAH in the DEIS, as well the potential for sole reliance on satellite telemetry data to underestimate calving area use, both described above, we sought out historical records of PCH calving and concentrated calving, digitized them to a geospatial format, and mapped them. The resulting records span annually from 1972-2018 (except for 2011) and also include a record from 1961. Maps are depicted individually for each year[1155] as well as in an animation that displays the variability in annual calving as well as the overall area used over time.[1156] Source information is listed in Table B-1 in Appendix B. We have provided these data as an attachment to our comments.[1157] Taken together, these historic records reinforce that over time the entire Arctic Refuge Coastal Plain is important for caribou calving.[1158]

We recognize the difficulties in combining calving depictions created using different survey methods (aerial surveys vs. telemetry records from individually-collared animals), varying sample sizes of collared individuals, multiple precisions of collar-based location information depending on the type of technology used, etc. Detailed analysis of overlap is difficult with such a dataset. Nonetheless, such historic records can be useful to reflect the extent of calving over longer time periods than are represented in the DEIS maps. We use our dataset primarily to communicate the extent of calving over time and the variability in use of calving areas over time. Review of the historic maps reveals extensive use of the entire program area for calving over time. It is notable that there are a number of years where calving occurred in the western part of the Coastal Plain, including outside of the calving areas of focus in the DEIS. We note that such depictions may still underestimate full Coastal Plain use by caribou.[1159] Over time the entire Coastal Plain is important for caribou calving.

As we point out throughout our comments, the calving period is not the only important time for caribou. Pre-calving arrival on the calving grounds, post-calving and summer insect relief are also critical if caribou are to successfully birth and grow their calves as well as replenish their own body condition to be ready for the subsequent winter. Coastal Plain use is thus not just important during the calving period, but across the rest of the year as well. An animation of caribou locations from collared animals created by CARMA,[1160] the CircumArctic Rangifer Monitoring & Assessment Network, illustrates well that the entirety of the Arctic Refuge Coastal Plain is used by caribou over time. The DEIS needs to clearly reflect the full array of historic data that represent use of the Coastal Plain.

[1155] Maps 2-48 in Appendix B.
[1156] Animation 2 in Appendix B.
[1157] These data are included with the documents submitted concurrently for the record.
[1158] Map 49 in Appendix B.
[1159] Russell and Gunn. 2019.
[1160] Animation 1 in Appendix B

4. Use of CAH Responses Insufficient for Inferring Impact to the PCH

The DEIS assumes responses of the PCH to development and resulting impacts to caribou will be similar to those recorded for the CAH.[1161] However, it fails to discuss impacts to the CAH following recent oil field expansions to the Prudhoe Bay oil field complex, particularly from the Point Thompson Project, which began production in April 2016 and is located just west of the Refuge Coastal Plain. While the DEIS acknowledges differences between conditions for the CAH and PCH, it fails to modify its assessment of impact based upon these differences.[1162] As we pointed out in our scoping comments,[1163] development impacts to the CAH have been substantial and USGS stated that impacts are expected to similarly be observed in the PCH, but that there are multiple reasons the PCH is likely to experience stronger effects from development.[1164] This is not reflected in the DEIS. We expand upon several differences between the herds below and describe their consequences for PCH impacts analysis. BLM must revise the DEIS to take these into consideration and use them to move beyond simply stating that differences exist and instead evaluate the greater impacts for the PCH and incorporate them into the descriptions of foreseeable effects.

a. The Narrow Arctic Refuge Coastal Plain Leaves Little Room for Shifts in Distribution

The Arctic Refuge Coastal Plain is constricted in a relatively narrow band between the Beaufort Sea coast on the north and mountainous terrain on the south, [1165] much less expansive than the coastal plain used for calving by the CAH and other herds farther west. In spite of this, the Arctic Refuge Coastal Plain is used for calving by one of the largest herds in North America, with about 8 times as many caribou calving in the Refuge in recent years on about one-fifth the amount of available habitat compared to that used by the CAH further west where current oil development is centered. While the CAH shifted its calving distribution away from industrial areas as they were developed,[1166] there are not the same opportunities to do so for the PCH. Displacement and disruption of calving and post-calving caribou by oil exploration and development in the Refuge, where the densities of caribou are very high, is likely to have far greater consequences than to the west. Although we pointed out the influence of the narrower Coastal Plain in the Arctic Refuge as part of our scoping comments, the DEIS fails to include implications of this feature for caribou and must do so in a revised DEIS.

[1161] E.g., DEIS vol. 1 at 3-114.
[1162] DEIS vol. 1 at 3-114.
[1163] Alaska Wilderness League et al. 2018.
[1164] Griffith et al. 2002.
[1165] Map 50 in Appendix B.
[1166] Wolfe 2000.; Cameron et al. 2002.

b. Different Demographic Drivers of the PCH and CAH

Russell and Gunn review demographic information for the PCH and CAH and relate it to various climate drivers.[1167] They found that early calf survival in the PCH was strongly influenced by spring and early summer forage conditions, while this had little influence on the CAH. In contrast, early calf survival in the CAH responded strongly to snow conditions in the previous fall, which have less effect on the PCH. These differences mean that development is likely to have disparate effects on the two herds. The DEIS notes that "[a]lthough several potential demographic impacts of development on CAH caribou have been reported…, the CAH increased in size between 1978 and 2010 before declining in size between 2010 and 2016."[1168] Reports of a CAH population increase during a period of increasing oil and gas development are likely due to a number of factors, one of which may be that limiting conditions for early calf survival occur at a time when the CAH is generally away from the main development areas.[1169] The PCH, in contrast, shows the strongest effects on early calf survival at the precise time that cows and calves would come into contact with potential Coastal Plain development – spring and early summer. Russell and Gunn conclude that, in light of this, "the documented displacement of calving in the CAH, if experienced with development in the PCH, would have more significant impacts on calf survival (for the PCH) than occurred in the CAH."[1170] BLM needs to account for this in the DEIS.

In addition, comparison of population patterns for the CAH and PCH would be enhanced by inclusion of quantitative population data in the DEIS. This is currently lacking. BLM needs to provide these data for the CAH both for the pre-oil and gas exploration and development period, particularly prior to Prudhoe Bay exploration in 1968 and intense construction of the Trans-Alaska Pipeline between 1969–1977, as well as for the period following exploration and development. Along with data from both periods, any limitations of the data should be discussed. This will allow a more robust assessment of population trends and potential development impacts.

c. Greater Insect Harassment Risk for the PCH

As described above, insect harassment is a major driver of caribou movement and can have important consequences for caribou energy balance and the ability to obtain sufficient forage to support calves and prepare for winter. Russell and Gunn describe how shifts in distribution of the CAH away from infrastructure came with a tradeoff in ability to reach coastal insect relief habitat.[1171] One reason the CAH might have been able to sustain this tradeoff, however, is due to a lower overall insect exposure. A spatial analysis of mosquito activity index based on temperature and wind speed records indicated that 70% of the CAH summer range occurs within the lowest mosquito activity category, while only 20% of PCH summer range

[1167] Russell and Gunn. 2019.
[1168] DEIS vol. 1 at 3-114.
[1169] Nicholson et al. 2016.
[1170] Russell and Gunn. 2019 at 35.
[1171] Russell and Gunn. 2019.

occurs in the same category.[1172] Thus, insect harassment effects may be stronger on the PCH compared to the CAH, accentuating the effect of any hindrance of caribou in reaching insect relief areas. BLM must evaluate this, given the DEIS' acknowledgement of the potential for "deflection and delays in caribou movements across roads and pipelines during the summer insect season."[1173]

d. Assumed Caribou Displacement Buffer Is a Minimum Estimate

The DEIS uses a 2.49-mile buffer to calculate potential displacement of calving caribou,[1174] presumably based on studies of the CAH.[1175] Terminology is inconsistent here: in some places the DEIS states that "maternal caribou with young calves would avoid infrastructure by up to 2.49 miles,"[1176] while in other places the DEIS states that they "may" be displaced.[1177] Nonetheless, the assumption clearly is made that impacts would range from the area of the gravel footprint up to a maximum of 2.49 miles out from that footprint.[1178] While we appreciate the recognition that caribou would be affected by infrastructure and would exhibit displacement, nowhere is it noted that this is a minimum estimate of displacement from infrastructure and that the actual displacement may be larger. There are several reasons to expect that potential impacts could exceed those previously recorded for the CAH. First, study of the CAH has shown that the increasing pattern of cows and calves with distance from roads may continue beyond 4 km (2.49 miles).[1179] As ADF&G summarizes, "[b]y the mid-1980s, major movements of CAH caribou through the Prudhoe Bay oil field in summer had ceased, and caribou distribution and movements within the Kuparuk oil field were altered substantially."[1180] Later studies have shown more broad shifts of CAH caribou with caribou use of areas decreasing as the density of infrastructure increased, as described above.[1181] This suggests much more extensive displacement than just 4 km. While the USGS notes that 4 km is a conservative estimate of calving displacement,[1182] BLM fails to do the same in the DEIS.

Second, the DEIS points out that "PCH caribou have had much less exposure to human development and activities than have CAH caribou…, so they would be expected to have stronger reactions to infrastructure than CAH caribou for some years."[1183] It is unclear why this is not reflected in the expected displacement away from infrastructure. Instead, the DEIS says

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[1172] Table 3 in Bali. 2016.
[1173] DEIS vol. 1 at 3-113.
[1174] DEIS vol. 1 at 3-112.
[1175] DEIS vol. 2 at E-8.
[1176] DEIS vol. 2 at E-8 (emphasis added).
[1177] E.g., DEIS vol. 2 at F-28.
[1178] E.g., DEIS vol. 1 at 3-118.
[1179] Dau and Cameron. 1986.
[1180] Lenart. 2015 at 18-2.
[1181] *See* Figure 14 in Russell and McNeil. 2005 and Figure 4.7 in Cameron et al. 2002.
[1182] Griffith et al. 2002.
[1183] DEIS vol. 1 at 3-114.

that the same level of displacement "observed at existing North Slope oil fields would be expected in the program area with similar development and mitigation design."[1184]

Third, assuming the same displacement distance as observed with the CAH ignores the potential influence of hunting. Hunting is not allowed from roads in the Prudhoe Bay complex,[1185] but will be allowed for both subsistence and non-subsistence hunters in the Coastal Plain according to the DEIS.[1186] Previous studies have shown that hunting may increase avoidance responses of ungulates to infrastructure.[1187] Indeed, one study found road effects on caribou extended up to 15 km from roads some years during hunting season.[1188] The presence of hunting in the Coastal Plain will create different conditions for the PCH compared to those experienced by the CAH, potentially increasing the effect of displacement from roads and facilities. The statement in the DEIS that "hunting is allowed along most roads in Alaska"[1189] has little relevance to this discussion, as it nonetheless is not something experienced by the CAH around oil and gas infrastructure, which is the standard being used in the DEIS to extrapolate impacts to the PCH.

For all of the reasons above, BLM should clearly state that the 4 km displacement distance used in its analyses is a minimum representation of what might be observed during calving and post-calving by caribou cows and calves and should acknowledge that development may displace caribou and/or disrupt free movement of caribou from all or most of the Coastal Plain during both calving and post-calving. Furthermore, BLM must provide a robust discussion of the above potential concerns and should revise its analysis to compare effects on caribou during calving and post-calving under a larger displacement buffer. This is important as it will influence the "potential disturbance and displacement" area calculations used by BLM to compare impacts under each alternative,[1190] potentially greatly increasing the affected area.

5. Development impacts on caribou are insufficiently addressed

There are multiple reasons that development impacts on caribou are insufficiently addressed in the DEIS. In addition to the deficiencies in baseline data and information discussed above, there are issues with certain potential impacts not being fully considered, unjustified assumptions being used, and phrasing that downplays potential impacts to caribou. Specific instances of these issues are described in the following sections.

[1184] DEIS vol. 1 at 3-114.
[1185] Lenart. 2015.
[1186] DEIS vol. 1 at 3-122.; DEIS vol. 2 at F-28.
[1187] Paton et al. 2017.; Plante et al. 2018.
[1188] Plante et al. 2018.
[1189] DEIS vol. 1 at 3-122.
[1190] DEIS vol. 1 at 3-112.

a. Seismic exploration

The DEIS downplays the potential impact to caribou and their habitats from seismic exploration, such as the geographic extent of potential operations across the Coastal Plain as well as the likelihood of repeated surveys over the life of the oil and gas program. [1191] The DEIS states that direct impacts on caribou from seismic exploration are expected to be negligible due to the low level of use by caribou during the winter.[1192] There are two problems with this conclusion. First, it ignores that the Coastal Plain has at times been used in the winter by a sizable proportion of the TCH[1193] and regularly by scattered groups of the CAH.[1194] That such events are rare for the TCH and affect relatively small numbers of the CAH does not necessarily mean the impacts are insignificant. What would the consequences be for the CAH, TCH or another caribou herd if, in a year when conditions drove them to use the Coastal Plain, there were inhibited from doing so by seismic exploration or other activities and infrastructure? It is surprising that BLM gives no consideration to this possibility, even if rare, given that the DEIS acknowledges this occasional use of the Coastal Plain by the TCH.[1195] This should be considered and the potential consequences if it were to occur should be clearly stated and supported by scientific justification.

The second problem involves potential impacts to the PCH. The end date permitted for seismic exploration could influence the likelihood of impacts to caribou. When SAExploration applied for a permit to conduct seismic exploration in the Arctic Refuge in the 2018–2019 and 2019–2020 winter seasons, it requested a plan of operations ending on May 31st or the date of tundra closure.[1196] As of the submission of these comments, SAExploration has indicated that it will seek permits for 2019–2020 and 2020–2021, so we do not know if the company would be granted permission to operate at all or if dates would extend through May 31st. Such an end date would almost certainly bring exploration activities into contact with pregnant caribou arriving on the Coastal Plain calving ground. Caribou preparing to calve typically arrive on the Coastal Plain by mid- to late-May, though they have been noted as early as May 5th in light snow years.[1197] The U.S. Geological Survey (USGS) reported median arrival dates on the Coastal Plain of collared pregnant females as ranging from May 17 to June 4.[1198] The first calves are usually born the last week of May,[1199] and peak calving even has been reported in late May.[1200] In light of this, it is possible that calving ground arrival, and even calving itself, could coincide with the end of the seismic exploration season. As calving is a time when caribou mothers and calves are highly sensitive to disturbance,[1201] the unquestionably significant impacts that any overlap of

[1191] *See supra* seismic section.
[1192] DEIS vol. 1 at 3-110, 3-112.
[1193] Person et al. 2007.
[1194] Clough et al. 1987.
[1195] DEIS vol. 1 at 3-104.
[1196] SAExploration. 2018.
[1197] Garner and Reynolds. 1986.
[1198] Griffith et al. 2002.
[1199] Garner and Reynolds. 1986.
[1200] Skoog et al. 1963.
[1201] Dau and Cameron. 1986.

seismic exploration with calving ground arrival and calving would have must be considered in the EIS. BLM needs to explain why, in light of the information presented above, no consideration is given to the impact of end-of-season seismic dates on caribou.

Indirect effects of seismic exploration are also a concern for caribou. While these are mentioned in the DEIS, the full impacts are not adequately considered. The DEIS acknowledges that timing of snowmelt could change due to compaction of snow caused by seismic exploration, and that this could reduce forage availability for caribou.[1202] Furthermore, it is noted that long-term damage to forage plants is likely to occur,[1203] with impacts lasting about 20 years.[1204] This was based on the results of a single 2D seismic program; proposed and future 3D seismic surveys with closely spaced seismic lines used by greater numbers of heavier vehicles over the life of the oil and gas program could result in higher impacts.[1205] This is of great concern for caribou calving and post-calving habitat. As is noted above, the post-calving period is a crucial time for caribou to obtain sufficient high-quality forage to meet their energy needs during lactation and to begin re-building energy stores depleted during the winter. The BLM must fully evaluate, based on the best-available science, the impacts that damage to vegetation may have on caribou. This needs to be done with references to scientific studies. The DEIS alleges that seismic exploration "could also extend the time when highly nutritious, early growth forage is available after snowmelt."[1206] BLM provides no support for this conclusion, leaving the reader unable to evaluate whether or not the statement is justified. Scientific evidence for this statement must be clarified and the relative effects of any potential benefits must be weighed against the foreseeable significant negative effects specified above. Furthermore, scientific information must be evaluated for impacts to caribou and their habitat from all elements of seismic operations, including seismic trails, camp and fuel move trails, and snow trails, as well as any summer "stickpicking" clean up or follow-up ground work conducted in summer associated with seismic exploration.

The concerns above are especially strong because even under Alternative D, where some of the PCH primary calving habitat (using the DEIS definition) is set aside for no leasing, the DEIS acknowledges that "seismic activity could occur over the entire program area."[1207] It is deeply troubling that seismic exploration would be allowed under Alternative D in an area set aside to protect sensitive caribou calving habitat, especially because such exploration would serve no apparent purpose given that the areas are unavailable for leasing. The BLM should not allow this and must give a thorough rationale for why seismic exploration would be allowed in an area with no leasing.

[1202] DEIS vol. 1 at 3-112.
[1203] DEIS vol. 1 at 3-112.
[1204] DEIS vol. 1 at 3-71.
[1205] Walker et al. 2019.
[1206] DEIS vol. 1 at 3-112.
[1207] DEIS vol. 1 at 3-120.

b. Importance of less frequently used calving and post-calving habitat

Much attention is focused in the DEIS on "primary calving habitat" and post-calving habitat, based on repeated use over time.[1208] The DEIS "defines important calving grounds as the high-use PCH calving area (area used in greater than 40 percent of years)."[1209] It is important to note, however, that annual calving areas used less frequently may still be of great importance to the ability of a caribou herd to survive and thrive. Annual calving grounds tend to occur in areas with higher rates of increase for vegetation productivity, as measured by the Normalized Difference Vegetation Index (NDVI).[1210] The importance of caribou accessing nutritious forage during the calving and post-calving periods has been described above. These areas vary spatially over time, and the PCH appears to shift its calving areas in response.[1211] Because of this, the entire Coastal Plain is important to caribou over time.[1212] Indeed, historic records show calving and even concentrated calving, along with large post-calving aggregations, in the western parts of the program area.[1213] While the DEIS acknowledged the 2015 findings of the USFWS, that "due to the annual variability in the calving area, the PCH needs a large region from which to select the best conditions for calving in a given year,"[1214] it also contends that, while "[h]abitat loss would reduce forage availability for terrestrial mammals," "foraging habitat is abundant across the program area."[1215] This assumes that forage habitat is of equal quality everywhere, a contention not borne out by previous studies. In their 2002 report on the PCH, USGS concluded that "unrestricted access to annual calving grounds and concentrated calving areas maximized performance of lactating Porcupine caribou herd females and their calves."[1216] Caribou need to be able to track varying resources. For these reasons, the entire Coastal Plain is important for caribou, not just areas that have shown repeated use in the recent past. As USFWS described, "[c]ertain areas within a caribou herd's range may not be used by caribou for a long period. But as herd movement patterns shift (possibly due to climatic changes), these infrequently used areas may become important."[1217] The potential for climate change-induced shifts in calving areas is acknowledged in the DEIS,[1218] but not taken into consideration when evaluating important habitat. It is the responsibility of BLM to evaluate, using the best available scientific information, the potential costs for caribou population growth of being unable to access nutritious forage for one or a few years in a row due to development, rather than just asserting that an abundance of habitat means there will be no consequences of displacement.

[1208] E.g., DEIS vol. 1 at 2-13 and 2-14.
[1209] DEIS vol. 2 at E-8.
[1210] Griffith et al. 2002.
[1211] Griffith et al. 2002.
[1212] Caikoski. 2015.
[1213] E.g., Garner and Reynolds. 1986.
[1214] DEIS vol. 1 at 3-107, citing USFWS. 2015.
[1215] DEIS vol. 1 at 3-112.
[1216] Griffith et al. 2002 at 32.
[1217] Garner and Reynolds. 1986 at 241.
[1218] DEIS vol. 1 at 3-110.

Furthermore, BLM needs to consider the full range of records of caribou use when delineating important caribou habitat. Caribou have continuously inhabited the range of the PCH for over 400,000 years according to paleontological evidence.[1219] As Joshua Miller relates in his comments on the DEIS, based on paleontological research he has done on the Coastal Plain, antler records show calving and other patterns of use for both male and female caribou across the Coastal Plain stretching back thousands of years.[1220] Written references to caribou on the Coastal Plain date back to 1825,[1221] while artifacts and bones confirm use of caribou by indigenous people 12,000–17,000 years ago or more.[1222] Western scientific information dating back to at least the early 1950s on distribution and habitat use should also be considered.

c. Road effects on caribou habitat

As is noted above, caribou rely on movement to access nutritious forage and avoid predators and insects. Freedom to roam is thus an important element of caribou habitat. There are no roads today in the Arctic National Wildlife Refuge, nor in the adjacent Ivvavik and Vuntut National Parks in Canada. The DEIS fails to fully consider the unique risks to unimpeded access that major transportation networks and oil field roads pose to caribou movements and use of the Coastal Plain. Those risks are exacerbated by the narrowness of the Coastal Plain in the Arctic Refuge.

The hypothetical development scenario states, without scientific analysis:

> In caribou areas, potential roads would be built on north-south and east-west orientations to the extent possible to limit interference with caribou migration. Figure B-2, Conceptual Layout of a Caribou Area Stand-alone Oil Development Facility, shows how the hypothetical layout could be adjusted for caribou mitigation if deemed appropriate by permitting agencies.[1223]

Figure B-2 depicts a slightly different layout of the roads radiating out from the Central Processing Facility to additional "satellite" drill sites, but no explanation is provided for assumptions about why it would be expected to have a differing impact on caribou compared with Figure B-1. Furthermore, no analysis was provided for how a major road and transportation system and infield roads would affect caribou movements. BLM needs to address these issues using strongly supported scientific information.

Nor does the DEIS fully analyze other reasonably-foreseeable infrastructure impacts on caribou. This includes the impacts of temporary exploration roads, gravel extraction,[1224] and water withdrawals and hauling for ice infrastructure and other needs — particularly considering

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[1219] Nuttall et al. 2005.
[1220] Miller. 2019.
[1221] Franklin. 1828.
[1222] Nuttall et al. 2005.
[1223] DEIS vol. 2 at B-13.
[1224] *See* gravel section.

the relative lack of Coastal Plain freshwater.[1225] The DEIS lacks specific analysis of where temporary and permanent infrastructure is likely to be located or where water withdrawals, water reservoirs, and gravel extraction are likely to take place. Without that information, BLM cannot analyze reasonably foreseeable disturbance impacts to caribou.

There has been extensive research on negative impacts of roads associated with the Trans-Alaska Pipeline and the Prudhoe Bay oilfield complex to the CAH.[1226] The DEIS fails to provide an adequate synthesis of the impacts to caribou documented in dozens of monitoring and research studies conducted over many decades by biologists of the Alaska Department of Fish and Game, federal agencies, University of Alaska Fairbanks scientists and others, nor of their evaluations of differences in potential effects for the PCH due to the natural landscape, habitat use and migratory patterns.[1227] Such research on effects to caribou and their habitats was addressed in an extensive synthesis of cumulative impacts of oil and gas activities by the National Academy of Sciences.[1228] The DEIS obscures or downplays these documented major and accumulating effects, and evades its responsibility to provide sufficient discussion by stating: "impacts of oil and gas development on caribou have been summarized in various reviews, along with appropriate mitigation measures (Shideler 1986; Cronin et al. 1994; Murphy and Lawhead 2000; Lawhead et al. 2006), which are incorporated here by reference and are summarized below."[1229] That approach — which is repeated throughout the impacts analysis, including for behavioral responses from potential disturbance[1230] — does not satisfy BLM's obligation to take a hard look at reasonably foreseeable impacts to caribou.

The DEIS acknowledges that habitat alteration and snowdrifts along roads would delay and ultimately reduce local forage availability for caribou.[1231] As is stated in the previous section, this raises concerns that should be addressed about the ability of caribou to acquire adequate forage to meet their energetic needs during the calving and post-calving periods. The DEIS also fails to include adequate discussion of the toxicological effects of roads. The DEIS states that dust generation during creation of gravel roads and travel upon those roads "may add toxic metals to roadside vegetation that mammals forage."[1232] This is a significant potential consequence, yet it was not even mentioned in the DEIS description of road effects.[1233] Contaminants in snow have been previously documented at Prudhoe Bay.[1234] Contaminants are

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[1225] *See* water resources section.

[1226] E.g., Cameron et al. 1979.; Cameron and Whitten. 1979.; Cameron and Whitten. 1980.; Whitten and Cameron. 1983.; Smith and Cameron. 1985.; Dau and Cameron. 1986.; Cameron et al. 1992.; Smith et al. 1994.; Cameron et al. 1995.; Nellemann and Cameron. 1996.; Nellemann and Cameron. 1998.; Cameron et al. 2005.

[1227] E.g., Griffith et al., 2002.

[1228] National Research Council. 2003.

[1229] DEIS vol. 1 at 3-110; *see also* discussion re: improper tiering.

[1230] E.g., DEIS vol. 1 at 3-113.

[1231] DEIS vol. 1 at 3-113.

[1232] DEIS vol. 1 at 3-117.

[1233] E.g., around DEIS vol. 1 at 3-113.

[1234] Snyder-Conn et al. 1997.

of special concern given that studies in Prudhoe Bay have shown that indirect effects of infrastructure combined with rapid climate change have increased rates of thermokarsting, creating more channels.[1235] This may exacerbate spread of toxic dust, increasing the level of impact. Studies of drilling waste reserve pits documented dispersal of drilling waste components across tundra wetlands and ponds away from the actual drilling sites,[1236] and at nearshore drilling sites.[1237] Additional information is needed about the likelihood of such toxic metal deposition and about the expected impacts it would cause on caribou. Such discussion must be supported by the best-available scientific information and include studies elsewhere in Alaska.[1238] It is especially important that this topic be addressed if fugitive dust leads to early snowmelt and green-up, attracting caribou to areas near roads.[1239] Toxic metals could change such early snowmelt from potentially beneficial, as claimed in Table 3-19, to having a significant adverse effect on caribou. This is especially of concern in calving and post-calving habitat (which occupy the entire Coastal Plain), as young organisms, especially those that are still feeding on milk, experience greater absorption and lower excretion of toxic metals, making early age a critical period for metal toxicity.[1240] BLM needs to address these concerns in a much more robust and science-supported manner, clearly explaining the consequences for caribou.

d. Little evidence for assumption of habituation

The DEIS asserts that "[e]xperience in existing northern Alaska oil fields indicates that caribou and other terrestrial mammals may habituate to low-level constant noise and oilfield activities on roads and pads."[1241] Notably, no citations are given for this statement. Throughout the DEIS, the assumption is made that habituation will play a role in reducing negative impacts on caribou from development.[1242] The effectiveness of habituation is not sufficiently demonstrated in the DEIS. In fact, the evidence in the scientific literature for habituation to infrastructure in caribou is equivocal at best. A search of the scientific database *Web of Science* for studies of caribou habituation revealed only three peer-reviewed studies of caribou habituation to oil and gas activity. Two of these look at habituation within the CAH.[1243] While both claimed to show evidence of habituation, Haskell et al.[1244] base this largely on use of areas closer to infrastructure during the post-calving period, when insect harassment is a dominant driver of caribou space use. Calving caribou only moved closer to infrastructure during the calving period in one of the three years evaluated.[1245] The second study[1246] found no evidence of

[1235] Raynolds et al. 2014.
[1236] West and Synder-Conn. 1987.; Woodward et al. 1988.
[1237] Snyder-Conn et al. 1990.
[1238] E.g. Hasselback et al. 2005.
[1239] DEIS vol. 1 at 3-113.
[1240] Jugo. 1977.; Kostial et al. 1978.
[1241] DEIS vol. 1 at 3-114.
[1242] E.g., DEIS vol. 1 at 3-115, 3-119, 3-121; DEIS vol. 2 at E-7.
[1243] Haskell et al. 2006.; Haskell and Ballard. 2008.
[1244] Haskell et al. 2006.
[1245] Haskell et al. 2006.
[1246] Haskell and Ballard. 2008.

habituation across years. They observed greater percentages of calves and numbers of caribou per kilometer surveyed in years with earlier snowmelt and inferred this as evidence that caribou habituated to infrastructure during each year, but point out that "[t]he available data were few, so our results may benefit from further verification or falsification."[1247] Furthermore, they acknowledge that "caribou will not coexist with hunted oilfields as they have with oilfields as a refuge."[1248] As is noted above, the presence of hunting in the Arctic Refuge will present a key difference from the Prudhoe Bay and Kuparuk areas, enhancing impacts and, in this case, preventing habituation — something not acknowledged in the DEIS. The third study[1249] is cited in the DEIS as a possible indication of habituation to infrastructure by the PCH.[1250] Johnson and Russell used 27 years of location data for the PCH to examine winter distribution responses to various human infrastructure and disturbance in Canada, including both seismic lines and well sites as well as non-energy infrastructure.[1251] They found a decreasing response of caribou to human infrastructure over time, but concurrent decreases in oil and gas activities made it difficult to determine whether this was due to habituation or to regeneration of natural habitats and processes after the cessation of human activities.[1252] They specifically point out that their "measured pattern is neither definitive nor causal."[1253] It is also notable that this study was during winter, not during calving when parturient females are most sensitive, and took place in forested environments, where barren-ground caribou show different behavior than is seen in open tundra areas.[1254] In a report on mitigating oil development effects on caribou that is cited in the DEIS, Cronin et al. acknowledge that "[e]vidence for habituation to anthropogenic stimuli by the CAH in and around the oil fields is fragmentary and anecdotal."[1255] It is thus surprising that the DEIS so often assumes habituation.

Other studies of ungulates also have failed to find strong evidence of habituation to industrial development and activity. Boulanger et al.[1256] examined caribou disturbance responses near a diamond mine in Canada and found variation in avoidance responses over time but no

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[1247] Haskell and Ballard. 2008 at 628.
[1248] Haskell and Ballard. 2008 at 634.
[1249] Johnson and Russell. 2014.
[1250] DEIS vol. 1 at 3-114.
[1251] Johnson and Russell. 2014.
[1252] Johnson and Russell. 2014.
[1253] Johnson and Russell. 2014 at 61.
[1254] Bergerud. 1974.
[1255] Cronin et al. 1994 at A-67. We do not endorse or agree with many of the conclusions of Cronin et al. 1994. This report was funded by the Alaska Oil and Gas Association, who selected the participants of a workshop that was closed to the public, other researchers, conservation organizations, and the Gwich'in Steering Committee. Northern Alaska Environmental Center Press Release: Oil industry meetings privately with agencies on Caribou Study Plans (Jan. 24, 2002).Work by this group implying a lack of infrastructure impacts on caribou has been rebutted (Joly et al. 2006). We cite the report here only to reinforce the point that the very studies that BLM cites do not support its reliance on habituation to mitigate impacts.
[1256] Boulanger et al. 2012.

clear evidence of habituation. Another recent Canadian study found avoidance of long-established infrastructure, "suggesting that long-term habituation is unlikely."[1257] Similarly, recent research on mule deer (*Odocoileus hemionus*) in the contiguous United States found that the deer did not habituate to energy development even after a 15-year period and intensive mitigation efforts.[1258] A study in Norway found no evidence of habituation by reindeer to ski resorts, trails, and recreational cabins over a 20-year study.[1259] Furthermore, a group of caribou experts concluded that past experiences suggest that the PCH would show "a low degree of habituation, particularly of maternal cows, to the presence of development."[1260] The EIS must reflect the current state of knowledge and acknowledge that the current scientific literature does not justify an assumption of habituation for caribou.

e. DEIS downplays impacts to caribou in its phrasing

The way many of the impacts to caribou are described in the DEIS, including what is mentioned and what is omitted, serves to downplay the possible magnitude of negative effects. For example, while the DEIS properly acknowledges that major negative impacts to calving caribou and displacement of caribou from infrastructure will be adverse, long-term, and planning area wide,[1261] in multiple instances the phrasing of the DEIS serves to downplay the importance of this impact. This starts in the Affected Environment descriptions of calving on the Coastal Plain. The description of PCH calving switches the units of measures in ways that cover up the importance of the Arctic Refuge Coastal Plain for calving. From 1983–2001 the DEIS states that "the annual percentage of PCH females calving in the ANILCA 1002 Area (essentially the program area) averaged 42.7 percent."[1262] Presumably this refers to the percentage of collared PCH females, not all calving females, but this is not clear because no data source is cited for this claim. The presence of the same statistic in Griffith et al.[1263] leads us to assume that was the source of this information. BLM must clearly cite its sources rather than leaving the reader to infer data sources from their own research. In any event, reporting only the average percentage makes it appear that the Arctic Refuge Coastal Plain is used for calving by less than half of female caribou. Examination of the presumed source, however, reveals that while the average percentage of females calving in the 1002 Area from 1983–2001 was 43%, the percentage use each year "was quite variable" and ranged from 0-92%.[1264] Only reporting the average downplayed the fact that in some years use was quite high. From 2000 to 2011 the DEIS description is of the number of years in which "annual concentrated calving areas occurred in the Yukon or near the Yukon-Alaska border."[1265] The resulting claim of 8 out of 12 years where concentrated calving occurred mostly outside of the program area again suggests the relative

[1257] Plante et al. 2018 at 138.
[1258] Sawyer et al. 2017.
[1259] Nellemann et al. 2010.
[1260] Elison et al. 1986 at 21.
[1261] Table 3-19 in DEIS vol. 1 at 3-111.
[1262] DEIS vol. 1 at 3-106.
[1263] Griffith et al. 2002.
[1264] Griffith et al. 2002 at 17.
[1265] DEIS vol. 1 at 3-106.

unimportance of the Coastal Plain for calving. This time a source is given. Review of that source reveals that in addition to reporting the trend of concentrated calving primarily occurring outside of the program area from 2000–2011, USFWS also reports that "[f]rom 1983-1999, concentrated calving areas were in Arctic Refuge in all years and also occurred in the Yukon in 3 of 17 years."[1266] Had the same unit of measure been used for both the 1983–1999 period and 2000–2011, it would have presented a very different picture. As is noted above, historic records point to use of the Arctic Refuge Coastal Plain for caribou calving for thousands of years. Furthermore, as we discuss above, even in years in which the PCH primarily calved in Canada, the herd has travelled to the Arctic Refuge Coastal Plain for food and insect relief during the post-calving period.[1267] It is important that BLM reflect the importance of the Arctic Refuge Coastal Plain in the EIS and not downplay it by selectively choosing which statistics to report.

Impacts to caribou are also minimized in the DEIS by including them outside of the main caribou section. While the DEIS acknowledges that "future oil and gas infrastructure in the program area, particularly in the PCH calving grounds, could cause a shift in calving distribution during some years, which would likely reduce calf survival and halt herd growth," potentially resulting in reductions in calf survival and herd numbers,[1268] this comes in the Subsistence Uses and Resources section, rather than in the Terrestrial Mammals section. Impacts to caribou must be clearly stated in the sections on caribou so that the public is able to determine the full weight of potential impacts.

f. Inconsistent impact metrics hinder effective analysis

Much of the analysis of potential development impacts on caribou in the DEIS relies on the hypothetical development scenario and descriptions of expected impact. Different descriptions of the amount of the environment affected, however, prevent clear evaluation of what the true impacts may be. For example, in Chapter 3, the DEIS states that the hypothetical schematic of an anchor-field footprint totals 750 acres, resulting in 633,000 acres of potential disturbance and displacement for caribou.[1269] Presumably the 750 acres is representative of Figures B-1 and B-2, as the description "(one CPF and 6 radiating 8-mile access roads to 6 drill pads, including an STP pad and a 30-mile access road, totaling 750 acres)"[1270] precisely matches what is shown in those figures.[1271] In Appendix E, however, BLM states:

> Surface disturbance associated with one CPF in the high-use PCH calving area could total up to 488 acres based on Figure B.2., Conceptual Layout of a Caribou Area Stand-along Oil Development Facility, in Appendix B. Depending on the configuration of the oil field, displacement of maternal caribou around 488

[1266] USFWS. 2015 at 4-101.
[1267] Griffith et al. 2002.
[1268] DEIS vol. 1 at 3-173.
[1269] DEIS vol. 1 at 3-112.
[1270] DEIS vol. 1 at 3-112.
[1271] DEIS vol. 2 at B-14 and B-15.

acres of surface disturbance could total up to 118,500 acres (4 percent) of the high-use calving area.[1272]

This reference to the hypothetical development figure states that the facility acreage is only about 65% of that listed in Chapter 3, resulting in an estimated displacement area that is less than 20% of the size reported in the Chapter 3. Simple addition of the acreages shown in Figure B-2 yields 732 acres total,[1273] suggesting the Appendix E estimate may be incorrect. This difference is very disturbing, especially as it seems that BLM is drastically underestimating effects in its ANILCA 810 subsistence analysis that are clearly acknowledged elsewhere.[1274] This raises grave concerns about the impacts estimated for caribou and the conclusions drawn in Appendix E. BLM needs to fix this discrepancy and clearly explain what the level of impact is expected to be and how it was derived from the diagram.

g. Lack of analysis of gravel mining effects

BLM acknowledges that gravel mining would result in habitat loss and alteration,[1275] yet gravel mines are not included in the 2,000-acre limit.[1276] The justification given for not including gravel mines, that they "supply raw materials for construction of oil and gas facilities but are not themselves oil and gas facilities any more than are mills that supply steel for construction of pipelines and other facilities,"[1277] completely ignores the difference between facilities located far outside the Arctic Refuge and those located within its boundaries. If steel mills were proposed to be created within the program area it would be essential that they and their impacts be considered. So too should the direct, indirect, and cumulative impacts of gravel mines be considered. Unfortunately, the impacts of gravel mining largely were not considered when analyzing potential impacts of development on caribou.

Caribou have been shown to respond negatively to mining, exhibiting displacement from the area around mines[1278] and alteration of movement behavior in response to mining roads and traffic.[1279] The DEIS acknowledges that studies have shown larger areas of displacement for caribou than reported around roads in the Prudhoe Bay area,[1280] but nevertheless bases its

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[1272] DEIS vol. 2 at E-9.

[1273] Calculation based acreages listed in Figure B-2 in DEIS vol. 2 at B-15: 1 CPF x 50 acres + 6 satellite wells x 12 acres each + 1 seawater treatment plant x 15 acres + 1 barge landing location x 10 acres + (1 road from the seawater treatment plant to the development area x 30 miles + 6 access roads to satellite wells x 8 miles each) x 7.5 acres per mile of road (as stated in DEIS vol. 2 at B-16) = 147 acres from buildings + 585 acres from roads = 732 acres total. Note that acreages, road miles, and facility numbers are identical in Figure B-1 also.

[1274] *See also* discussion re: subsistence and ANILCA 810.

[1275] DEIS vol. 1 at 3-112.

[1276] DEIS vol. 1 at 1-6.

[1277] DEIS vol. 1 at 1-6.

[1278] Boulanger et al. 2012.; Plante et al. 2018.

[1279] Wilson et al. 2016.

[1280] DEIS vol. 1 at 3-114, citing Boulanger et al. 2012.

displacement analyses on a 4 km road displacement distance and ignores any compounding effects of mining removing additional caribou habitat. Displacement due to mining may be 3–5 times larger than the 4 km area that BLM assumes for roads.[1281] Furthermore, Required Operating Procedure (ROP) 24 has a goal of minimizing the impact of mining on air, land, water, fish and wildlife[1282] but no mention is made of caribou, nor do any provisions prohibit mine placement within caribou habitat, NSO or no leasing areas. BLM needs to clearly specify where gravel mining will be allowed within or near the program area to allow evaluation of its impacts. It must then use that information in conjunction with the scientific evidence cited above to quantitatively evaluate the direct, indirect and cumulative impacts to caribou from gravel mining in or near the program area.

h. Numerous points are asserted with insufficient justification

There are a number of points in the DEIS where statements are asserted with no or insufficient support or citation. This is problematic for the document's ability to be adequately reviewed by the public. While several such instances are described elsewhere in these comments, additional examples are provided here. For example, the DEIS asserts that mitigation measures under Alternative B "would be adequate to maintain caribou passage to coastal areas."[1283] No citation or support is given for this statement. Indeed, it is not even clear to which specific measures BLM is referring. Moreover, the statement seems in sharp contrast to recognition by ADF&G that "[b]y the mid-1980s, major movements of CAH caribou through the Prudhoe Bay oil field in summer had ceased, and caribou distribution and movements within the Kuparuk oil field were altered substantially."[1284] BLM needs to demonstrate based on the scientific literature, not simply assert, why and how specific proposed measures will adequately allow caribou passage. [1285]

Another example comes from the DEIS assessment of road mortality risk to caribou. The DEIS states that traffic management and vehicle use plans and prohibitions on chasing caribou with vehicles "sufficiently mitigate mortality risk to caribou on the North Slope."[1286] The citation given for this statement is a personal communication by Alex Prichard, one of the consultants who helped prepare the Terrestrial Mammals section of the DEIS.[1287] Serving both as an author of the DEIS and as the source of a personal communication about the sufficiency of the DEIS presents a conflict of interest and offers insufficient justification for the recorded claim. BLM needs to provide a robust scientific analysis of the proposed road mortality mitigation measures that demonstrates how and why they will "sufficiently mitigate mortality risk to caribou."

[1281] Boulanger et al. 2012.; Plante et al. 2018.
[1282] DEIS vol. 1 at 2-27.
[1283] DEIS vol. 2 at E-7.
[1284] Lenart. 2015 at 18-2 and citations therein.
[1285] *See also* mitigation measures discussion.
[1286] DEIS vol. 2 at E-7.
[1287] DEIS vol. 2 at C-2.

A third example regards the DEIS' statements about caribou displacement. It is asserted that, "[c]aribou would be displaced from areas that no longer have suitable forage, but displacement is not expected to be widespread. Caribou could still forage within the total footprint of a CPF and its associated satellite well pads, for example."[1288] Again, no citations are provided. The claim that "displacement is not expected to be widespread" is surprising in light of the DEIS's recognition of displacement of caribou with calves due to development[1289] and the estimated acreages of potential calving displacement that are larger than the entire area available for leasing under some alternatives.[1290] As is described above, these estimates are minimums. The assertion that caribou could forage within the development footprint ignores the history of CAH animals gradually abandoning concentrated use of much of the development complex to the west of the Arctic Refuge. As a recent Canadian report points out:

> [T]he CAH, especially cows and calves, altered their behavior and distribution as risk aversive responses to the oilfields and those responses have persisted for over 40 years. Current monitoring describes cows and newborn calves continuing to avoid roads and shifted calving distribution based on aerial surveys and location of collared caribou which does raise questions about the effectiveness of mitigation.[1291]

We agree with their concern. Results from the CAH suggest that even "state of the art" mitigation measures have not been effective and raises great concerns about the impacts to caribou foraging that would arise from concentrated development in the Arctic Refuge. The DEIS assertions also raise concerns about the resulting impacts to subsistence hunting of caribou displacement away from development, which the DEIS minimizes.[1292]

Yet another example involves statements about the effectiveness of timing limitations to protect caribou. Appendix E in the DEIS states that "[r]esearch has demonstrated that TLs [timing limitations] effectively mitigate the majority of impacts to caribou," though it acknowledges that they are not effective for mitigating displacement of maternal caribou during calving.[1293] No citation is given to explain what "research" is being referred to here. It is notable that nowhere in Chapter 3 of the DEIS is justification for the effectiveness of timing limitations given. Instead, Chapter 3 states, "the potential impacts of the alternative on caribou would depend, in large part, on how well these TLs avoid displacement of calving caribou and impediments to caribou movements during other times of year when caribou are present."[1294] This seems much more tentative than the bold, but unsupported, claim in Appendix E. The DEIS needs to be consistent in its representation of the impacts of development on caribou and to clearly cite its sources when making claims, especially if those claims are used to indicate a lack

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[1288] DEIS vol. 2 at E-6.
[1289] DEIS vol. 2 at E-8.
[1290] DEIS vol. 1 at 3-121.
[1291] Russell and Gunn. 2019 at 89.
[1292] DEIS vol. 2 at E-6; *see also* subsistence and ANILCA 810 discussion.
[1293] DEIS vol. 2 at E-8 – E-9.
[1294] DEIS vol. 1 at 3-118.

of impact on caribou and subsistence users. This is especially the case given that a report by well-published caribou experts recently stated, "We simply do not know whether… continuing drilling while shutting down construction (Time Limited stipulation) is effective mitigation."[1295] BLM needs to update its statements to conform with the best-available science.

i. Cumulative effects are insufficiently addressed

The cumulative effects analysis for caribou is very brief and primarily provides background, describing what has happened in the program area in the past, but not drawing implications from it for the future[1296] — which, of course, is the entire point of a cumulative effects analysis. There is no discussion of the effects of other development outside of the project area. This is surprising as cumulative effects are to be analyzed across the annual range of both the PCH and CAH.[1297] Analyses of the effects of existing infrastructure on the PCH and CAH are needed to enable quantification of cumulative (i.e., added) effects of proposed development within the program area.[1298] Furthermore, impacts of foreseeable future development within the PCH and CAH herd ranges also need to be analyzed for how they may compound potential Coastal Plain development. This is a serious omission for the CAH, as the DEIS states that "[i]nfrastructure to support development in the program area may facilitate additional development west of the program area, potentially altering the behavior and movements of CAH caribou."[1299] The potential for this facilitated development and how it may affect the CAH, along with other development on State lands west of the Arctic Refuge, should be specified by BLM in the cumulative effects section. Furthermore, the DEIS fails to address the cumulative effects of the proposed action and expanding oil field infrastructure and activities to the west of the Refuge on the PCH during times when large aggregations move west of the Refuge boundary during post-calving/insect relief season.[1300]

In addition, it is surprising that no mention or analysis is made of the Arctic Strategic Transportation and Resources (ASTAR) project in the cumulative effects section. Appendix F states that "ASTAR is in its preliminary stages"[1301] but does not otherwise justify ignoring the project in analyses of cumulative effects. The DEIS defines reasonably foreseeable future actions as those that are likely, or reasonably certain, to occur based on plans, permit applications, and fiscal appropriations.[1302] While the ASTAR project has not yet secured funding to build infrastructure, it has acquired funding from the Alaska State Legislature to conduct a planning process. The November 2, 2018 letter from the Alaska Department of Natural Resources and

[1295] Russell and Gunn. 2019 at 92.
[1296] DEIS vol. 1 at 3-122.
[1297] DEIS vol. 2 at F-28.
[1298] Russell and Gunn. 2019.
[1299] DEIS vol. 1 at 3-110.
[1300] Thayer. 1967, 1968.
[1301] DEIS vol. 2 at F-11.
[1302] DEIS vol. 2 at F-6.

North Slope Borough to the DOI Assistant Secretary for Land and Minerals Management[1303] requesting BLM revise the Integrated Activity Plan (IAP) for the National Petroleum Reserve – Alaska (NPR-A), in part because of the ASTAR process, seems to clearly indicate intention to proceed. Furthermore, since the ASTAR project first started posting maps displaying potential futures for the project, the maps have included potential roads that stretch up to the western edge of the Arctic Refuge Coastal Plain. These maps have changed multiple times since they were initially posted in 2017, but the most recent map[1304] still shows roads passing along the edge of the program area, which falls within the range of both the CAH and PCH. This warrants inclusion in the cumulative effects analysis.

BLM also neglects to address any potential impacts to caribou habitat on private lands within the Refuge, even though concentrated PCH calving habitat exists there,[1305] along with significant coastal insect relief habitat used by large numbers of caribou during the post-calving season. Furthermore, BLM's Hypothetical Development Scenario assumes that a CPF may occur on private land.[1306] This has also been assumed in assessments by USGS.[1307] Impacts associated with such development must be assessed. Cumulative impacts must address potential infrastructure and activities on lands within the external boundary of the Arctic Refuge Coastal Plain, and within the full range of the CAH and PCH.

j. Climate change threats are inadequately weighted

The DEIS is correct in pointing out that climate change is likely to have multiple, possibly counteracting, effects on caribou.[1308] However, the conclusion drawn as a result – that "[b]ecause climate change could involve both adverse and beneficial effects on caribou, it is not possible to predict the impacts on the PCH and CAH"[1309] – is unduly equivocal and misleading. The DEIS lists one positive potential effect of climate change[1310] and ten potential negative effects.[1311] Not listed were potential negative consequences such as sudden pathogen outbreaks that can lead to sudden and large-scale die offs of herbivores, such as was seen in 2016 in Russia

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[1303] Available from https://eplanning.blm.gov/epl-front-office/projects/nepa/117408/162755/198560/11.2.18_Ltr_to_AsstSecDOI_Balash_NPRA_IAP_Coop_Agency_Request.pdf.

[1304] Arctic Strategic Transportation and Resources website. https://www.arcgis.com/apps/Cascade/index.html?appid=ab8be9349a08477ebfb66d017e0aec8d.

[1305] Map 49 in Appendix B.

[1306] DEIS vol. 2 at B-19.

[1307] Attanasi. 2005.

[1308] DEIS vol. 1 at 3-109.

[1309] DEIS vol. 1 at 3-109.

[1310] Increased access to forage. DEIS vol. 1 at 3-109.

[1311] Increased shrub abundance, decreased forage quality, increased insect harassment, increased parasite incidence, more rapid annual decline in forage quality, increased predator densities and altered distributions, increased rain-on-snow events, phenological mismatch, earlier mosquito emergence, altered migration conditions due to earlier melting of ice and snow and earlier river breakup. DEIS vol. 1 at 3-109.

when over 2000 reindeer were killed by anthrax that was apparently exposed by melting permafrost.[1312] In 2015, an outbreak of *Pasteurella* similarly killed off over 200,000 saiga antelope (*Saiga tatarica tatarica*), which calve in large aggregations somewhat similarly to caribou, reducing the global population by over 60%.[1313] Even warming temperatures, noted in the DEIS but not described as a potential negative effect, may threaten caribou. Warmer temperatures in summer have been correlated with higher adult female mortality rates in a Canadian caribou herd.[1314] With such a strong preponderance of potential negative effects arrayed against relatively few expected positive effects for cold-adapted caribou, BLM must clearly articulate reasonably foreseeable negative impacts and support any assertion that positive effects may balance or outweigh negative effects with scientific literature.

It is also important for BLM to acknowledge that the presence of both positive and negative potential effects of climate change on caribou does not necessarily make it impossible to predict impacts. An analysis from Canada used a spatially-explicit simulation model to examine net effects of both positive and negative climate-induced factors on a caribou herd.[1315] Similarly, a recent Canadian report evaluating Coastal Plain development effects on the PCH incorporated climate variability and found that it strongly influenced population consequences of development for caribou and resulting impacts on subsistence users.[1316] BLM has multiple options for how climate change effects on caribou can be evaluated quantitatively and must incorporate such an analysis of the likely net effects of climate change on the PCH and CAH to robustly reflect impacts under the proposed alternatives. A revised DEIS should incorporate cumulative analyses of potential stresses from climate change, existing development, and reasonably foreseeable future development.

k. NSO is not the equivalent of Alternative A

The DEIS repeatedly affirms the idea that "the areas of NSO would have no additional impact relative to Alternative A."[1317] Such a statement neither aligns with scientific understanding, nor with other statements in the DEIS. The DEIS clearly states that "[t]here would be no direct or indirect impacts on terrestrial mammals from post-lease oil and gas activities under Alternative A."[1318] No impacts is then the standard against which NSO areas should be compared. A first issue with the assertion of no impacts in NSO areas is that it assumes effects of development will end at the boundary of NSO areas. The idea of "edge effects" — that conditions around the edge of a habitat patch will often be different than those in the interior of the patch – has long been recognized in landscape ecology.[1319] In the context of the Coastal Plain the concern is that effects occurring in the non-NSO areas will "spill over" into

[1312] Golovnev. 2017.
[1313] Kock et al. 2018.
[1314] Russell et al. 2018.
[1315] Tews et al. 2007.
[1316] Russell and Gunn. 2019.
[1317] DEIS vol. 1 at 3-120. See also DEIS vol. 1 at 3-119, 3-122.
[1318] DEIS vol. 1 at 3-110.
[1319] Forman and Godron. 1981.

the NSO areas. This phenomenon is affirmed in the DEIS in the Recreation section where it states that under Alternative D, "some impacts associated with an anticipated 21 well pads and associated infrastructure would occur inside of the NSO areas. These would include changes to the recreation setting from artificial lighting and alteration of the recreation setting and visitor experiences from the visual presence of infrastructure and vehicles."[1320] The analysis of viewshed effects of Coastal Plain development submitted by Stuart Smith confirms that the visual effects of development would extend far across the Coastal Plain.[1321] Many of these impacts could also affect caribou, which are highly visual creatures and rely heavily on sight for predator avoidance.[1322] Indeed, DEIS statements support the idea of caribou impacts in NSO areas, though the DEIS does not explicitly acknowledge this. Under each of the action alternatives, acreage of the potential PCH calving displacement area estimated by BLM is mentioned to "likely fall into the locations with NSO."[1323] This is especially evident under Alternative D, where the potential PCH calving displacement area is larger (by almost double) than the program area remaining open to surface occupancy.[1324] By necessity much of this displacement area would have to overlap NSO areas since "[t]he amount of future construction activity is expected to be similar across action alternatives."[1325]

Another reason impacts in NSO areas are expected to exceed those under Alternative A is because seismic activity will be allowed across the entire program area.[1326] The DEIS clearly notes potential impacts from seismic exploration and, as is noted above, there is reason to conclude impacts may be greater than indicated in the DEIS. Nevertheless, there clearly will be impacts of some sort in the NSO and no leasing areas if seismic activity is allowed there that will differ from the current conditions, which would be maintained under Alternative A.

Finally, NSO stipulations are subject to waivers, exceptions, and modifications across all action alternatives. Indeed, the DEIS expressly acknowledges how particular stipulations may be waived. For example, under Lease Stipulation 2 in Alternative D surface occupancy is prohibited within 0.5 miles of certain waterbodies, except that "[o]n a case-by-case basis, essential pipelines, road crossings, and other permanent facilities may be considered through the permitting process in these areas where the lessee/operator/contractor can demonstrate on a site-specific basis that impacts would be minimal."[1327] Similar possibilities for NSO waivers are mentioned in Lease Stipulations 1, 4, 5, and 9.[1328] In these instances it is clear that impacts would be different than under Alternative A and must be analyzed. BLM may not claim that no impacts will occur in NSO areas.

[1320] DEIS vol. 1 at 3-208.
[1321] Smith. 2019.
[1322] de Vos. 1960.; Bergerud. 1974.
[1323] DEIS vol. 1 at 3-117; *see also* DEIS vol. 1 at 3-119.
[1324] DEIS vol. 1 at 3-121.
[1325] DEIS vol. 1 at 3-112.
[1326] DEIS vol. 1 at 3-120; *see also* Part III.B.8.
[1327] DEIS vol. 1 at 2-5 – 2-6.
[1328] Table 2-2 in DEIS vol. 1 at 2-4 – 2-16.

The evaluation of impacts under each alternative specifies the amount of acreage of calving and post-calving habitat that would be closed to surface occupancy based on the assumption that "[t]his could limit potential impacts on caribou in potentially important calving areas."[1329] The discussion above, however, makes clear that these acreages are not accurate representations of the unimpacted acreages across the program area. BLM needs to re-calculate unaffected acreages of calving and post-calving habitat under an assumption of development right along the NSO boundary (as would be likely to maximize the potential for directional drilling to accesses subsurface resources in NSO areas) and using a minimum 4 km displacement buffer into NSO areas. As is noted above, the 4 km buffer is a conservative estimate and BLM should also run a similar comparison using a wider displacement buffer, to show the range of possible effects on calving and post-calving caribou.

We note that development effects extending beyond the development footprint may also alter caribou calving adjacent to the program area. Data from caribou telemetry collars reveals that females that do not calve within the program area may still use areas just south of the program area boundary during the calving and post-calving seasons.[1330] Displacement of caribou from these areas as a result of activity and development within the program area is not analyzed in the DEIS. BLM needs to consider the full area of impacts on caribou when calculating acreages affected.

6. *BLM's Stipulations and Required Operating Procedures pertaining to caribou are insufficient*

We appreciate that many of BLM's proposed stipulations and required operating procedures (ROPs) attempt to mitigate impacts to caribou. However, as described above, the DEIS does not include adequate information to assess the effectiveness and enforceability of the measures, which are subject to exceptions, waivers, and modifications across all alternatives. Moreover, many of the stipulations and ROPs related to caribou must be strengthened to ensure they will meet the stated objective and effectively mitigate reasonably foreseeable impacts. To that end, we offer the following comments on specific measures.

a. Lease stipulation 3 – Springs/Aufeis

This stipulation acknowledges that aufeis "provides insect relief for caribou."[1331] Although the objective for Alternatives B and C states "[b]ecause the subsurface flow paths to perennial springs are unknown and could be disturbed by drilling or fracking, use buffer areas around the major perennial springs that support fish populations in which no leasing is permitted,"[1332] neither alternative considers no leasing in those areas. This only occurs under Alternative D. BLM should operate according to its own recommendation and likewise make

[1329] DEIS vol. 1 at 3-119. See also, DEIS vol. 1 at 3-117 through 3-121.
[1330] *See* Figure 6 in Russell and Gunn. 2019 at 24.
[1331] DEIS vol. 1 at 2-6.
[1332] DEIS vol.1 at 2-6.

spring/aufeis habitat for fish, caribou and other organisms associated with perennial springs unavailable for leasing under Alternatives B and C.

b. Lease stipulation 4 – Nearshore marine, lagoon, and barrier island habitats

The objective for this stipulation includes protection of caribou insect relief areas among its purposes.[1333] The stipulation prohibits certain types of infrastructure in coastal waters, lagoons and barrier islands, but provides a caveat that infrastructure "necessary for oil and gas activities" may be approved.[1334] No guidance is given for what conditions would be deemed "necessary," nor if there would be any limits placed on the amount or density of structures that could be approved by this process. This lack of certainty makes it unclear to what degree, if any, caribou coastal insect relief habitat will be protected over the long term. Restrictions need to be clearly specified and justified with the best-available scientific information.

Alternative D adds additional restrictions, including that — in coordination with prospective Refuge users or user groups — lessees, operators and contractors would "[d]esign and construct facilities to minimize impacts on subsistence uses, travel corridors, and seasonally concentrated fish and wildlife resources" and conduct daily operations in a way to "minimize impacts on…wildlife resources."[1335] It is unclear (and not justified) why these provisions only apply to Alternative D. These are common-sense requirements that BLM should apply across all alternatives to reduce impacts to caribou, other wildlife, and subsistence and other users. Moreover, to ensure efficacy, the stipulation should include measurable standards to achieve the broad objective of minimizing impacts, supported by the best-available scientific information.

c. Lease stipulation 6 – Caribou Summer Habitat

We agree with the acknowledgement in this stipulation that "[a]ll lands in the Arctic Refuge Coastal Plain are recognized as habitat of the PCH and CAH and would be managed to ensure unhindered movement of caribou through the area."[1336] Management to ensure unhindered movement is indeed an important goal to avoid negative consequences for caribou. Unfortunately, the stated objective of *minimizing* disturbance, hindrance and alteration of movement[1337] is inconsistent with that important goal. We urge BLM to follow its own rationale stated in the note on this stipulation and to define the objective as ensuring unhindered movement of caribou through the Coastal Plain.

It is important to note that due to the sensitivity to development of cows with young calves, as acknowledged in the DEIS,[1338] it is likely impossible to ensure unhindered movement through developed areas. This reinforces the need for large areas sufficiently far away from infrastructure and activity where cows and calves are unlikely to be affected. BLM should

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[1333] DEIS vol. 1 at 2-7.
[1334] DEIS vol. 1 at 2-7.
[1335] DEIS vol. 1 at 2-8.
[1336] DEIS vol.1 at 2-11.
[1337] DEIS vol. 1 at 2-11.
[1338] E.g., DEIS vol. 1 at 3-114.

demonstrate spatially and based on the best-available science where such areas will occur, taking into account that displacement effects from development will not stop at the boundary of an NSO or no leasing area.

Addition of timing limitations under Alternative D2 is important to improve protections to caribou and should be applied to the other alternatives. This addition states that timing limitations are intended "to restrict activities that would disturb caribou during calving and insect-relief periods."[1339] Since the entire Coastal Plain may be used by caribou during calving and post-calving,[1340] we urge that the description on page 2-12 be changed from: "If caribou arrive on the calving grounds before May 20…," to "If caribou arrive on the *Coastal Plain* before May 20…." This is necessary to ensure that the definition of "calving grounds" is not subject to interpretations that might reduce protections under the stipulation. Furthermore, as others have pointed out,[1341] minimum requirements for the 'stop work plan' developed by the lessee should be specified in the DEIS to ensure plans will achieve their intended goal.

Finally, the caveat in the timing limitation description that states, "unless approved by the BLM Authorized Officer,"[1342] is highly problematic. As written, no guidelines are given for when approval might be allowed, beyond "in consultation with the appropriate federal, state, and NSB regulatory and resource agencies."[1343] Absent measurable standards and specific guidelines for when approval might be granted (e.g., no caribou detected within 20 km of facilities by both telemetry data and aerial surveys and telemetry records from collared caribou do not show caribou heading in the general direction of the project area), this caveat should be removed. Whatever guidelines are presented must be clearly supported by the best-available scientific information.

d. Lease stipulation 7 – PCH Primary Calving Habitat Area

The note on Stipulation 7 defines the "PCH primary calving habitat area" as that "with a higher-than-average density of cows about to give birth during more than 40 percent of the years surveyed."[1344] This is a problematic definition and is not supported in the DEIS with robust scientific justification, as discussed in detail above. Moreover, areas outside of the most commonly used concentrated calving areas can still be very important for caribou in some years, as described above. Protecting only the "primary calving area" as defined here will provide little protection in some years, potentially increasing calf mortality and threatening the caribou population. This is especially a concern if warming conditions under climate change leads to "a western shift in concentrated calving areas," as the DEIS indicates.[1345] This possibility would render the strict definition of primary calving habitat given in Stipulation 7 ineffective. Instead,

[1339] DEIS vol. 1 at 2-11.
[1340] Map 49 in Appendix B.
[1341] Russell and Gunn. 2019.
[1342] DEIS vol. 1 at 2-11.
[1343] DEIS vol. 1 at 2-11.
[1344] DEIS vol. 1 at 2-13.
[1345] DEIS vol. 1 at 3-110.

BLM should recognize the clear array of historic records showing that the entire Coastal Plain is important for calving over longer timeframes and seek to avoid disturbance and hindrance of movement across the entire Coastal Plain.

Some of the timing limitation restrictions in this stipulation are similar to those in Stipulation 6 and we have the same concerns and recommendations listed above.

The added traffic restrictions in Stipulation 7 include speed limits when caribou are within half a mile of the road.[1346] Caribou can travel very quickly, covering half a mile in a matter of minutes.[1347] It is thus important to extend this boundary and to use multiple monitoring methods to manage vehicle activities. These should include: 1) daily review of location data from collared caribou to examine general movement patterns long before caribou contact roads, 2) daily or alternate day aerial reconnaissance flights in buffer areas near roads to provide more detailed location information, including of non-collared individuals, 3) road-based surveys to detect caribou proximity to roads. Traffic alteration must be started early and increasingly restricted as caribou near roads. Also, although BLM acknowledges that "15 vehicles per hour or more has been shown to deflect caribou movements and delay road crossings,"[1348] no limits on traffic volume are included her or in other stipulations and ROPs. BLM should conform to its own acknowledgement of impacts and restrict traffic below 15 vehicles per hour. Even these mitigation measures are unlikely to be ultimately effective, however, as the DEIS notes that "[s]ome level of displacement of calving caribou has been shown to occur even with low levels of traffic."[1349] The high sensitivity of calving caribou to human disturbance and sustained shifts in CAH distribution away from development areas in spite of mitigation measures[1350] indicate that the requirements specified in this stipulation are unlikely to remove disturbance and displacement of female caribou with young calves during calving.

Finally, while the stipulation states that "[t]he following ground and air traffic restrictions would apply,"[1351] no air traffic restrictions are listed. These must be specified so that their utility can be evaluated.

e. Lease stipulation 8 – PCH Post-Calving Habitat Area

The note on Stipulation 8 defines the "PCH post-calving area" using the same guidelines used for the primary calving area in Stipulation 7.[1352] This is again problematic and not supported in the DEIS with robust scientific justification. As is described above, the post-calving period is a crucial time for caribou when movement is critical to ensure access to sufficient forage while reducing the negative effects of insect harassment. Once again, areas outside of the

[1346] DEIS vol. 1 at 2-14.
[1347] Jim Dau (ADF&G caribou biologist, retired) pers. comm.
[1348] DEIS vol. 1 at 3-113 – 3-114.
[1349] DEIS vol. 1 at 3-117.
[1350] Cameron et al. 2005.; Russell and Gunn. 2019.
[1351] DEIS vol. 1 at 2-13.
[1352] DEIS vol. 1 at 2-14.

most commonly used post-calving areas will still be important for caribou in some years. Thus, protections laid out in Stipulation 7 should be applied across the entire post-calving area – the full Coastal Plain – incorporating the recommendations we provided above.

The concept of evacuating roads when attempted caribou crossings appear imminent is appropriate but details must be more clearly defined. For example, what qualifies as "appears to be imminent"?[1353] Science-based guidance should be clearly stated. Also, what needs to be done for "evacuation"? Is this simply removing people and stopping vehicle movement or actually removing vehicles from the area? If the latter, how will vehicle removal be accomplished without further disturbing caribou? Furthermore, what is the rationale for choosing "approximately 100 or more" caribou as the trigger for road evacuation? In the NPR-A IAP traffic is stopped "to allow a crossing by 10 or more caribou."[1354] Nor does BLM provide a rationale for why the date range for evacuating roads begins June 15. This does not align within the post-calving period as displayed in Map 3-21, which starts earlier. This stipulation should have language similar to that in Stipulation 6 that allows the applicable dates to be adjusted in response to the presence of caribou within the program area. It is unclear who will make the evacuation decision, what the consequences will be of not following the protocol, and who will enforce consequences. These things need to be clarified to increase confidence in the ability of this stipulation to reduce impacts on caribou. Finally, it is not specified why road evacuation standards are only specified for the timing limitation areas. Inclusion of road evacuation standards is common-sense and in line with past BLM action in the NPR-A. BLM should apply this standard across all action alternatives and across the entire program area. However, we note that this still is not likely to prevent all impacts in light of major documented effects of roads to calving caribou and summer movements recorded for the CAH.

f. Lease stipulation 9 – Coastal Area

The objective for this stipulation includes minimizing "the hindrance or alteration of caribou movement in caribou coastal insect-relief areas."[1355] The requirement to implement a conflict avoidance and monitoring plan is appropriate; however additional details are needed about standards and requirements for such a plan to ensure effective adaptive management. The DEIS needs to state standards for monitoring plans, including use of measurable, science-based indicators, clear and scientifically-supported requirements for the frequency of data collection, and clear triggers for defining necessary conflict avoidance measures. Conflict avoidance measures should also be specified and include BLM authority to disapprove of or delay permitting decisions. Responsibility for developing and implementing the monitoring plan for effects of infrastructure and activities on the coastal habitats and subsistence should be assigned to USFWS, as the surface managing agency, rather than to the lessee. BLM should specify that prior to implementation, this plan must be reviewed and approved by the relevant state, federal, and North Slope Borough wildlife and subsistence officials. It should also be specified that the

[1353] DEIS vol. 1 at 2-14.
[1354] BLM. 2013 at 83 and 89.
[1355] DEIS vol. 1 at 2-15.

results and data from the report must be made publicly available, as described below under ROP 23.

It is notable that the stipulation requires an impact and conflict avoidance and monitoring plan to be implemented "[b]efore beginning exploration or development."[1356] As BLM is currently considering a pending permit application for 3D seismic exploration, BLM should require and make available a pre-exploration conflict avoidance plan as a condition on any permit approval.

g. ROP 18

This ROP states that "[a]ll roads must be designed, constructed, maintained, and operated to create minimal environmental impacts."[1357] The BLM should note that achieving this standard with respect to caribou will often mean not building roads at all. Additional details need to be given and scientifically-justified to clarify what standards would meet the ROP objective.

h. ROP 21

Requirement h in this ROP calls for "[l]ocating facilities and other infrastructure outside areas identified as important for wildlife habitat."[1358] BLM needs to clearly identify in the EIS which areas are importance for each species across each season to ensure this otherwise generalized ROP can be meaningfully implemented and to ensure the public has adequate information to assess its efficacy. As pointed out above, the definition given in the DEIS for important caribou calving habitat is insufficient and must be updated to conform with prevailing scientific knowledge. The entire Coastal Plain is important for caribou calving and post-calving habitat.

i. ROP 23

The requirements in ROP 23 may help reduce impacts from infrastructure on caribou, but are insufficient. As described above, documented displacement and continued avoidance of areas near roads by CAH cows and calves indicate that the measures in ROP 23 are unlikely to provide sufficient protection during the calving and post-calving periods. This is compounded by the lack of information about how very large groups of caribou, larger than the peak herd size of the CAH, will respond to infrastructure when aggregated.[1359] Deflection and displacement of caribou are likely.

Tentative language in the ROP must be clarified. For example, it states that ramps or buried pipelines "may be required by the BLM Authorized Officer."[1360] Under what conditions

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[1356] DEIS vol.1 at 2-15.
[1357] DEIS vol. 1 at 2-25.
[1358] DEIS vol.1 at 2-26.
[1359] Russell and Gunn. 2019.
[1360] DEIS vol. 1 at 2-27.

would this decision be made? What circumstances would trigger use of buried pipelines or ramps? This needs to be made clear and scientifically justified. Furthermore, BLM needs to explain how such features will be accounted for within the 2000 acre limit on surface disturbance.

We agree with the requirement to perform a study of caribou movement specific to the PCH and CAH prior to authorization of construction.[1361] However, it is important that such studies, as well as creation of an overarching plan for research and monitoring, be carried out by USFWS instead of industry. USFWS is responsible for establishing a long-term integrated baseline and monitoring program for fish and wildlife for the Arctic Refuges, which would include ensuring there is adequate baseline data and research on caribou populations and their habitats and movements to evaluate future impacts of the oil and gas program activities and infrastructure to caribou.[1362] Similarly, agency scientists should conduct the required studies of caribou movement prior to authorization of construction to ensure that results are robust and made publicly available. If a previous study conducted within the last 10 years is to be used instead of completing new research, it is important that the previous study and associated data be made available to the public prior to authorization by the BLM Authorized Officer (AO) to enable thorough review of the sufficiency of the study. A mechanism should be established for the public to provide input to the AO, with sufficient time included for review of the previous report and commenting. If a new study is to be conducted, study design must be approved by the relevant state, federal and North Slope Borough wildlife management authorities and the resulting data and reports from such studies should be made publicly available.

Requirement g states that "traffic may be stopped throughout a defined area for up to 4 weeks, to prevent displacement of calving caribou,"[1363] but it does not give more specific instances of less than a full closure, such as those seen in Stipulation 8. No justification is given for why a four-week maximum is listed for closure. This should be changed to read: "…throughout a defined area whenever necessary to prevent displacement of caribou." This recommended language not only removes the arbitrary 4-week deadline but also broadens the focus from just calving caribou, to reflect the importance of the post-calving and insect relief periods.

j. ROP 28

In order "to conserve important habitat types," this ROP requires "[u]se [of] ecological mapping as a tool to assess wildlife habitat before developing permanent facilities."[1364] Creation of habitat maps is an important step toward "detailed analysis of development alternatives,"[1365] however, BLM does not specify how the resulting map would be used or what guidelines or

[1361] Requirement f in DEIS vol. 1 at 2-27.
[1362] *See, e.g.*, 16 U.S.C. § 3142(c).
[1363] DEIS vol. 1 at 2-27.
[1364] DEIS vol. 1 at 2-29.
[1365] DEIS vol. 1 at 2-29.

thresholds would be used to ascertain whether the goal of conserving important habitat types is met under future development proposals. This should be made clear.

While, map preparation prior to approval of facility location and construction and ground-based wildlife surveys are commendable, the DEIS fails to include any guidelines to inform when and how BLM will determine if such surveys are "deemed necessary."[1366] These must be clarified.

k. ROP 33

This ROP requires geospatial representations of new infrastructure be provided to BLM and the State of Alaska "to be used in monitoring and assessing wildlife movements during and after construction."[1367] This is a very important ROP and we appreciate BLM including it in the DEIS, along with inclusion of construction beginning and end dates as ancillary data. As much as possible, these dates should be provided for different components of the project to allow the finest scale analyses of construction impacts on wildlife movement. To fully achieve the objective of this ROP, we request that BLM specifically state in this ROP that provided geospatial data will be made publicly available. Furthermore, BLM should specify how it will integrate the resulting data into the USFWS monitoring plan described above. This must include how monitoring will inform management decisions, such as through establishing impact thresholds beyond which permitting will be stopped or increasing mitigation requirements.

l. ROP 34

This ROP seeks to "[m]inimize the effects of low-flying aircraft on wildlife" and people.[1368] This is an important goal. However, the ROP must be strengthened and improved to meet its objective. First, requirement c specifies a minimum altitude of 1500 feet above ground level (agl) for flights over caribou calving range and near raptor nesting sites. Federal Aviation Administration guidance recommends a minimum altitude of 2000 feet agl over all National Wildlife Refuges and other noise-sensitive areas.[1369] ROP 34 should be amended to align with this guidance and increase the minimum altitude to 2000 feet over the entire program area at all times. This will help meet the DEIS requirement to maintain the Refuge's original purposes under ANILCA while also complying with the 2017 Tax Act.[1370] It will also be consistent with the importance of the entire Coastal Plain for calving and post-calving habitat over time. It should be noted, however, that even incorporating this minimum requirement is unlikely to prevent impacts to caribou. Flight ceilings often are lower than 1500 feet agl, particularly during calving,[1371] so there is concern that weather exceptions will increase the impact of aircraft on caribou despite the guidance of this ROP.

[1366] DEIS vol. 1 at 2-29.
[1367] DEIS vol. 1 at 2-30.
[1368] DEIS vol. 1 at 2-31.
[1369] FAA. 1984.
[1370] DEIS vol. 1 at ES-1.
[1371] Ken Whitten (ADF&G PCH caribou biologist, retired) pers. comm.

Second, requirement d seeks to "[m]inimize the number of helicopter landings in caribou calving ranges from May 20 through June 20."[1372] Given the extreme importance of the calving period for population well-being and the sensitivity of cows with newborn calves to disturbance, this should be amended to prohibit all helicopter landings in calving grounds during this period.

Third, the requirements under Alternative D expand the altitude and landing restrictions to include the post-calving period. This is necessary given the extreme importance of the post-calving period to caribou and their need to access high quality forage unhindered (see above). In light of this, these provisions should apply consistently across all action alternatives. Provisions should also be expanded to include the period where cows arrive on the calving ground. If animals are deflected and unable to reach the calving ground, the consequences will be as severe as if they were displaced from the calving ground. The start date should be extended to May 1st to accommodate this and language should be included, as is done with traffic effects above, to provide flexibility if migration timing alters with a changing climate.

Fourth, this EIS provides an opportunity to better study the effects of aircraft on people and wildlife. Concerns about the impact of aircraft on wildlife and subsistence hunting have long been voiced by Alaska Native hunters.[1373] The DEIS reviews aircraft effects on caribou.[1374] Many of the studies discussed either dealt with responses to military jets or were conducted prior to 2000. Older studies have an important role to play in understanding the effects of aircraft on caribou; however, the advent of GPS technology for tracking mobile animals like caribou creates great potential to build upon past studies of caribou response to aircraft activity with a finer-scale investigation. Currently, however, the ability to do this is hindered by a lack of adequate aircraft data. In the NPR-A, BLM collects records of the number of aircraft takeoffs and landings, but not flight paths. As it is currently written, ROP 34 is likely to be similar. Requirement a mentions a plan with strategies that include aircraft types, flight altitudes and routes.[1375] To enable more detailed and spatially-explicit studies of aircraft impacts in the Arctic Refuge, we request that BLM add a requirement to ROP 34 that specifies collection of geospatial aircraft data reporting the location, time, altitude, and aircraft type of each permitted flight within the program area. These data should be housed by the USFWS or another designated federal repository and made available to researchers to enable more complete analysis of aircraft use within the Coastal Plain and its effects on wildlife, subsistence hunters, and surface resources.

m. ROP 42

This ROP necessarily prohibits chasing wildlife, especially caribou, with ground vehicles.[1376] The qualifier "with ground vehicles" should be deleted from the requirement language; chasing of wildlife with any type of vehicle should be prohibited.

[1372] DEIS vol. 1 at 2-31.
[1373] Georgette and Loon. 1988.; Halas. 2015.
[1374] DEIS vol. 1 at 3-115 and 3-116.
[1375] DEIS vol. 1 at 2-31.
[1376] DEIS vol. 1 at 2-36.

7. *Conclusions Regarding the DEIS Proposed Alternatives*

For all the reasons described in detail above, it is clear that none of the action alternatives presented in the DEIS will sufficiently protect caribou. We offer more specific critiques of the action alternatives below.

Under Alternative B, the DEIS acknowledges that "[m]inimal protection measures for development in caribou summer, calving, and post-calving habitat areas could lead to displacement and possible decline in caribou populations, which would decrease hunting and viewing opportunities."[1377] Complete leasing of the program area, combined with a lack of limits to coastal infrastructure — which are acknowledged to possibly hinder coastal movements of CAH and PCH during insect harassment[1378] — make displacement and population decline highly likely. The CCE modeling analysis affirms this, showing significant population decline for the PCH under Alternative B.[1379] Furthermore, the DEIS acknowledges that potential impacts to caribou "would be long term, lasting at least for the period of development."[1380] These acknowledged effects are unacceptable.

BLM claims that under Alternative C the protective measures limiting activity in "caribou summer, calving, and post-calving habitat would minimize the potential for species dispersion, or decline, which would indirectly maintain the quality of hunting and wildlife viewing experiences."[1381] Throughout the above comments we have raised numerous reasons why this assertion is unsubstantiated, insufficiently supported, and based upon analyses that fail to constitute best-available science. The entire program area would once again be open for leasing under Alternative C. Over half of the stipulations and all of the ROPs are identical under Alternatives B and C, reinforcing the notion that Alternative C will not ultimately provide additional protections.

While Alternative D provides the most protection to caribou of the proposed action alternatives, it nonetheless does an insufficient job of adequately protecting caribou in a way that satisfies the caribou and subsistence protection purposes of the Arctic Refuge. For instance, the DEIS admits that neither Alternatives D1 nor D2 will provide additional protection to maternal caribou: "[s]ince these assumptions [under Alternative D1] are identical to Alternative C, impacts to maternal caribou would likewise by the same,"[1382] and "[d]isplacement of maternal caribou associated with future oil and gas development in the Coastal Plain would be similar [under Alternative D2] to that expected under Alternative D1."[1383] Additional reasons why Alternative D provides inadequate protection for caribou are detailed above.

[1377] DEIS vol. 1 at 3-207.
[1378] DEIS vol. 1 at 3-117.
[1379] Russell and Gunn. 2019.
[1380] DEIS vol. 1 at 3-118.
[1381] DEIS vol. 1 at 3-208.
[1382] DEIS vol. 2 at E-13.
[1383] DEIS vol. 2 at E-15.

BLM has not provided an adequate range of alternatives that adequately protect caribou. It is necessary that BLM prepare a revised DEIS that addresses all of the issues described in these comments. Proceeding with any of the current action alternatives and based on the incomplete and inaccurate impacts analysis included in the DEIS risks grave danger to the caribou herds that utilize the Arctic Refuge Coastal Plain and the people who rely upon them for subsistence and recreation.

J. BLM'S ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON OTHER TERRESTRIAL MAMMALS IS INADEQUATE.

1. BLM's Analysis of the Impacts to Muskoxen Is Inadequate.

a. Importance of Muskoxen to the Coastal Plain

Among the U.S. states, the muskox (*Ovibos moschatus*) occurs only in Alaska. Muskox are known for their amazing come-back after being hunted to extirpation by the late 1800s in the state.[1384] In 1930, with a $40,000 allocation from Congress, thirty-four of the animals made a perilous journey from Greenland to Alaska (via New Jersey for quarantine).[1385] Though meant to be domesticated, their care became expensive and difficult and Nunivak Island became their wild home. The Nunivak herd thrived and served as a source population for reintroduction back into the Coastal Plain and Arctic National Wildlife Refuge with translocations in 1969 and 1970.[1386] Muskoxen are important subsistence species for meat, clothing shelter made from hide, and tools and crafts made from bone and horn.

A purpose of the Arctic Refuge identified by ANILCA is to conserve muskox.[1387] The BLM has not sufficiently evaluated the impacts of the oil and gas program in light of this management purpose.

b. Assessment of the Affected Environment

The DEIS states:

> The population in northeastern Alaska and northwestern Canada was estimated at 700–800 animals in the mid-1990s, but it subsequently declined to approximately 300 animals from 2007 to 2014; about 200 were located west of the Arctic Refuge and 100 were located east of it in northern Yukon (Lenart 2015b; Arthur and Del Vecchio 2017). The decline was especially steep in the

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[1384] Lent, P.C. 1999. Muskoxen and their hunters: a history. University of Oklahoma Press, Norman, Oklahoma.

[1385] Rozell, N. 2018. By 1900, no musk oxen were left in Alaska. Their journey back was from Greenland to Nunivak Island, via New Jersey. Anchorage Daily News. September 9.

[1386] Jingfors, K.T. and Klein, D.R. 1982. Productivity in recently established muskox populations in Alaska. Journal of Wildlife Manage. 46:1092-1096.

[1387] ANILCA § 303(2)(B)(i).

> Arctic Refuge, where only one muskox was observed in 2006. A group of fewer than 20 animals, which moved back and forth across the Canning River, was the only group using any part of the Arctic Refuge from 2009 to 2015 (Lenart 2015b). Predation by grizzly bears accounted for 58 percent of calf mortality and 62 percent of adult mortality from 2007 to 2011 (Arthur and Del Vecchio 2017).[1388]

Despite acknowledging this alarming population decline, the DEIS does not fully describe the affected environment relating to the muskox in a way that conveys baseline conditions essential to understanding how oil and gas leasing and activities will impact the species and its habitats.

Indeed, the muskox population on the Coastal Plain is small, isolated, and declining. After being reintroduced to the Refuge, the population grew to a high of over 400 animals in the mid-1990s.[1389] The larger population in northeast Alaska and northwest Canada dropped precipitously between 1998 and 2006,[1390] largely due to losses from the Refuge. The dramatic decline is associated primarily with increased predation by grizzly bears,[1391] but also disease,[1392] winter weather,[1393] distributional changes in the populations of other ungulates such as moose and caribou, and other factors.[1394] Muskoxen continue to occur on the Arctic Refuge, though the Refuge may not currently have a permanent resident herd.

Predation, nutritional conditions, dispersal (which can all be affected by oil and gas development), and also weather are the primary influencers on the species' population dynamics.[1395] Unlike other ungulates that inhabit the region, muskoxen do not migrate but

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[1388] DEIS at vol. 1 at 3-111–3-112.

[1389] Reynolds, P.E. 1998a. Dynamics and range expansion of a reestablished muskox population. Journal of Wildlife Management 62: 734-744; Reynolds, P.E., Reynolds HV, Shideler RT. 2002. Predation and multiple kills of muskoxen by grizzly bears. Ursus 13: 79–84.

[1390] Reynolds P.E., Reynolds, H.V., Shideler, R.T. 2002. Predation and multiple kills of muskoxen by grizzly bears. Ursus 13: 79–84; Lenart, E.A. 2011. Units 26B and 26C muskoxen management report. In: Harper P., editor. Muskox management report of survey-inventory activities 1 July 2008–30 June 2010. Alaska Department of Fish and Game, Juneau, Alaska, pp. 63–84.

[1391] Reynolds, P.E., Reynolds, H.V., Shideler, R.T. 2002. Predation and multiple kills of muskoxen by grizzly bears. Ursus 13:79–84.

[1392] Afema, J.A., Beckmen, K.B., Arthur, S.M., Huntington, K.B., and Mazet, J.A.K. 2017. Disease complexity in a declining Alaskan muskox (*Ovibos moschatus*) population. Journal of Wildlife Diseases 53(2): 311-329.

[1393] Berger, J., Hartway, C., Gruzdev, A., and M. Johnson. 2018. Climate Degradation and Extreme Icing Events Constrain Life in Cold-Adapted Mammals. Scientific Reports 8(1): 1156.

[1394] Barboza, P.S., Reynolds, P.E. 2004. Monitoring nutrition of a large grazer: Muskoxen on the Arctic Refuge. Int Congr Ser 1275: 327–333.

[1395] Reynolds, P.E. 1998b. Ecology of a reestablished population of muskoxen in northeastern Alaska. PhD Thesis, University of Alaska, Fairbanks, Alaska, 106 pp. Reynolds PE,

instead persist in the Arctic year-round.[1396] They build fat stores in summer, and conserve energy in winter by trying to avoid movement.[1397] Winter forage availability is typically of limited quantity and of low nutritional quality. Muskox winter habitat is restricted to shallow snows, often along windswept ridges because they do not move well in deep snow.[1398] Muskox survive the winter by using stored body fat and reducing movement to compensate for low forage intake (Dau 2001). Because of this strategy, muskox may be even more susceptible to disturbances during the winter. It is possible that repeated disturbances of the same animals during winter could result in increased energetic costs that could increase mortality rates.[1399] Additionally, the species reproduces slowly — not breeding until age four or five, only breeding every other year and sometimes less frequently, and only birthing one calf per cycle. These characteristics make the muskox vulnerable to oil and gas development activities, particularly in winter.

c. The EIS Fails to Take a Hard Look at Impacts to Muskox.

In the DEIS, the BLM fails to take a hard look at the myriad impacts of the proposed lease sales and resulting oil and gas development activities on muskoxen and their habitats. Muskox are threatened by disturbance and displacement and habitat degradation from seismic activities and increased air and ground traffic; direct loss of habitat from gravel mining; barriers to movement from facilities, roads, and other infrastructure; increased hunting and poaching associated with increased human presence; increased predation due to increased numbers of predators attracted to human trash and food; and the additive and synergistic effects of climate change. According to the FWS,[1400] oil and gas exploration and extraction activities, particularly along river corridors, can cause:

- displacement from preferred winter habitat
- increased energy needs related to disturbance and displacement
- decreased body condition of females

Reynolds HV, Shideler, R.T. 2002. Predation and multiple kills of muskoxen by grizzly bears. Ursus 13: 79–84.

[1396] Jingfors, K.T. 1982. Seasonal Activity Budgets and Movements of a Reintroduced Alaskan Muskox Herd. Journal Wildlife Management 46(2): 344-350.

[1397] Dau, J. 2001. Muskox Survey-Inventory Management Report, Unit 23. In Muskox. Federal Aid in Wildlife Restoration - Inventory Management Report, Grants W-24-5 and W27-1, Study 16.0, M.V. Hicks (ed.). Alaska Department of Fish and Game, Juneau, Alaska.

[1398] U.S. Department of the Interior, Fish & Wildlife Service. 1999. Guide to Management of Alaska's Land Mammals. U.S. Department of Interior, U.S. Fish and Wildlife Service, Office of Subsistence Management. Anchorage, Alaska.

[1399] Department of Interior, Bureau of Land Management. National Petroleum Reserve – Alaska, Final Integrated Activity Plan/EIS. Vol. 2, Ch. 4 (November 2012) at 189.

[1400] U.S. Fish and Wildlife Service, Arctic National Wildlife Refuge, Potential Impacts of Proposed Oil and Gas Development on the Arctic Refuge's Coastal Plain: Historical Overview and Issues of Concern (Jan 17, 2001), *available at*: https://www.fws.gov/uploadedFiles/Region_7/NWRS/Zone_1/Arctic/PDF/arctic_oilandgas_impact.pdf.

- increased incidents of predation
- decreased calf production and animal survival

i. BLM Fails to Adequately Consider Impacts to Muskox from Seismic and Other Activities in Winter.

The DEIS states of all alternatives:

> Future seismic exploration is expected to occur in all portions of the program area that are open to lease sales. It has the potential to affect terrestrial mammals by eliminating below snow habitat for small mammals, reducing forage availability during winter through compaction of snow and underlying vegetation, and disturbing denning grizzly bears and muskoxen. … Potential localized disturbance of the small number of muskoxen along the western boundary of the program area could result from seismic exploration activities in areas of High HCP.[1401]
>
> Potential indirect effects of seismic exploration would include short-term compaction of snow cover in foraging habitats for herbivores. The timing of snowmelt during the spring following seismic exploration would change as a result of snow compaction and changes in snow drifting. Delayed snowmelt in the spring could decrease forage available to caribou and other herbivores, but could also extend the time when highly nutritious, early growth forage is available after snowmelt. Some potential habitat alterations and long-term damage to forage plants for herbivores, such as riparian willow shrub is also likely to occur, as described in the Section 3.3.1.[1402]

This description ignores some of the most significant impacts of seismic exploration to muskox. Seismic exploration and other winter oil and gas development activities, such as air and ground traffic, can disturb muskox and have detrimental impacts to the animals' energy balance.[1403] Reactions to seismic activities can be variable, but animals have responded with alert behavior, assorting in defensive formations, and running from the disturbance from distances up to 2.5 miles away from operations.[1404] This can result in the deaths of young calves that are left

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[1401] DEIS vol. 1 at 3-110–3-112.

[1402] DEIS vol. 1 at 3-112.

[1403] Department of Interior, Bureau of Land Management. National Petroleum Reserve – Alaska, Final Integrated Activity Plan/EIS. Vol. 2, Ch. 4 (November 2012) at 189 and 191.

[1404] Reynolds, P.E. and LaPlant, D.J. 1985. Effects of Winter Seismic Exploration Activities on Muskoxen in the Arctic National Wildlife Refuge. In Arctic National Wildlife Refuge Coastal Plain Resource Assessment. 1984 Update Report Baseline Study of the Fish, Wildlife, and Their Habitats, G.W. Garner and P.E. Reynolds (eds.). ANWR Progress Report No, FY85-2, Volume I. U.S. Department of Interior, U.S. Fish and Wildlife Service, Anchorage, Alaska; J.F. Winters and R.T. Shidler 1990. An Annotated Bibliography of Selected References

behind.[1405] According to the BLM, "Where 3-D seismic exploration survey lines were located only 500 to 2,000 feet apart, localized displacement of terrestrial mammals could last for several days or *lead to complete abandonment of localized habitat*"[1406] (emphasis added). Calving season — just before snowmelt from mid-April to mid-May — is a sensitive time, and anthropogenic disturbance can be particularly taxing.[1407] If the same animals experience repeated disturbance, energetic deficits could lead to increased mortality rates.[1408]

This information suggests that seismic exploration on the coastal plain would risk disturbing and displacing muskox, causing additional stress in the winter and early spring that could lead to abandonment of preferred habitat areas and increased mortality. The EIS must address the significant potential impacts of seismic exploration on muskox in the coastal plain, particularly the 20 or so animals currently using the program area, and explain how inflicting those impacts on this small population will be consistent with the Refuge purpose of conserving muskox.

ii. BLM Fails to Consider Impacts to Muskox from Oil Spills and Resulting Release of Contaminants and Other Effects.

Oil spills can harm muskoxen by contaminating habitat and forage, causing air pollution, and causing disturbance with clean-up activities. Damage to tundra vegetation, including killing off macroflora, could persist for years, even decades.[1409] Spills affecting waterways could have very detrimental effects to muskoxen because they congregate in riparian areas during summer months.

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of Muskoxen Relevant to the National Petroleum Reserve. Alaska Department of Fish and Game. Fairbanks, Alaska.

[1405] U.S. Fish and Wildlife Service, Arctic National Wildlife Refuge, Potential Impacts of Proposed Oil and Gas Development on the Arctic Refuge's Coastal Plain: Historical Overview and Issues of Concern (Jan 17, 2001), at p.9, *available at*: https://www.fws.gov/uploadedFiles/Region_7/NWRS/Zone_1/Arctic/PDF/arctic_oilandgas_impact.pdf.

[1406] Department of Interior, Bureau of Land Management. Northeast National Petroleum Reserve – Alaska, Final Supplemental Integrated Activity Plan/EIS. Vol. 2, Ch. 4 (May 2008) at 4-158.

[1407] Department of Interior, U.S. Fish and Wildlife Service. Proposed Oil and Gas Exploration within the Coastal Plain of the Arctic National Wildlife Refuge, DEIS and Draft Regulations. (September 1982) at IV-34.

[1408] *Id.*

[1409] McKendrick, J.E. and Mitchell, W. 1978. Fertilizing and Seeding Oil-Damaged Arctic Tundra to Effect Vegetation Recovery, Prudhoe Bay, Alaska. Arctic 31(3): 296-304; McKendrick, J.E. 2000. Vegetative Responses to Disturbance. In The Natural History of an Arctic Oil Field: Development and the Biota, J.C. Truett and S.R. Johnson (eds.). Academic Press, New York, New York.

Muskox are difficult to study, given the harsh conditions of where they live. BLM must identify it is missing information on muskox and discuss why it is not obtaining that information and moving forward or the agency must obtain the information. BLM appears to rely on studies from cattle, citing the IAP. The 2012 DEIS for the NPRA IAP stated:

> Toxicity studies of crude-oil ingestion in cattle indicate that substantial weight loss and aspiration pneumonia leading to death are possible effects (Rowe et al. 1973). Exposure of livestock (horses and cattle) utilizing grazing lands with oil development has resulted in mortality and morbidity (Edwards 1985). Exposure could involve heavy metals, salt water, caustic chemicals, crude oil, and condensates. In cattle, this exposure has been shown to result in a wide variety of symptoms including effects on the central nervous system, cardio-pulmonary abnormalities, gastrointestinal disorders, inhalation pneumonia, and sudden death. Caribou, moose, and muskox that become oiled by contact with a spill in contaminated lakes, ponds, rivers, or coastal waters could die from toxic hydrocarbon inhalation and absorption through the skin. In addition to acute toxicity, mortality from chronic effects could occur well after a spill.[1410]

If BLM believes that it can rely on information about the impact of oil spills on cattle to inform its analysis of the impacts of toxicity on muskox, the agency must explain why.

iii. BLM Fails to Consider Impacts to Muskox from Facilities Construction, Roads and Other Related Infrastructure Associated with Oil and Gas Development.

Roads, pipelines, and other infrastructure can cause movement barriers and habitat fragmentation as well as habitat loss.[1411] Gravel mining associated with oil and gas facility and road construction can cause harm from habitat loss, water loss, and disturbance and displacement.[1412] Mining often occurs in river floodplains, where muskox congregate in the

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[1410] U.S. Department of Interior, Bureau of Land Management, Draft Environmental Impact Statement for the National Petroleum Reserve – Alaska, Integrated Activity Plan, Vol. 2, Chapter 4 (sections 4.1 to 4.6) (March 2012) at 195; Edwards, W.C. 1985. Toxicology Problems Related to Energy Production. Veterinary and Human Toxicology 21: 328-337; Rowe, L., J. Dollahite, and B. Camp. 1973. Toxicity of Two Crude Oils and of Kerosene to Cattle. Journal of American Veterinary Medicine Association 16: 60-66.

[1411] Garner, G.W., and P.E. Reynolds (eds.). 1986. Impacts of Further Exploration, Development and Production of Oil and Gas Resources. In Arctic National Wildlife Refuge Coastal Plain Resource Assessment, Final Report. Baseline study of Fish, Wildlife, and Their Habitats, Volume II. U.S. Department of the Interior, Fish and Wildlife Service, Anchorage, Alaska. Clough, J.G., A.C. Christensen, and P.C. Patton (eds.). 1987. Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment. U.S. Department of the Interior, Washington D.C.

[1412] *Id.*

summer. Vegetation disturbance could lead to encroachment of non-native vegetation, affecting forage availability. The DEIS fails to assess the impacts of each of these activities on muskox.

iv. BLM Fails to Consider Impacts to Muskox from Increased Human Presence and Activity.

Grizzly bears are the primary predator on muskoxen, and they have contributed to significant declines in the northeastern Alaska population, as discussed above. Increased human presence around oil and gas facilities is likely to attract predators to oil and gas facilities due to trash and food accumulation. Predation not only causes mortality but also increases animal vigilance, stress, and energy use. Muskox typically respond to predation threats by circling into defensive groups. They may also respond by running and abandoning a resting site, and leaving calves vulnerable to predation. Recently, declines in the Central Arctic Caribou Herd and moose populations in the region — the historic prey base for grizzlies — has led to increased predation of muskox.[1413]

Increased human presence and access to the region due to an increase of roads will likely lead to increased hunting and poaching of muskox. Hunting pressure has increased in other areas inhabited by muskox and have had potentially significant impacts on abundance. Not only does hunting cause direct mortality, but the targeting of males for trophies can decrease the resiliency of whole herds.[1414] Males play a significant role in defensive behavior versus predators. The loss of males can lead to increased calf losses. The presence of humans cause general disturbance, and energy-depleting responses as described above. Oil and gas development will increase helicopter and plane traffic, road traffic, and off-highway vehicle use.[1415] The DEIS fails to assess the impacts of each of these activities on muskoxen.

v. BLM Fails to Consider the Cumulative, Additive, and Synergistic Impacts of Other Threats in Combination with Climate Change Effects on Muskox.

Climate change is already affecting muskoxen habitat and is likely affecting the health of individuals. Warm, wet years can be detrimental to muskoxen populations, as shown by past research conducted in Greenland and Canada.[1416] More erratic weather conditions in the Arctic is likely also contributing to mortality and morbidity. For example, rain-on-snow (ROS) events can

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[1413] Arthur, S.M., and Del Vecchio, P.A. 2017. Effects of grizzly bear predation on muskoxen in northeastern Alaska. Ursus 28(1): 81-91.

[1414] Schmidt, J.H., and Gorn, T.S.. 2013. Possible secondary population- level effects of selective harvest of adult male muskoxen. PLoS ONE 8(6):e67493; Berger, J. 2017. The Science and Challenges of Conserving Large Wild Mammals in 21st-Century American Protected Areas." Science, Conservation, and National Parks: 189.

[1415] Murphy, S.M. and Lawhead, B.E. 2000. Caribou. In The Natural History of an Arctic Oil Field: Development and the Biota, J.C. Truett and S.R. Johnson (eds.). Academic Press, San Diego, California.

[1416] Berger, J. 2017. The Science and Challenges of Conserving Large Wild Mammals in 21st-Century American Protected Areas. Science, Conservation, and National Parks: 189.

cause direct mortality by freezing animals in the path of an extreme occurrence. Such an occurrence caused the sudden death of over 50 muskox in northwestern Alaska, and another killed an estimated 20,000 animals on Banks Island in the northwestern Canadian Arctic[1417]. These events can also create icing conditions that prevents access to forage, and this may have an adverse impact on the long-term health of individuals, especially if they experience food deprivations as juveniles.[1418] ROS events are likely to increase as climate warming increases. New diseases appearing in the northeastern population of muskox may be correlated with warming temperatures.[1419] Illness causes mortality and can make animals more vulnerable to predation. The DEIS fails to assess the impacts of climate change on muskox but must do so.

2. BLM's DEIS entirely fails to consider the impacts of an oil and gas program on Dall Sheep

A purpose of the Arctic Refuge identified by ANILCA is to conserve Dall sheep (*Ovis dalli dalli*).[1420] The BLM has entirely failed to evaluated the impacts of the oil and gas program on the species in light of this management purpose. In the United States, Dall sheep occur only in the state of Alaska. They are an important prey species and used for human subsistence. They are also in decline in the Refuge, likely due to weather changes, though other factors have not been well-researched.[1421]

Dall sheep are identified as an important subsistence resource in the program area.[1422] Although the northern reach of the population appears to be at the southern edge of the program area, oil and gas activities will likely have direct, indirect, and cumulative impacts on the regional population. The animals are sensitive to air traffic, roads, artificial noise, off-road

[1417] Berger, J., Hartway, C., Gruzdev, A., and Johnson, M. 2018. Climate Degradation and Extreme Icing Events Constrain Life in Cold-Adapted Mammals. Scientific Reports 8(1): 1156; Putkonen, J. et al., Rain on Snow: Little Understood Killer in the North. Eos 90, 221-222 (2009).

[1418] Berger, J., Hartway, C., Gruzdev, A., and Johnson, M. 2018. Climate Degradation and Extreme Icing Events Constrain Life in Cold-Adapted Mammals. Scientific Reports 8(1): 1156.

[1419] Kutz S.J., Jenkins, E.J., Veitch, A.M., Ducrocq, J., Polley, L., Elkin, B., Lair, S. 2009. The Arctic as a model for anticipating, preventing, and mitigating climate change impacts on host-parasite interactions. Vet Parasitol 163: 217–228; Kutz SJ, Bollinger T, Branigan M, Checkley S, Davison T, Dumond M, Elkin B, Forde T, Hutchins W, Niptanatiak A, et al. 2015. Erysipelothrix rhusiopathiae associated with recent widespread muskox mortalities in the Canadian Arctic. Can. Vet. J. 56: 560–563; Afema, J.A., Beckmen, K.B., Arthur, S.M., Huntington, K.B., and Mazet, J.A.K. 2017. Disease complexity in a declining Alaskan muskox (Ovibos moschatus) population. Journal of Wildlife Diseases 53(2): 311-329.

[1420] ANILCA § 303(2)(B)(i).

[1421] U.S. Fish and Wildlife Service. 2018. Dall Sheep in Alaska Refuges.

[1422] DEIS vol. 1 at 3-161–3-162.

vehicles, and other anthropogenic disturbance.[1423] Overflights by helicopter and airplanes can cause sheep to flee and use valuable energetic resources.[1424] Increased hunting may result from an increase in workers near the area.[1425]

The DEIS made no attempt to analyze the effects on climate change on the regional population. Dall sheep are sensitive to extreme weather events and changes in snow conditions.[1426] Dall sheep are susceptible to parasites and bacterial and viral diseases[1427] that may be a growing threat with climate change.[1428] BLM must include an analysis of an oil and gas program on Dall sheep; the failure to do so is a glaring omission in the draft EIS.

3. Seismic and Other Industrial Activities and Noise Impacts on Carnivores

Brown bears den during the winter and can be disturbed by noise. ROP 10 requires a 0.5 mile buffer around occupied brown bear dens identified by the Alaska Department of Fish and Game (ADFG). But the DEIS sets forth no basis for this buffer to ensure that it is sufficiently protective, and no information to indicate what distance from an occupied brown bear den is safe for seismic activity to operate without disturbing the denning bear.[1429] There is no further discussion of the impacts of seismic exploration on carnivores. This must be remedied.

Discussion of the impacts of other industrial activities like construction, blasting, gravel mining, helicopter or airplane overflights, etc., is insufficient to support any conclusion regarding the significance of those impacts. For example, "[d]uring winter, future construction activities

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[1423] AXYS Environmental Consulting Ltd. 2005. Problem Analysis of the Stone's Sheep Situation in Northeastern British Columbia. Draft Report.

[1424] Frid, A. 2003. Dall's sheep responses to overflights by helicopter and fixed-wing aircraft. Biological Conservation 110:387-399.

[1425] Draft Legislative Environmental Impact Statement. 1986. Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment.

[1426] AXYS Environmental Consulting Ltd. 2005. Problem Analysis of the Stone's Sheep Situation in Northeastern British Columbia. Draft Report; Sivy, K.J., Nolin, A.W., Cosgrove, C., and Prugh, L. 2018. Critical snow density threshold for Dall sheep (Ovis dalli dalli). Canadian Journal of Zoology (ja); van de Kerk, M., Verbyla, D., Nolin, A.W., Sivy, K.J. and Prugh, L.R., 2018. Range-wide variation in the effect of spring snow phenology on Dall sheep population dynamics. Environmental Research Letters.

[1427] AXYS Environmental Consulting Ltd. 2005. Problem Analysis of the Stone's Sheep Situation in Northeastern British Columbia. Draft Report.

[1428] Jenkins, E.J., Veitch, A.M., Kutz, S.J., Hoberg, E.P. and Polley, L., 2006. Climate change and the epidemiology of protostrongylid nematodes in northern ecosystems: Parelaphostrongylus odocoilei and Protostrongylus stilesi in Dall's sheep (Ovis d. dalli). Parasitology 132(3):387-401; Aleuy, O.A., Ruckstuhl, K., Hoberg, E.P., Veitch, A., Simmons, N. and Kutz, S.J., 2018. Diversity of gastrointestinal helminths in Dall's sheep and the negative association of the abomasal nematode, Marshallagia marshalli, with fitness indicators. PloS one 13(3):p.e0192825.

[1429] DEIS vol. 1 at 3-110.

would affect mammals that are active all year or are denning in the area. Future summer construction activities could potentially disturb all mammal species using the area in that season. Increased disturbance could result in increased energetic costs, decreased time spent foraging, or displacement from preferred habitat."

The DEIS simply fails to meaningfully assess, and all but ignores, the impacts of industrial development on carnivores, and all terrestrial mammals except caribou (problems and issues with BLM's analysis of caribou are discussed above).

a. Human Interactions and Attractants

The DEIS also appears to largely ignore our scoping comments regarding the impacts of oilfield development and associated potential anthropogenic food sources on predators such as brown bears and wolves and on natural predator-prey relationships. We highlighted significant impacts to those relationships such as increased brown bear density and prey mortality near oilfields; increased hunting pressure and "defense of life or property" killings of brown bears; increased fox populations that require human intervention, including removal.[1430]

The DEIS states:

> All species of terrestrial carnivores can be attracted to areas of human activity if food or rotting waste are improperly handled or disposed of. This can lead to habituation and food-conditioning, thus increasing the risk of injury or mortality to humans or the carnivores themselves (Burgess 2000; Shideler and Hechtel 2000). Increasing predator populations, with the associated higher predation rates on prey populations (especially migrant birds), has been a perennial concern around the North Slope oilfields (Day 1998).[1431]

Some species, particularly bears and foxes, may be attracted to areas of human activity in the program area due to the availability of food or shelter. An increase in red foxes due to human food sources could result in a decline in arctic fox densities.[1432]

ROPs 1 and 2 require that areas be kept clean of debris and that food, garbage and rotting waste be handled in some way that avoids attracting wildlife.[1433] Bear-resistant storage containers are required for garbage. There are not any other specific requirements to avoid attracting wildlife. These are standard ROPs that have not prevented the significant wildlife attraction issues already widely reported from North Slope oil and gas operations, so while well-intentioned, they do not provide any assurance that those issues will not arise on the coastal plain.

Also, ROP 4 says that the lessee:

[1430] Alaska Wilderness League et al., Scoping comments, June 19, 2018 at
[1431] DEIS vol. 1 at 3-108.
[1432] DEIS vol. 1 at 3-113.
[1433] DEIS vol. 1 at 2-16.

> would prepare and implement bear-interaction plans to minimize conflicts between bears and humans. These bear interaction plans would be developed in consultation with and approved by the USFWS and the Alaska Department of Fish and Game (ADFG). The plans would include specific measures identified in the current USFWS Polar Bear Mitigation Plan and would be adapted as needed for grizzly bears.

This language is vague even for polar bears, and even worse for brown bears in terms of providing any assurance that mitigation measures would be effective, or that human-bear interactions related to oilfield development on the coastal plain would not cause significant adverse impacts to predators and prey.

In sum, the DEIS fails to disclose the extent to which the industrialization of the coastal plain will disrupt and disturb carnivores. It relies on ROPs to mitigate these undisclosed impacts, with no underlying rationale or explanation providing any indication of their effectiveness in doing so.

K. BLM'S ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON POLAR BEARS IS INADEQUATE.

As described above, BLM's analysis of the ESA and MMPA protections for polar bears is inadequate.[1434] Polar bears (*Ursus maritimus*) were listed as threatened under the Endangered Species Act (ESA) in 2008 and are also federally protected under the MMPA.[1435] Of the two polar bear populations (or stocks) found in the United States, the Southern Beaufort Sea (SBS) population is the most likely to occur on the Coastal Plain.[1436] The SBS population is among the most imperiled stocks in the world, having declined dramatically since the 1990s.[1437]

Threatened polar bears den on the Coastal Plain and are using the area with increasing frequency for other activities. The majority of the Coastal Plain (approximately 77 percent) is designated as critical habitat for the species.[1438] Despite the importance of the Coastal Plain to SBS polar bears, the EIS fails to properly describe the environmental baseline for the species, and does not adequately analyze potential direct, indirect and cumulative impacts of oil and gas oil and gas leasing on polar bears using the Coastal Plain. The DEIS further fails to adequately analyze meaningful and effective mitigation measures to avoid injurious or lethal impacts to threatened polar bears.

[1434] *See supra*, Section III.D (describing BLM's ESA and MMPA obligations).

[1435] 73 Fed. Reg. 28,212 (May 15, 2008); 75 Fed. Reg. 76,086 (Dec. 7, 2010).

[1436] 75 Fed. Reg. at 76,090.

[1437] FWS Polar Bear Southern Beaufort Sea Stock Assessment 2017 (draft) at 7 (estimating 900 SBS bears, compared to earlier estimates ranging from 1480-2272 bears in the 1990s and 2000s).

[1438] 75 Fed. Reg. at 76,086.

1. *Affected Environment*

a. The DEIS omits important information on polar bears

BLM fails to include adequate baseline information on the SBS population of polar bears. Modeling predicts "significant declines in polar bear populations within three generations"[1439] The DEIS fails to mention that there is more than a 70% chance of a global polar bear population decline of 30% or more within three generations.[1440] This study refers to significant declines in the *global* population, not just the SBS stock, which has already declined by approximately half since the 1980s.[1441] BLM should clarify that the SBS population has already experienced an alarming decline and is in a more precarious condition than most other polar bear populations.

The DEIS states that "Regehr documented decreases in vital rates of the SBS stock, including survival and breeding rates, corresponding to increases in the number of ice-free days per year in waters over the Beaufort Sea continental shelf."[1442] While that statement is true, BLM ignores the additional finding that those annual ice-free days are projected to continue to increase, which will mean further decreases in vital rates, including survival and breeding rates.[1443] BLM fails to apply existing information and trends regarding increased ice-free days over the Beaufort Sea continental shelf to generate a relevant projection for SBS bears' survival and breeding rates. The FEIS must acknowledge that ice-free days are increasing and will continue to increase, and must disclose the likely impacts to the SBS population from the increased ice-free days and growing distances that bears must traverse from sea ice to land (see below).

BLM also fails to adequately support an assumption about the number of denning female polar bears expected on the coastal plain. BLM states that based on the estimated population of the SBS stock, the proportion of adult females in the population, the breeding probability of adult females, the proportion of dens on land, and the proportion of historical dens in the program area, approximately 19 female bears may den in the program area annually.[1444] BLM offers no calculation to arrive at this estimate, and it may be understated. Using conclusions presented in the DEIS in addition to other information, Dr. Steven Amstrup estimates up to 29 maternal dens may be found annually within the bounds of the Arctic Refuge Coastal Plain.[1445] The DEIS does not even present its estimates for each of the listed factors upon which BLM says it based its

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[1439] DEIS vol. 1 at 3-124.

[1440] Regehr 2016 at 1.

[1441] March 2019 Amstrup Letter at 8 (citing Bromaghin et al. 2016).

[1442] DEIS vol. 1 at 3-125.

[1443] E.g., Bromaghin et al. "Polar bear population dynamics in the southern Beaufort Sea during a period of sea-ice decline." *Ecological Applications* 25: 634–651 (2015) ("Reduced spatial and temporal availability of sea ice is expected to increasingly force population dynamics of polar bears as the climate continues to warm.")

[1444] DEIS vol. 1 at 3-128 (citing personal communication with Ryan Wilson, FWS, October 18, 2018).

[1445] March 2019 Amstrup Letter at 11–12.

calculation of the number of dens. This makes it impossible for the general public to understand how BLM arrived at its conclusion.

The proportion of females denning on land has increased significantly, from 34% to 55% between 1985 and 2013, and is expected to continue to increase.[1446] BLM must show some defensible calculation to support its estimate of the number of denning bears annually in the program area over the course of the program. Moreover, BLM must provide the public with an opportunity to comment on the assumptions that it has made in the course of that calculation, rather than obscuring it, as it has done in this DEIS.

Further, the DEIS fails to meaningfully characterize the extent to which climate change will reduce the stability of dens during the future time periods when oil and gas activities will also be disturbing denning bears. The DEIS discusses the key characteristics of denning habitat, but glosses over relevant projected changes in one critical characteristic – snow cover – stating only that:

> The warming temperatures and increased precipitation year-round and longer growing seasons that are predicted to occur in the future may have negative implications for the stable conditions required for maternal denning by polar bears, especially if warm temperatures prevent snow cover of sufficient depth from accumulating early in the denning season.[1447]

Yet that lack of snow cover early in the denning season is just what is projected for the Alaskan Arctic.[1448] BLM must present the best available science indicating the likely timing and amount of snow cover arriving on the coastal plain throughout the life of the proposed oil and gas program and disclose the implications of that snow cover for SBS bears' breeding success.

Due to the lack of this information, BLM's assessment of the impacts that oil and gas activities will have on denning is measured against an inaccurate baseline. The DEIS thus fails to take into account how disturbances to denning caused by oil and gas activities will be even more severe in the future than they would be at present.

b. BLM failed to consider existing or projected levels of intentional or incidental take of polar bears in its environmental baseline

The DEIS is missing essential information on the annual number of human-caused mortalities for SBS polar bears and fails to connect this existing baseline level of lethal take to its

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[1446] DEIS vol. 1 at 3-128.

[1447] DEIS vol. 1 at 3-132.

[1448] *See* NOAA, Final Rule, Threatened Status for Arctic ringed seal (and other subspecies), 77 Fed. Reg. 76706 (December 28, 2012); *see also* Rettig, "Need a Weather Forecast for 2030? Alaska climatologist can help" (May 31, 2016) available at https://www.adn.com/science/article/need-weather-forecast-2030-cutting-edge-alaska-climatologist-may-be-able-helo/2013/05/11/.

analysis of oil and gas impacts on the SBS population. Regarding polar bear harvest under the Inupiat-Inuvialuit Agreement, the DEIS states that from 2006-2015, "an average of 19 bears per year were removed from the U.S. portion of the SBS stock, averaging 50 percent males, 27 percent females, and 22 percent unreported sex."[1449] However, it omits the more relevant total number of bears removed annually from the SBS stock, which includes bears taken in Canada. According to the draft FWS 2017 SBS Polar Bear Stock Assessment Report, during the same ten-year time period referenced in the DEIS, an average of 14.2 bears were removed from the Canadian portion of the SBS stock, with a sex ratio of 56 males to 44 females.[1450] This latest government information states that the combined average number of polar bears removed annually from the SBS stock is 33.2 bears taken for subsistence purposes.[1451] Notably, the FWS Polar Bear Five Year Review states that the average number of human-caused mortalities was even higher between 2010–2014 at 36 SBS bears taken per year.[1452] Indeed, apparently referring to the SBS population, the 2017 FWS 5-year status review states that harvest rates in some subpopulations "appear excessive in relation to the best-available estimates of subpopulation size."[1453]

The DEIS fails to examine how this current level of lethal take will adversely affect SBS polar bears or the species as a whole, including the cumulative effects on annual rates of recruitment or survival combined with the additional impacts of oil and gas activities on the Coastal Plain. It completely ignores the Potential Biological Removal (PBR) level established for the SBS stock under the MMPA. PBR is defined as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its Optimum Sustainable Population (OSP).[1454] PBR for the SBS stock has most recently been calculated at 14, far below the average number of bears removed via annual harvest alone.[1455] According to a recent FWS memorandum, with at least 33.2 bears removed from the SBS population annually compared to a PBR of 14, it is clear that "the ability

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[1449] DEIS vol. 1 at 3-125.

[1450] FWS (draft) Polar Bear: Southern Beaufort Sea Stock Assessment (2017) at 12-13 available at https://www.fws.gov/alaska/fisheries/mmm/polarbear/pdf/Southern%20Beaufort%20Sea%20Draft%20SAR%20%20for%20public%20comment.pdf.

[1451]FWS (draft) Polar Bear: Southern Beaufort Sea Stock Assessment (2017) at 12-13

[1452] FWS Polar Bear Five Year Review 2017 at 27; that combined annual harvest from 1988-2007 averaged 56.9, and from 2006-2010 averaged 53.6. FWS SBS Polar Bear Stock Assessment 2010 at 3, 5.

[1453] *Id.*; see also p. 27 (identifying SBS bears as the only stock with both a historically reduced and still-declining current population, with "harvest mortality additive to negative growth rate.").

[1454] 16 U.S.C. § 1362(20).

[1455] FWS (draft) Polar Bear: Southern Beaufort Sea Stock Assessment (2017) at 11. Even using the 2010 minimum population estimate of 1397 SBS bears, PBR was calculated at 22 – also well below the mortality from harvest alone. FWS Polar Bear Stock Assessment 2010 at 3.

of the population to reach OSP is [already] being compromised."[1456] The DEIS neglects to consider this baseline information in its cursory evaluation of the status of the SBS stock or incorporate it into its cumulative effects analysis. As noted in the FWS memorandum, it is reasonable to assume that any additional lethal take from proposed seismic testing would additionally impact the SBS stock causing further adverse effects on annual rates of recruitment or survival.[1457] Likewise, over the lifetime of an industrial oil field, from post-lease exploration, to infrastructure construction, oil and gas development and production, it is reasonable to assume that some additional level of lethal take will occur.

Notably, while comparison to the PBR calculated by FWS demonstrates that oil and gas activities under the program are likely to cause impacts that the DEIS has failed to acknowledge, the PBR itself cannot rationally be used to show an acceptable take level in the context of a stock like the SBS population that is already experiencing such catastrophic decline.[1458]

The DEIS also fails to consider that sustainable removal rates rely on assumptions about the sex-ratio of polar bears taken by harvest, as well as other conditions. Historically, removing 4.5% of a polar bear population annually was considered sustainable take, a level at which the population can still produce maximum sustainable yield (Taylor et al. 1987).[1459] But that conclusion turns on qualifiers related to sex-ratio and the absence of other stressors that are not consistent with the realities affecting the SBS population. Taylor estimated the sustainable yield of the female component of the population at < 1.6% per annum **under optimal conditions**.[1460] Such "optimal conditions" clearly do not exist at present for the SBS population. Recent research by Regehr et al. (2015) found that while the 4.5% removal rate would be generally reasonable in the absence of climate change related stressors, a lower rate may be necessary to avoid accelerating population declines caused by habitat loss due to climate change.[1461] In addition, the Regehr study includes an important qualifier that is not considered in the DEIS: a 4.5-percent harvest rate for polar bears is reasonable under many biological and management conditions **at a 2:1 male-to-female ratio**, although a lower or higher rate may be appropriate in some cases.[1462] SBS bears are not being harvested at a 2:1 male-to-female ratio in Canada; for the period 2003-

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[1456] U.S. Fish and Wildlife Service, Memo re: 1002 Coastal Plain Incidental Take Regulation Application, September 2018 at 3 *available at* https://assets.documentcloud.org/documents/5647572/Alaska-Memo.pdf

[1457] *See Id.*

[1458] *See* March 2019 Amstrup Letter at 33.

[1459] FWS Polar Bear Five Year Review: Summary and Evaluation 2017 at 25.

[1460] *Id*. (omitting the phrase "under optimal conditions" from the study). *See* Taylor et al., Modeling the Sustainable Harvest of Female Polar Bears, J. Wildl.Manage.51(4) at 811 (1987). The Taylor study is not included in the DEIS References. The FEIS must provide the best available science regarding sustainable removal from the SBS population and explain how additional polar bear take and harassment from industrializing the coastal plain is consistent with recovering the population.

[1461] *Id.*.

[1462] Regehr et al., Resilience and Risk—A Demographic Model to Inform Conservation Planning for Polar Bears (2015) at 1. This study also does not appear in the DEIS References.

2007, for example, the sex ratio in the Canadian harvest was 45% male to 55% female,[1463] and during the 2006-2015 time period it was 56% males to 44% females.[1464]

In sum, the DEIS dramatically understates the removal of SBS bears actually occurring. It also fails to explain the relevance of the number of bears removed from the population annually and ignores the best available science estimating a removal number and sex-ratio considered to be consistent with the recovery of the SBS population. All available science indicates that current levels of removal by harvest alone exceed acceptable levels of polar bear mortality. BLM can therefore arrive at no supportable conclusion that additional oil and gas -related harassment and mortality on top of existing harassment and mortality will be consistent with the recovery of the SBS population.

2. Environmental Consequences

The DEIS presents a narrow range of action alternatives that fail to protect polar bears. BLM also does not accurately describe the reasonably foreseeable impacts of oil and gas activities on polar bears, including significant habitat loss and displacement, noise, seismic operations, and increased human-bear interactions. BLM also fails to assess the cumulative impacts of this proposal together with existing and foreseeable developments in the Arctic against a backdrop of climate change. Further, BLM makes no attempt to quantify the number of polar bears that would potentially be harmed by oil and gas activities, nor explain how the program could affect the SBS population as a whole.

a. BLM failed to consider a reasonable range of alternatives to protect polar bears.

BLM's range of alternatives is inadequate.[1465] The three action alternatives do not present a reasonable range sufficient to analyze differences in impacts to polar bears. The EIS plainly states that "[a]ll the action alternatives would affect large areas of the designated terrestrial-denning unit of critical habitat for polar bears; any facilities constructed within 20 miles of the coast would be located in that critical habitat unit."[1466] Additionally, all of the action alternatives assume the entire Coastal Plain will be open to seismic exploration, which by itself may have lethal impacts on polar bears.

The minor variations between the action alternatives do not offer a meaningful difference in impacts to polar bears and their critical habitat. For instance, under Lease Stipulation 5 in Alternative D, BLM would prohibit permanent oil and gas structures from being within 1 mile of the small portion of potential denning habitat located from the coastline to 5 miles inland on the Niguanak River, Katakturuk River, Marsh Creek, Carter Creek, and Sadlerochit River, and all

[1463] FWS Polar Bear Stock Assessment 2010 at 3.
[1464] FWS (draft) Polar Bear: Southern Beaufort Sea Stock Assessment (2017) at 13.
[1465] *See supra* Part III.B.2.
[1466] DEIS vol. 1 at 3-133.

associated tributaries.[1467] Similarly, under Alternative D, BLM would prohibit oil and gas "activities" within that same small portion of the denning habitat from October 30 through April 15.

The only rationale provided by BLM for protecting that portion of the denning habitat is that 37% of known historic dens in the Coastal Plain have been observed there, even though that area represents only 8.8% of the terrestrial denning critical habitat within the Coastal Plain.[1468] BLM provides no scientific basis to rely on the historical den occurrences to conclude that this portion of the suitable denning habitat is the only portion of the suitable denning habitat in the Coastal Plain that requires the protection conferred by Lease Stipulation 5. BLM does not explain whether the agency followed any scientifically sound approach to identifying areas within the suitable denning habitat that have a higher likelihood of den occurrence than other portions. For example, BLM does not explain or evaluate whether it has considered the effect of potential telemetry or survey biases, which may mean that density of denning in other areas is underestimated due to those areas being less accessible to researchers. Moreover, BLM has failed to explain whether or how it has taken climate change impacts into account, and how such impacts may shift preferred denning locations in the future compared to historically observed preferences.

BLM should have evaluated impacts from oil and gas activities on all terrestrial denning critical habitat on the Coastal Plain, and considered measures to mitigate impacts to that broader geographic area. It also should have considered the impacts of alternative seismic exploration methods and sought to mitigate those impacts specifically.

b. BLM failed to analyze impacts to critical habitat

In Appendix B, the DEIS describes the extensive industrialization of the Coastal Plain as a Reasonably Foreseeable Development scenario. It assumes there will be three or four central processing facilities (CPF), each with six satellite well pads connected by roads averaging eight miles in length. Each CPF area would include oil pipeline connections to the Trans-Alaska Pipeline, and water and electricity pipelines to supply the CPF; these would total hundreds of miles.[1469]

There would be barge landings, staging pads and a seawater treatment plant located along the coastline, connected to the CPF by thirty miles of road and pipeline.[1470] In addition to

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[1467] *See* DEIS vol. 1 at 2-10.

[1468] *See* DEIS vol. 1 at 3-147.

[1469] Draft EIS vol. 2 at B-13.

[1470] Draft EIS vol. 2 at B-15- B-16 ("A barge landing and an associated staging pad to store equipment and modules until ice roads can be constructed would typically disturb approximately 10 acres, including the barge landing and a gravel staging pad…. A road and seawater transport pipeline would be constructed from the seawater treatment plant to the [Central Processing Facility]. Typical gravel roads in the Arctic require 7.5 acres of surface disturbance per mile.").

each potential CPF, it is expected that a generator, airstrip, storage tanks, a communications center, waste treatment units, and a maintenance shop would be constructed on the anchor pad, as well as living quarters and offices on or off the pad.[1471] Hundreds of miles of gravel roads, and undisclosed miles of ice roads, would be constructed, and gravel mines unearth hundreds of additional acres.[1472]

This extensive system of coastal infrastructure would significantly alter and permanently fragment critical habitat for polar bears, rendering thousands of acres on the coastal plain either undesirable or completely unavailable. Although bears prefer sea ice habitat to hunt, roam and rest, both males and females are known to use land habitat in late summer and early fall, with females remaining an average of 56 days and increasing.[1473] The coastal plain has already become the denning habitat used by a large proportion of SBS bears, and will likely become progressively more important for bears to hunt, roam and rest, as well. As discussed further below, SBS polar bears are facing deteriorating health and the avoidance behavior and energetic losses posed by this project will worsen their existing conditions.

The DEIS fails to take a hard look at this enormous imposition of industrial infrastructure and associated activities on polar bear critical habitat, simply stating the following:

> Most polar bears moving through areas near industrial facilities would likely be disturbed by activities on, or be hazed away from, drill-site pads. Disturbance from traffic on access roads would likely alter the use of habitats by bears nearby, although those effects would diminish for facilities located farther inland because they would be less likely to be used by bears than other areas near the coastline. Overall, the effects of reduced use of habitats near oil and gas facilities likely would be minimal, although they would be long-term in duration.[1474]

The DEIS fails to further explain the impact of these direct losses of polar bear habitat, and there is no support for the conclusion that effects would be minimal. BLM must assess the impact of the habitat fragmentation caused by the development of oil and gas facilities spanning hundreds of miles in designated critical habitat on the movements, behaviors, health and distribution of SBS polar bears.

Additionally, if bears spend more time on land during the open water period, there is potential for increased disease transmission, particularly where bears form aggregations at sites where the remains of subsistence harvested whales are deposited (e.g., Barter Island and Cross Island, Alaska). Such aggregations are also more susceptible to the impacts from potential oil spills.[1475] The DEIS ignores any increased potential for disease transmission or increased

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[1471] *Id.*
[1472] *Id.* at B-22-23.
[1473] DEIS vol. 1 at 3-127
[1474] DEIS vol 1 at 3-135.
[1475] FWS Polar Bear Five-Year Review 2017 at18.

susceptibility to oil spills faced by SBS bears using increasingly important land habitat in new ways.

BLM's comparison of alternatives focuses on the overlap of leasing areas with mapped suitable denning habitat, rather than impacts within the boundaries of the critical habitat designation of terrestrial denning habitat.[1476] The majority of the Coastal Plain (approximately 77 percent) is designated as critical habitat for the species.[1477] However, BLM focuses much of its discussion on what it calls "suitable denning habitat," referring to the potential denning locations themselves, which it states covers only 4,700 acres.[1478] But maternal denning habitat includes, inter alia, corridors between the dens and the coast, and BLM's designation obscures the reality that BLM is only talking about a small portion of the actual critical habitat designated for terrestrial denning. BLM then limits its analysis of infrastructure to only quantify the extent of the industrial footprint within the 4700 acres.

This approach likely understates the impacts on denning habitat because disturbance and structures in designated critical habitat may have negative impacts on the mapped denning habitat as well. Moreover, analyzing impacts to *only* mapped suitable denning habitat overlooks the fact that polar bears must move between these riverine corridors to travel to the coast, reach their dens, and seek out food sources. BLM's failure to consider impacts beyond suitable denning habitat artificially limits the scope of its analysis by omitting impacts to critical habitat on the majority of the Coastal Plain. In sum, the EIS fails to evaluate the direct, indirect and incremental cumulative effects that could occur to polar bears due to this proposal. These include the exclusion or avoidance from feeding, resting, or denning areas; increased energetic costs; and disruption of associated biological behaviors and processes as a result of disturbance and displacement of their critical habitat caused by an oil and gas program. Ultimately, BLM provides no reasonable basis to support its surprising conclusion that the effects on polar bears of developing a large oilfield in the middle of designated polar bear critical habitat will be minimal.

c. BLM failed to analyze impacts from noise and human disturbance and interactions

Industry activities may disturb polar bears at maternal den sites, with polar bears reacting in a variety of ways depending on factors such as the level of exposure and distance from the den site from the industrial activity.[1479] The DEIS states that in a report for ExxonMobil Co., MacGillivray et al. (2003) found that noises associated with various industry activities were detectable above background levels at ranges from 0.3 miles to 1.24 miles from artificial den sites depending on the stimulus, with low-frequency vibrations and noises detected at the greatest

[1476] *See* DEIS vol. 1 at 3-145 (BLM presents two tables that attempt to differentiate impacts between alternatives. BLM GIS 2018 is cited as a source for mapping potential maternal denning habitat in Table 3-24.) BLM should fully describe how these maps and acreage numbers were developed.

[1477] 75 Fed. Reg. 76,086.

[1478] DEIS vol. 1 at 3-134.

[1479] 81 Fed Reg. at 52,292 (Aug. 5, 2016).

distances.[1480] Helicopter noise was detectable up to .6 miles. BLM acknowledges that "[b]lasting at gravel mines and pile-driving of bridge abutments during future winter construction would be sources of noise in polar bear denning habitat… Possible impacts on polar bears exposed to noise potentially include disruption of normal activities, displacement from foraging and denning habitats, and displacement of maternal females and young cubs from dens."[1481]

BLM does not state the distance at which blasting and pile-driving noise would likely be detected by denning or non-denning bears, leaving unexamined the likelihood of the identified potential impacts occurring. As discussed elsewhere, it also fails to evaluate the impacts of seismic testing, including noise impacts on denning bears. The FEIS must evaluate whether winter construction activities such as blasting and pile driving could result in displacement, injury or death to polar bears. If a 2003 report prepared for Exxon measuring noise at artificial dens represents the best available science on the sensitivity of actual denning polar bears to noise, then BLM cannot support a conclusion that all the noise associated with oil and gas activity on the coastal plain, including seismic exploration and winter construction, won't significantly affect polar bears.

Other industrial activities and noise will disturb non-denning bears as well. Routine snowmachine noise has been shown to prompt significant avoidance responses in polar bears at distances up to 3,272 meters – over two miles.[1482] Except for male adults, bears studied "typically had a pronounced response and frequently fled snowmobiles and continued to flee the area at lengthy distances." The DEIS notes this study but fails to mention the two-mile response threshold noted for some bears and understates the intensity of the observed fleeing response.[1483] The FEIS must disclose the known snowmachine impacts more transparently and discuss the likely impacts of the many other mobile sources of foreseeable industrial noise on polar bears, including trucks, bulldozers, airplanes, helicopters, etc.

BLM relies heavily on Incidental Take Regulations that do not yet exist for the Coastal Plain to conclude that noise from industrial activities will have no significant impact on bears.[1484] This reliance is misplaced for at least two reasons.

[1480] DEIS vol. 1 at 3-136; References-31.

[1481] DEIS vol. 1 at 3-137.

[1482] Andersen, M., and J. Aars. 2008. "Short-term behavioral response of polar bears (*Ursus maritimus*) to snowmobile disturbance." *Polar Biology* 31: 501–507.

[1483] DEIS vol. 1 at 3-137.

[1484] *See* DEIS vol. 1 at 3-144 (stating that the current ITR process has been effective at addressing and mitigating the risks from human encounters with polar bears); DEIS vol. 1 at 3-141 ("The precautions against den disturbance in the interaction plan, required under ITRs, and the denning surveys conducted before seismic exploration and construction of roads and pads would minimize the likelihood of this potential risk"); DEIS vol. 1 at 3-138: ("Behavioral disturbance on the productivity of polar bears in the program area is likely to be low. This assumes that all mitigative measures are implemented, as required under ITRs and specified in typical wildlife interaction plans for industrial activity in Arctic Alaska, and that preconstruction den surveys detect most maternal dens in the affected areas.")

First, the track record pursuant to the Beaufort Sea ITR for disturbances to polar bears is mixed at best, with examples of industry activity disturbing and displacing denning bears along with examples of bears largely unaffected despite fairly close proximity to industrial activity.[1485] The monitoring done pursuant to the ITR provides some useful information but is not designed to measure overall bear responses to various stimuli at different distances in any scientific way. The monitoring information doesn't indicate that behavioral disturbances to polar bears in the Beaufort Sea have been minimal, and certainly doesn't support the conclusion that noise impacts from industrializing the coastal plain – with its unique site characteristics and different and changing usage by polar bears – would be minimal.

Second, as FWS notes in the Beaufort Sea ITR, "the distribution and habitat use patterns of polar bears indicates that relatively few animals will occur in the areas of Industry activity at any particular time, and, therefore, few animals are likely to be affected. SBS polar bears are widely distributed, are most often closely associated with pack-ice, and are unlikely to interact with open-water industrial activities . . ."[1486]

These findings are critical to the FWS's "negligible impacts" determination in the Beaufort Sea ITR,[1487] but the same findings cannot be made with regard to the coastal plain. As noted herein and in the DEIS, the coastal plain has become a critically important denning area and will likely be of increasing importance for roaming and foraging as well, as sea ice continues to diminish. It cannot be said that relatively few animals will occur in the areas of industry activity on the coastal plain, or that bear interactions with that activity are unlikely. In short, the coastal plain is completely different than the Beaufort Sea ITR area in terms of the likely impacts on polar bears, and the Beaufort Sea experience to date offers little assurance that those impacts will be insignificant.

In sum, there is evidence of industrial noise detectability in dens up to 1.24 miles depending on the source, and the DEIS fails to disclose the specific noise sources and associated detectability distances expected. The potential impacts are significant, including abandonment of dens which can equate to death for cubs, and curtailed nursing time in the den, which also can impair cub survival. There have also been observed strong avoidance reactions of non-denning bears to snowmachines at distances up to two miles, and no countervailing evidence to suggest that impacts from snowmachines and other mobile sources of noise on the coastal plain would not trigger similar intense reactions from bears. Despite this evidence, the DEIS concludes that establishing a one-mile buffer around known dens and complying with future, unspecified ITRs will suffice to protect bears from noise. This conclusion is inconsistent with the evidence.

[1485] 81 Fed. Reg. 52,292 (August 5, 2016).
[1486] 81 Fed. Reg. 52,304.
[1487] *Id.*

d. BLM must address methods for reducing human food, hazardous substances, and other attractants associated with Arctic Refuge Coastal Plain oil and gas development

The DEIS appears to ignore scoping comments regarding the impacts of oilfield development in the Arctic on polar bears, in terms of reducing attractants and addressing the increasing likelihood of human-polar bear interactions on the coastal plain if oil and gas development were to proceed there.[1488] The DEIS states that:

> ITRs also include measures to avoid and minimize bear conflict with humans. Upon issuance of a LOA by the USFWS, trained personnel are allowed to haze or otherwise take polar bears under specific circumstances involving the protection of human life. The USFWS has voluntary deterrence guidelines (75 FR 61631) to deter polar bears without causing injury or death, focusing on passive measures intended to prevent bears from gaining access to property or people, such as fencing, gates, skirting, exclusion cages, and bear-proof garbage containers, as well as on preventive measures to discourage bears from interacting with property or people, such as acoustic devices for auditory disturbance and vehicle or boat deterrence.[1489]

This fails to address the extent to which industrial development on the coastal plain is likely to attract polar bears and increase human-polar bear interactions. It ignores the evidence already provided that those interactions are already increasing, with bears spending more time on land and doing more foraging and traveling, and that one company reported tripling the number of bears it has had to haze.[1490] Hazing can help prevent the need to kill bears in defense of self or property but increases metabolic costs, and for females can result in decreased reproductive rates – ultimately affecting population growth.[1491]

While the DEIS acknowledges that oil and gas activities lead to more human-bear encounters, it relies on extremely dated information to downplay the effects of those activities. The DEIS cites polar bear sighting and hazing statistics from 2005 to 2008, ignoring the last 10 years of oil and gas activities.[1492] It also relies on a 2003 source to say that oil and gas activities have not affected polar bears and ringed seals,[1493] despite the fact that the cumulative effects of climate change and oil and gas activities were significantly lower fifteen years ago.

BLM must disclose these foreseeable impacts to polar bears and describe how the increased human-bear interactions, increased incidences of hazing and other efforts to deter bears

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[1488] Scoping Comment Letter at 51–53.

[1489] DEIS vol. 1 at 3-125.

[1490] T. C. Atwood et al., Rapid environmental change drives increased land use by an arctic marine predator, 11 PLoS ONE e0155932 at 12 (2016); Scoping Comment Letter at 52-53.

[1491] *Id.*.

[1492] DEIS vol. 1 at 3-148.

[1493] *Id*.

from seeking food sources in developed areas, and increased energetic costs for polar bears will translate into adverse impacts for the SBS population.

BLM also failed to assess and disclose the potential threats to polar bears from oil spills. The EIS states that accidental spills, leaks, and other sources of contamination are a potential source of injury or mortality, but brushes aside the potential impacts by relying on assumptions that any spill would be small, on-land, and cleaned up quickly. [1494] The assumptions underlying BLM's discussion of oil spills are faulty, and BLM underestimates the potential environmental damage from spills on the Coastal Plain.[1495] Further, BLM states that "[s]pills associated with development projects on the mainland are of much less concern for polar bears than are marine spills."[1496] This finding seemingly ignores the fact that polar bears are spending more time onshore due to climate change, so terrestrial spills are increasingly likely to affect their habitat and prey. BLM also failed to explore alternatives or mitigation measures to reduce spills and protect areas of particular importance to bears, like feeding and resting areas, summer refugia and winter denning areas. Thus, BLM's analysis of impacts to polar bears from oil spills is deficient.

e. BLM failed to analyze potentially significant impacts to polar bears from seismic exploration.

The EIS underestimates the potential impacts to polar bears as a result of seismic exploration. BLM's analysis of pre-leasing seismic exploration is confusing and inadequate throughout the EIS, but this is particularly concerning in the case of polar bears. Seismic exploration presents a risk of lethal take to polar bears due to shortened denning time, den abandonment and the ensuing indirect mortality, or direct mortality caused by trucks running over bears and cubs in maternal dens.

As the FWS recognized, "it is thought that successful denning, birthing, and rearing activities require a relatively undisturbed environment."[1497] Polar bears are particularly vulnerable to anthropogenic disturbance during denning as compared to other times in their life cycle.[1498] The best available science indicates that sows entering dens or denning with cubs are more sensitive to noise disturbance than other demographic groups.[1499] Seismic exploration on the Coastal Plain will likely have particularly harmful impacts as it would occur during the

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[1494] DEIS vol. 1 at 3-41.

[1495] *See supra*, at Part IV.B (describing the shortcomings in BLM's oil spill analysis).

[1496] DEIS vol. 1 at 3-41.

[1497] 81 Fed. Reg. at 36,673 (June 7, 2016).

[1498] S. C. Amstrup, *Polar bear, Ursus maritimus, in* WILD MAMMALS OF NORTH AMERICA: BIOLOGY, MANAGEMENT, AND CONSERVATION 587, 606 (G. A. Feldhamer, B. C. Thomson & J. A. Chapman (eds.), John Hopkins Press 2003).

[1499] 81 Fed. Reg. at 52,291 (Aug. 5, 2016).

winter months, overlapping with the denning season and the period when bears emerge with their young cubs to hunt prey on sea ice.[1500]

Bears that are forced to den onshore are increasingly vulnerable to human encroachment, and denning females disturbed by human activities, including oil and gas activities, may abandon their dens, causing a loss of cubs.[1501] Disturbance can also cause the mother and cubs to leave the den together sooner than they otherwise would, which reduces the likelihood that the cubs will survive their first year of life. The FWS has expressly acknowledged the potentially lethal effects of winter oil and gas exploration on denning polar bears in the Arctic Refuge, finding that "[m]aternal polar bears with newborn cubs can be prematurely displaced from their winter dens by the noise, vibrations, and human disturbance associated with oil exploration activities. This displacement may result in potentially fatal human-bear conflicts, and may expose the cubs to increased mortality due to harsh winter conditions for which they are not yet prepared."[1502] Cubs, which are born in mid-winter, are generally unable to survive conditions outside the den until March or April.[1503]Female polar bears have an average of 1.8 cubs per litter, [1504] and adequate time in a den is necessary to optimize cub development for withstanding harsh Arctic spring conditions and to synchronize den emergence with peak prey availability.[1505] If den site abandonment occurs before the cubs are able to survive outside the den, or if the female abandons the cubs, the cubs will die.[1506]

A rational, scientifically legitimate analysis of the impacts of seismic exploration requires consideration of the areal extent of the survey during a given denning season and the number of den locations distributed in the proposed survey area, and must consider the high failure rate for the den detection methods that will be employed. BLM has provided no such analysis in the DEIS. For example, taking into account the realities of heavy vehicle movement during recent seismic surveys in Alaska, a seismic survey covering the entire Coastal Plain within a denning season would pose a 79% to 90% chance that at least one undetected polar bear den would be directly run over by a vehicle and crushed, with potential immediately lethal consequences for

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[1500] F. Messier *et al.*, *Denning ecology of polar bears in the Canadian Arctic Archipelago*, 75 Journal of Mammalogy 2 (1994).

[1501] *See, e.g.*, S. C. Amstrup, *Human disturbances of denning polar bears in Alaska*, 46 Arctic 246 (1993).

[1502] U.S. Fish and Wildlife Service, *Potential Impacts of Proposed Oil and Gas Development on the Arctic Refuge's Coastal Plain: Historical Overview and Issues of Concern*, at 10 (2001), *available at*: https://www.fws.gov/uploadedFiles/Region_7/NWRS/Zone_1/Arctic/PDF/arctic_oilandgas_impact.pdf.

[1503] 81 Fed. Reg. at 52,292.

[1504] Rode et al. *Variation in the response of an Arctic top predator experiencing habitat loss: feeding and reproductive ecology of two polar bear populations*, Global Change Biology, v. 20, 82 (2014).

[1505] Rode et al. *Den phenology and reproductive success of polar bears in a changing climate*, Journal of Mammology, 99(1): 16 (2018).

[1506] 75 Fed. Reg. at 76,090.

the mother and cubs.[1507] Moreover, due to the density of 3D seismic survey grids, any undetected den would have a very high probability of being disturbed by the very close passage of heavy vehicles.[1508] Given that den detection methods have failed to detect dens about half the time, this means that nearly half of the bears denning within the seismic survey area will be exposed to disturbance at proximities that in the past caused mothers to open their dens. [1509] Those disturbances will bring energetic costs and may also lead to lethal results.[1510]

Despite the foregoing, BLM largely ignores the effects of noise, vibration, human presence and other disturbance to polar bears produced by seismic exploration activities. BLM only mentions such impacts when describing mitigation measures it assumes will be implemented via ITRs that do not currently exist. For instance, the EIS states that "[d]en surveys using FLIR sensors or trained dogs would be conducted annually before seismic exploration and construction of roads and pads commenced in the program area…"[1511]

BLM cannot assume that such measures are wholly effective given recent research demonstrating the shortcomings of these surveys. FLIR surveys, while more effective at detecting polar bear dens than visual observations, cannot identify all of them. As described by Dr. Steven Amstrup, research suggests that a 50% detection rate is probably close to the highest that could reasonably be expected from FLIR surveys. Additionally, locating dens on the Arctic Refuge Coastal Plain is even more complex than in other parts of Alaska's Arctic slope. This is because "den concentration areas" are typical in some other Arctic regions and can be protected with restrictions on industrial and other human activities. However, snow accumulation sufficient for denning in the Coastal Plain occurs mainly in narrow linear features following drainage courses, lake shores and coastal banks. These features and their associated denning habitat are so abundant that they can be considered essentially uniform on the Coastal Plain.[1512] This means that FLIR surveys are likely to be even less than 50% effective when applied in the Coastal Plain.[1513]

While BLM does later acknowledge that FLIR surveys and dog detection "do not provide perfect detection and occupied maternal dens are sometimes missed in preconstruction surveys,"[1514] nowhere does BLM attempt to quantify the likelihood of missing dens. The EIS

[1507] *See* March 2019 Amstrup Letter at Table 2, columns 1 and 2 (showing 79% probability of running over at least one den if there are 10 undetected dens in survey area, and 90% if there are 15 undetected dens).

[1508] *See* March 2019 Amstrup Letter at 13–16.

[1509] *Id*. at 13 (anticipating at least 50% failure rate for den detection); *id.* (explaining that vehicles passing 65 meters from den caused premature opening in past); *id*. at 14 (calculating that if there were 15 undetected dens, on average at least 13 of them would be within 65 meters of vehicle passage).

[1510] *Id*. at 14–15 (describing latent lethal consequences for cubs due to disturbance).

[1511] DEIS vol. 1 at 3-137.

[1512] *See* March 2019 Amstrup Letter at 14.

[1513] *See* March 2019 Amstrup Letter at 23.

[1514] DEIS vol. 1 at 3-134.

merely states that "complete detection of occupied bear dens is unlikely to be achieved, so an unknown (though probably small) number of denning bears could be exposed to disturbance until discovered by such operations every winter during exploration, construction, and development drilling phases."[1515]

Exposing half of the maternal dens located within a proposed seismic survey area to disturbance and potential crushing cannot be considered a small number. This is particularly true when a seismic survey will cover an extensive area within the Coastal Plain within a given denning season. And the disturbance is not necessarily temporary – i.e. lasting only "until discovered by such operations." If a den is abandoned or left earlier than it otherwise would have been, the "discovery" is too late and the significant harm, possibly lethal harm, is done.

Finally, BLM fails to consider the efficacy of the use of dogs for den detection. For practical purposes, the use of the dogs is limited to confirming whether a suspected den already identified by the FLIR survey is actually occupied by a polar bear. Dogs cannot find dens that were not detected by the FLIR survey, because researchers would have to tread over nearly every square foot of an enormous area with the dogs. Further, the dogs must be transported via vehicles that can cause disturbance to undetected dens. The dogs themselves can also cause den disturbance when they alert to a den by starting to dig. [1516] For purposes of a seismic survey of a large area within the complex habitat of the Coastal Plain, dog detection will be of limited utility to mitigate adverse impacts to polar bears. [1517]

BLM failed to take a hard look, or any look at all, at impacts from seismic activities, which could have population-level impacts on threatened polar bears and are under active permitting consideration by the very same agency. [1518] BLM must thoroughly evaluate these impacts before leasing any areas or authorizing any seismic activity.

f. BLM's cumulative impacts analysis is deficient

The DEIS's discussion of cumulative impacts to polar bears is inadequate. The DEIS does not mention, let alone analyze, the majority of current and reasonably foreseeable circumstances and activities that are affecting and will affect polar bears cumulatively and synergistically with Arctic Refuge development. The DEIS fails to analyze the direct, indirect and cumulative effects of the proposed action against a backdrop of continued climate change, which is already causing habitat loss, conflicts with humans, energetic costs, nutritional stress, and strenuous long-distance swimming for polar bears.

[1515] *Id*. at 3-146.

[1516] *See* March 2019 Amstrup Letter at 24 (discussing limitations and adverse side effects of using dogs for den detection).

[1517] *Id.*

[1518] *See supra* at Part III.B. (BLM has improperly segmented and omitted any review of SAExploration's seismic proposal from its analysis of the oil and gas program).

The most significant impact that will act cumulatively with Arctic Refuge drilling is loss of sea ice habitat from climate change. Amstrup et al. (2010) evaluated the future range-wide population status of polar bears under five GHG emissions scenarios and combined them with management scenarios.[1519] Under the A1B, B1, and "mitigation" emissions scenarios (where the "mitigation scenario" was characterized by 450 ppm CO_2, radiative forcing of ~3.5 watts/m^2, and mean global temperature rise limited to ~1.75ºC above preindustrial temperatures by 2100), extinction was the dominant outcome in the Divergent ecoregion (where sea ice recedes from the coast in summer, and polar bears must remain on land or move with the ice as it recedes north) encompassing the SBS population.[1520] When the mitigation scenario was combined with the best-possible on-the-ground management to reduce threats from harvest, bear-human interactions, and oil and gas activities, reduced population was still the dominant outcome for the Divergent ecoregion, although the probability of extinction was still substantial at 24 percent by 2100.[1521]

The DEIS recognizes that climate change is causing, and will continue to cause, an increase in polar bears denning on land and spending time on land, which will lead to more bear-human conflict.[1522] The DEIS does not, however, assess the myriad other ways climate change will act cumulatively with Refuge activities to increase threats to polar bears. For example, polar bears' decreased body condition will mean that any disturbance from oil and gas activities will take a greater energetic toll than it would on healthy bears. Any disturbance that causes a bear to flee has a high metabolic cost.[1523] Moving at even relatively slow speeds results in bears' expending 13 times more energy than they otherwise would.[1524] Female polar bears that are energetically stressed may forgo reproduction, rather than risk incurring the energetic costs of an unsuccessful reproductive process, and the persistent deferral of reproduction could contribute to a declining population trend, further threatening a species with an intrinsically low rate of growth.[1525]

In a warming Arctic, polar bears have less energy to spare. A recent study found that radio-tracked adult female polar bears in the SBS population increased their activity time and/or their travel speed to compensate for rapid westward ice drift in recent years, as ice drift rates increased due to reduced ice thickness and extent.[1526] This additional activity increased their estimated annual energy expenditure, and "likely exacerbate[s] the physiological stress

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[1519] S. C. Amstrup *et al.*, *Greenhouse gas mitigation can reduce sea-ice loss and increase polar bear persistence*, 468 Nature 955 (2010).

[1520] *Id.* at 3.

[1521] *Id.*

[1522] DEIS vol. 1 at 3-138.

[1523] *Id.* at 192.

[1524] Schliebe (2006) at 75.

[1525] *Id.* at 20.

[1526] G.M. Durner *et al.*, *Increased Arctic sea ice drift alters adult female polar bear movements and energetics*, 23 Global Change Biology 3460 (2017).

experienced by polar bears in a warming Arctic."[1527] Polar bears are also increasing their energy expenditure by swimming more due to the decline in sea ice. For example, one study documented an adult female making a 687-km continuous swim over nine days to reach the distant sea-ice edge, followed by an 1800-km walk and swim, during which time she lost 22 percent of her body mass and her yearling cub.[1528] The study "indicates that long distance swimming in Arctic waters, and travel over deep water pack ice, may result in high energetic costs and compromise reproductive fitness" and that "[a]ssociated declines in body mass and losses of dependent young may ultimately become an important mechanism for influencing population trends."[1529]

Satellite telemetry records from 76 bears in the Beaufort Sea during 2007–2012, coupled with earlier results, indicated that the frequency of long-distance swims increased with (a) increases in the distance of the pack ice edge from land, (b) the rate at which the pack ice edge retreated, and (c) the mean daily rate of open water gain between June and August.[1530] These results indicate that "long-distance swimming by polar bears is likely to occur more frequently as sea ice conditions change due to climate warming."[1531] Again, this means that the bears that encounter Arctic Refuge drilling activities are likely to already be in an energy-deficit state, so disturbance from industrial activities will likely have a greater impact than it would have in the past.

BLM acknowledges dramatic sea ice loss, increases in the number of ice-free days in the Beaufort Sea, and the stress brought to polar bears by those factors. It notes that distances traveled by pregnant females from sea ice to denning habitat increased by 3.7 miles per year from 1979-2006, a total of over 103 miles.[1532] The DEIS ignores the next sentence in the cited study, however, which projects that that distance will continue to increase by 10 miles per year from 2001-2060 – close to another **600 miles**.[1533] It is undisputed that increased travel distances could negatively affect denning success and ultimately the population size of polar bears.

[1527] *Id.*; *see also* J.V. Ware *et al.*, *Habitat degradation affects the summer activity of polar bears*, 184 Oecologia 87 (2017) (finding that SBS bears were substantially more active than Chukchi Sea bears in lower quality habitat types and that onshore, SBS bears exhibited relatively high activity associated with the use of subsistence-harvested bowhead whale carcasses).

[1528] G. M. Durner *et al.*, *Consequences of long-distance swimming and travel over deep-water pack ice for a female polar bear during a year of extreme sea ice retreat*, 34 Polar Biology 975 (2011).

[1529] *Id.*

[1530] N. W. Pilfold, *et al.*, *Migratory response of polar bears to sea ice loss: to swim or not to swim*, 40 Ecography 189 (2017).

[1531] *Id.* at 189.

[1532] DEIS vol. 1 at 3-125.

[1533] Bergen et al. 2007. Predicting Movements of Female Polar Bears Between Summer Sea-Ice Foraging Habitats and Terrestrial Denning Habitats of Alaska in the 21st Century: Proposed Methodology and Pilot Assessment.

Since it ignores the additive distance that SBS bears will need to travel from sea ice to denning habitat, the DEIS does not estimate the energetic loss or nutritional stress that polar bears will have to overcome nor assign any expected additive mortality due to this dynamic. The DEIS thus understates the likely consequences for SBS bears.

Another recent study found that SBS polar bears cannot use a hibernation-like metabolism to prolong their summer fasting period meaningfully and that bears are susceptible to deleterious declines in body condition, and ultimately survival, during the lengthening period of ice melt and food deprivation.[1534] Scientists at DOI interpret these observations as a prelude to mass polar bear mortality events in the future: "[a]s changes in habitat become more severe and seasonal rates of change more rapid, catastrophic mortality events that have yet to be realized on a large scale are expected to occur."[1535]

Climate change and oil and gas development will also act cumulatively on polar bears' primary prey, ringed seals, likely reducing their abundance and availability for polar bears. Cumulative impacts and synergistic effects from potential Arctic Refuge Coastal Plain, Beaufort Sea OCS, and state offshore lease sales, exploration, and oil drilling programs could affect seal feeding, pup survival, and vulnerability to a suite of predators. For example, icebreakers used to move drilling vessels and related equipment to leased areas may fragment sea ice that ice-dependent seals need to build lairs and raise and feed their pups. Seismic noise and related vessel activities may also disturb seals, thereby reducing seal availability to polar bears during critical feeding periods. Increased human activity associated with exploration and drilling may also increase the occurrence of other Arctic predators like Arctic foxes and non-native red foxes (*Vulpes Vulpes)* and their predation on seal pups,[1536] thereby increasing predator competition and loss of meat to scavenging, and further reducing polar bear access to prey.[1537]

In addition to cumulative impacts from climate change, polar bears in the SBS population face cumulative impacts from a wide range of industrial activities, including onshore and offshore oil and gas development and increased shipping. BLM has failed to identify and assess the many ongoing and reasonably foreseeable oil and gas activities that will affect polar bears, including increased onshore oil development in the NPR-A, including CD-5, GMT-1, GMT-2, and Willow. The impacts and disturbance to polar bears due to oil and gas activities in the NPR-A may be further exacerbated if DOI moves ahead with its attempt to reopen and revise BLM's Integrated Activity Plan. As envisioned by DOI, this plan would open more areas in the Reserve to leasing and oil and gas activities, including in sensitive environmental areas near the coast. BLM also failed to fully consider impacts from increasing development on state lands adjacent to

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[1534] J.P. Whiteman *et al., Summer declines in activity and body temperature offer polar bears limited energy savings*, 349 Science 295 (2015).

[1535] Convention on Int'l Trade in Endangered Species, CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II, Sixteenth meeting of the Conference of the Parties, Bangkok (Thailand), 3-14 March 2013, Prop. 3 at 5.1.

[1536] L. E. Eberhardt, *et al., Arctic fox home range characteristics in an oil-development area,* 46 Journal of Wildlife Management 1 (1982).

[1537] I. Stirling and W. R. Archibald, *Aspects of predation of seals by polar bears,* 34 Journal of the Fisheries Research Board of Canada 8 (1977).

the Reserve; the Liberty offshore island in the Beaufort Sea; and a new Five-Year Plan for Offshore Oil Development that includes lease sales in the Beaufort Sea.

Polar bears in the SBS population face extinction during this century if we do not take aggressive steps to decrease greenhouse gas emissions and limit other impacts to polar bears from industrial development. The DEIS does not acknowledge or analyze how Arctic Refuge oil activities will act cumulatively with climate change and other development to seal polar bears' fate.

3. Mitigation Measures

BLM is obligated under NEPA to analyze appropriate mitigation measures to reduce impacts to polar bears. It fails to do so. Throughout its analysis, BLM improperly relies on conclusory statements about Incidental Take Regulations (ITRs) mitigating impacts to polar bears.[1538] The agency fails to state that such ITRs would be required for this leasing program, nor does the EIS explain its assumptions for what specific mitigation measures it believes will be in place at which phase of oil and gas activities.

The use of FLIR surveys and dogs to detect polar bear dens would not be required by the lease or by BLM; the DEIS says that they would be conducted "as stipulated by the LOAs and polar bear interaction plans that would be required."[1539] But LOAs are not necessarily required, depending on circumstances, nor are polar bear interaction plans mandated to require the use of FLIR surveys or dogs. BLM must require the mitigation measures it is relying on to make any conclusions about impacts to polar bears. At present, the DEIS speculatively discusses mitigation measures that *might* be required or suggested by another agency, rather than mitigation measures it intends to impose. The DEIS fails to consider whether the measures actually will occur. It also fails to consider their efficacy, or lack thereof, as discussed above.

The EIS also relies on a buffer zone around known dens to mitigate noise disturbance.[1540] However, such a buffer is ineffective if den-detection surveys are not mandated in the first place.[1541] Notably, Alternatives B and C do not mandate pre-activity den-detection surveys for winter overland moves and seismic work.[1542] Since polar bears do not return to the same exact den location each year, it is unclear how a current active den location would ever be "known" absent a pre-activity den-detection survey; and since dens are not visible to the naked eye, it is unclear how a den would be "observed" prior to disturbing it absent a den-detection survey using

[1538] See e.g., DEIS vol. 1 at 3-134, 3-135, 3-137, 3-138, 3-146

[1539] DEIS vol. 1 at 3-137.

[1540] See ROP 10, DEIS vol. 1 at 2-20.

[1541] See March 2019 Amstrup Letter at 22 (explaining that dens are not visible due to overlying snow and must be located using forward looking infrared camera surveys (FLIR) to detect heat); *id*. at 26 (explaining that polar bears do not return to the same exact den location from year to year).

[1542] DEIS vol. 1 at 2-20.

FLIR.[1543] Further, even when pre-activity den-detection surveys are conducted, such a buffer will fail to protect dens that remain undetected due to the high failure rate of the den-detection method employed. Alternative D, while stating that den-detection surveys for winter overland moves and seismic work "would" be conducted by parties subject to the ROP, does not specify the methods to be employed, instead stating that the pre-activity den-detection survey would be conducted "in consultation" with FWS and/or NMFS.[1544] It is not clear whether the term "consultation" is intended to mean the interagency consultation process required by ESA section 7, or merely that the party seek guidance from the other agencies. The DEIS thus leaves it to a future, possibly voluntary, process by another agency to decide what survey methods will be required while misleadingly indicating that FLIR-detection and the use of dogs will mitigate impacts.

And as discussed above, BLM fails to provide any science to indicate that a one-mile buffer will protect denning bears from foreseeable noise impacts, especially seismic testing and pile-driving. Also, BLM provides no buffer for non-denning bears, despite evidence indicating strong aversion reactions of non-denning bears, especially females and cubs, to industrial noise. BLM must support its denning buffer with science and establish ROPs for non-denning bears designed to reduce the extreme energetic stress that industrial sources of noise are known to cause polar bears.

Also, ROP 4 says the lessee/operator/contractor "would prepare and implement bear-interaction plans to minimize conflicts between bears and humans. These bear interaction plans would be developed in consultation with and approved by the USFWS and the Alaska Department of Fish and Game (ADFG). The plans would include specific measures identified in the current USFWS Polar Bear Mitigation Plan . . ." The DEIS does not cite to this Mitigation Plan or identify the specific measures, leaving them unexamined for efficacy. ROP 4 doesn't require that all such measures be included. The FEIS should include the Mitigation Plan, identify the specific measures, and require that they all be included. Even that, though, would not constitute an actual evaluation of the impacts to polar bears from these interactions.

The DEIS misleadingly implies that NSO stipulations will "protect" between "29 percent of the potential maternal denning habitat mapped in the program area" (under Alternative B) and 54 percent (under Alternative D), and that a total of 82 percent of the maternal denning habitat will be protected under Alternative D when combining the NSO with the areas not offered for lease.[1545] The DEIS fails to acknowledge or evaluate how oil and gas development on areas adjacent to the NSO and unleased locations will affect access to and viability of the maternal denning habitat itself. There is no analysis of the reach of impacts from areas where surface oil and gas activities will be allowed. A proper analysis minimally would require mapping the areas where surface oil and gas activities will be allowed and then evaluating how much habitat falls within a buffer distance from those locations, where the buffer distance reflects some scientifically determined estimate of the distance required to ensure the habitat will be safe from various forms of harm resulting from those activities. Moreover, the approach in the DEIS is

[1543] See March 2019 Amstrup Letter at 22, 26.
[1544] DEIS vol. 1 at 2-21 to 2-22.
[1545] DEIS vol. 1 at 3-144, 3-145, and 3-147.

misleading because it refers only to the mapped potential denning habitat rather than to the terrestrial denning critical habitat. The DEIS thereby improperly ignores the important role that the surrounding critical habitat plays in supporting the maternal denning locations, and misleadingly inflates the benefit of the NSO stipulations.

The proposed Lease Stipulations and Required Operating Procedures include Lease Notice 1, which states that BLM would not approve any activity that may affect any listed species or critical habitat until it completes its obligations under applicable requirements of the ESA, including completion of any required procedure for conference or consultation.[1546] This provision cannot be properly categorized as a mitigation measure, as BLM is merely characterizing the legal requirements of ESA section 7 consultation. The ESA imposes a substantive obligation on federal agencies, but BLM does not explain how it will comply with those requirements at the lease sale stage.[1547] For instance, BLM should explicitly state whether the agency will consult with FWS before issuing leases on the Coastal Plain. BLM's attempts to frame its existing ESA obligations as a mitigation measure in its impacts analysis does not obviate BLM's responsibility to provide for measures that minimize and avoid impacts to polar bears.

Furthermore, with regard to the effectiveness of Lease Notice 1, BLM has totally ignored the question that the scope of discretion retained under the terms of the lease may affect the scope of any post-leasing consultation. This is critical to define because the government has attempted to undermine ESA consultations by asserting that it has limited or no discretion over a decision.[1548] It is plain that if an agency has *any* discretionary authority to prevent or reduce an effect to a listed species resulting directly or indirectly from its action, then the scope of the consultation must extend to the full reach of such effects.[1549] But if there are effects that cannot be reached due to limits on the agency's discretion once the lease has been issued, the agency will claim that those effects need not be considered during the post-leasing ESA consultation, and therefore would not come within the ambit of notice provided by Lease Notice 1. Thus it is vitally important for the DEIS to consider, and for any future leases to clearly establish through their terms, whether BLM is retaining the authority to permanently and completely preclude

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[1546] DEIS vol. 1 at 2-35.

[1547] *See supra* Part III.D. (explaining BLM's procedural and substantive obligations under the ESA).

[1548] *See e.g., Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv*., 524 F.3d 917, 928 (9th Cir. 2008) (rejecting agency attempt to exclude consideration of effects of allegedly nondiscretionary components of action during consultation on ground that agency did have authority). *See also supra* Part III.D.1 (describing BLM's failure to explain how it will comply with its ESA mandates).

[1549] *See NRDC v. Jewell*, 749 F.3d 776, 784 (9th Cir. 2014) (en banc) (agency required to consult on water contract renewal even if obligated to renew, where agency could still attempt to negotiate contract terms not directly related to the water allocation or quantity); *Karuk Tribe of California v. U.S. Forest Serv*., 681 F.3d 1006, 1024 (9th Cir. 2012) (consultation required on any affirmative agency action where the agency has "some discretion" and that discretion has "the capacity to inure to the benefit of a protected species").

surface disturbing activities, if necessary to protect a listed species, or whether BLM is merely retaining the authority to condition the access to oil and gas resources so as to reduce impacts to the listed species. Unless the lease terms do the former, BLM ostensibly would be giving away a critical component of its discretion – and the ability to protect polar bears from injury and disturbance - at the leasing stage.[1550] The DEIS, and the ESA consultation that the DEIS claims is occurring now at the leasing stage, must consider the impact of BLM forsaking that discretion. If BLM is purporting to retain that full discretion, then it should do so unequivocally in the terms of the lease. If not, the DEIS and ESA consultation must evaluate the impacts accordingly. Moreover, BLM cannot lawfully give away its discretion to control impacts that it purports are not concrete enough to analyze fully at the leasing stage with regard to its ESA obligations. Thus, to comply with the ESA, BLM must ensure that the lease terms clearly retain full discretion to entirely and permanently preclude impacts at later stages.

Even for leases that BLM describes in this DEIS as being "NSO," it is not clear from the DEIS whether BLM would retain the authority post-leasing to permanently preclude activities on areas immediately adjacent to the NSO areas that would be required to access the oil and gas associated with the NSO leases. In short, it is not clear what BLM means by "NSO" in this DEIS, and the agency should carefully explain whether it is retaining the authority to deny all development on the NSO lease permanently, or whether the "NSO" lease entails a right of access via adjacent areas, and therefore potential spill-over effects on the NSO areas themselves that BLM will not be able to entirely and permanently preclude after the leasing stage.

L. BLM'S ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON MARINE MAMMALS IS INADEQUATE.

The DEIS fails to fairly assess the impacts of oil and gas leasing, exploration and development in the coastal plain on Arctic ringed seals. Arctic ringed seals are listed as threatened under the Endangered Species Act and also as depleted under the Marine Mammal Protection Act, as described above. Projections based on the best available science indicate that ringed seal habitat is vanishing and will shrink to a tiny fraction of its historical reach in the coming decades. Despite this, the DEIS makes misleadingly optimistic statements about the current and potential future conditions for this species and omits or fails to account for many of the documented impacts on seals from oil and gas operations. The one Required Operating Procedure, applicable in just one of the alternatives presented in the DEIS, does not appear sufficient to protect seals from noise and other impacts based on the best available science. We note that the concerns outlined below also apply to the threatened bearded seal Beringia distinct population segment, which are subject to the same ESA and MMPA protections as Arctic ringed seals.[1551]

[1550] *See supra* Part III.B.7 (explaining BLM's failure to maintain authority to preclude development on leases).

[1551] NOAA, Final Rule, Endangered and Threatened Species; Threatened Status for the Beringia and Okhotsk Distinct Population Segments of the Erignathus barbatus nauticus Subspecies of the Bearded Seal, 77 Fed. Reg. 76740 (December 28, 2012).

1. The DEIS Fails to Accurately Describe the Affected Environment for Seals.

Arctic ringed seals were listed as threatened under the ESA in 2012.[1552] The principal threats to ringed seals are habitat alterations stemming from climate change – specifically the reduced presence and extent of sea ice and decreasing spring snow cover.[1553] Ringed seals are vulnerable to habitat loss from changes in the extent or concentration of sea ice because they depend on this habitat for critical life stages including pupping, nursing, molting, and resting.[1554] In the Beaufort Sea, a moderate decline in sea ice is predicted during June within this century, while substantial declines in sea ice are projected in July and November after mid-century.[1555] Changes in the seasonality of snow cover on sea ice are already negatively impacting juvenile survival of ringed seals.[1556] Ringed seals, especially the newborn, depend on snow cover for protection from cold temperatures and predators.[1557] Earlier snow melts have resulted in high rates of pup mortality due to hypothermia and predation. In Alaska, researchers have documented the increasingly early emergence of seals from lairs.[1558]

Polar bear predation on ringed seal pups increased 4-fold in a year when average snow depths decreased from 23 to 10 cm. So, although a high proportion of pups born each year are lost to predation, that mortality would be much higher without the protection provided by the subnivean lair.[1559] Low ringed seal recruitment in western Hudson Bay was also attributed to decreased snow depth in April and May. Reduced snowfall results in less snow drift accumulation next to pressure ridges, and pups in lairs with thin snow cover are more vulnerable to predation than pups in lairs with thick snow cover. When snow cover is insufficient, pups can also freeze in their lairs or outside when lairs prematurely collapse.[1560]

[1552] NOAA, Final Rule, Threatened Status for Arctic ringed seal (and other subspecies), 77 Fed. Reg. 76706 (December 28, 2012).

[1553] 77 Fed. Reg. at 76708 (also noting changes in prey availability due to ocean acidification as a conservation concern).

[1554] *Id*. at 76,709.

[1555] *Id*.

[1556] Kelly, Climate Change and Ice Breeding Pinnipeds 2001 Pages 43-55 *in* G.-R. Walther, C. A. Burga, P. J. Edwards (eds.) "Fingerprints" of climate change: adapted behaviour and shifting species' ranges. Kluwer Academic/Plenum Publishers, New York and London; Stirling, I., and T. G. Smith. 2004. Implications of warm temperatures and an unusual rain event for the survival of ringed seals on the coast of Southeastern Baffin Island. Arctic 57:59-67.; Stirling and Smith 2004.

[1557] 77 Fed. Reg. at 76,711.

[1558] Kelly et al., Timing and Re-interpretation of Ringed Seal Surveys (2006) p.48, Table 15.

[1559] 77 Fed. Reg. at 76,711.

[1560] 77 Fed. Reg. at 76,709.

Seals need snow drift accumulations on stable pack ice a minimum 54 cm deep to build effective birth lairs.[1561] Those accumulations require accumulations of at least 20 cm on flat ice; therefore, areas forecasted to have less than 20 cm average snow depth in April are considered inadequate for the formation of ringed seal birth lairs.[1562] Snow cover in the first decade of the 21st century averaged 25-35cm over much of the range of Arctic ringed seals.[1563] The snowpack in the Beaufort Sea has thinned from 32.8cm historically to 14.5 cm as measured from 2009-2013.[1564] Before the end of this century, snow cover adequate for the formation and occupation of birth lairs is forecasted to occur in only parts of the Canadian Arctic Archipelago, a portion of the central Arctic, and a few small isolated areas in other regions.[1565] Areas with 25–30 cm of snow are projected to be limited to a few small isolated pockets in the Canadian Arctic by 2090–2099.[1566]

In sum, decreasing sea ice habitat and snow cover already threaten the continued existence of Arctic ringed seals, and there is projected to be very little habitat sufficient to support critical life-cycle functions of ringed seals within the coming 80 years.

Despite the very grim outlook that forms the basis for listing Arctic ringed seals, the DEIS understates their predicament and the ways in which oil and gas activity will exacerbate the stressors on this threatened population. BLM distorts the best available science by understating impacts and overstating the likelihood that behavioral responses or improved environmental conditions will benefit seals in the future.

For example, the DEIS says only "a small number of seals could use the program area."[1567] The map provided, however, indicates numerous seal sightings well within a five-mile buffer seaward of the coastal plain, plainly showing that seals in fact do use the program area, in unknown but potentially significant numbers.[1568] The surveys used to produce the map also likely overlooked a significant percentage of seals actually present in the program area.[1569]

[1561] NOAA, Proposed Designation of Critical Habitat for Arctic Ringed Seals 79 Fed. Reg. 73010, 73014 (December 9, 2014).

[1562] *Id*.

[1563] 77 Fed. Reg. at 76,708.

[1564] Webster et al., Interdecadal changes in snow depth on Arctic sea ice, Journal of Geophysical Research: Oceans Volume 199, Issue 8 (2014)

[1565] 77 Fed. Reg. at 76,708.

[1566] *Id*. at 76,711; see also Hezel et al., Projected decline in spring snow depth on Arctic sea ice caused by progressively later autumn open ocean freeze-up this century, Geophysical Research Letters Volume 39 (2012) (projecting declines in mean April snow depth north of 70 degrees latitude from about 28 cm to 16 cm, and a 70% decline in areas with snow depths above 20cm).

[1567] DEIS vol. 1 at 3-130.

[1568] DEIS vol. 2, App. B at Map 3-26.

[1569] Kelly et al., Timing and Reinterpretation of Ringed Seal Surveys (2006) at 6 (Modeling of the probability that seals were visible during past aerial surveys indicated that the fraction of seals visible varied from less than 0.40 to more than 0.75 between survey years).

The DEIS also states that "[t]he population trends and status of this stock are currently unknown but there are indications that ocean conditions have been favorable for ringed seals recently: ringed seals near Kaktovik are growing and maturing faster and at a younger age now than 30 years ago."[1570] BLM cannot reasonably base a broad conclusion that ocean conditions have been favorable for ringed seals, however, on the observed maturation rates of a small sample of seals in one area comprising a tiny fraction of their range.

More importantly, the climate change-driven existential threats to ringed seals described above negate the impact of any real or perceived recent improved ocean conditions. Ringed seals are just as threatened with extinction in the coming decades whether or not current ocean conditions appear "favorable," and the implication that there are meaningful countervailing improving conditions for ringed seals is misplaced. Particularly given the highly unfavorable condition of ocean acidification, a key conservation concern behind the Arctic ringed seal listing that the DEIS does not mention,[1571] the implication regarding favorable ocean conditions is even more misleading.

Finally, the DEIS claims that the "broad distribution, diverse diet, and *ability to haul out on land or ice* suggest that ringed seals may be resilient to changes in sea ice availability (NMFS 2013)."[1572] This quotation is inaccurate; the cited document actually states that ringed seals' "broad distribution, ability to undertake long movements, diverse diet, and association with widely varying ice conditions suggest resilience in the face of environmental variability."[1573]

The report does not state that ringed seals haul out on land, or that they could adapt to the disappearance of sea ice by hauling out on land instead, which appears to be the intent of the mis-quoted language. Further, the very next sentence in the report, not noted in the DEIS, states that "[h]owever, ringed seals' long generation time and ability to produce only a single pup each year may limit its ability to respond to environmental challenges such as the diminishing ice and snow cover."[1574] In all, the report suggests no notable "resilience" that seals may have that would meaningfully modify the science and findings behind the threatened listing under the ESA: critical habitat to support the continued existence of ringed seals is vanishing and is expected to persist in just a very small area on the planet within about 80 years.

In sum, BLM must modify the discussion in the DEIS to reflect the best available science and provide an accurate sense of the environmental baseline relevant for Arctic ringed seals.

[1570] DEIS at 3-130.

[1571] 77 Fed. Reg. 76,708.

[1572] DEIS at 3-131 (emphasis added).

[1573] NMFS Biological Opinion on Oil and Gas Leasing and Exploration Activities in the U.S. Beaufort and Chukchi Seas, Alaska (2013) at 153.

[1574] *Id*.

2. The DEIS Understates Impacts from Oil and Gas Activities to Seals

The DEIS underestimates potentially significant adverse impacts to seals from exploration, and impacts from industrial noise. Regarding seismic exploration impacts, the DEIS states that:

> A small number of ringed seals could over-winter and produce pups in the nearshore program area. One potential impact on ringed seals from the action alternatives could result from threats to lair integrity, such as lair collapse caused by tracked vehicles transiting sea ice during seismic activity. This impact could result in injury or mortality of pups and females. Noise from seismic activities could also disturb and displace individual seals. Overall, potential impacts of on-ice seismic activity could be lethal to a small number of seals, although the probability of this occurring is low. Most impacts would be temporary behavioral changes on the ringed seal population.[1575]

It is unclear why BLM believes the probability of lethal impacts to seals is low given the known presence of seals in the area and the difficulty in detecting and avoiding lairs; BLM should clarify that lethal impacts are quite possible and explain how they will be prevented. We also note that any lethal take of ringed seals would require an incidental take permit pursuant to the Marine Mammal Protection Act, which BLM entirely fails to acknowledge in the DEIS.

Further, the DEIS adds that industrial noise, e.g., from vessel operations, coastal facilities, seismic exploration, mobilization of modular units and other sources may impact seals at a distance of 2.5-3.7 miles.[1576] There is no lease stipulation or ROP, however, that would protect seals from noise impacts at this distance. There is also no citation offered for this distance estimate, nor any differentiation between the type of noise and distance needed to avoid impacts, nor discussion of what those impacts would be – i.e., no discussion regarding seal noise disturbance thresholds and responses.

The DEIS omits the best available science on the specific topic of noise impacts to ringed seals. For example, seals have been found to abandon lairs three times more often when located within 150 meters of seismic lines, and seismic Vibreosis caused lair abandonment from 644 meters away.[1577] Radio-tagged seals departed their lairs in response to snow machines within 2.8 km, human footfalls as far away as 600 m, a skier as far away as 400 m, and in response to a helicopter flying 5 km from the lair at an altitude of 152 m, and during helicopter landings or takeoffs as far away as 3 km.[1578] Seals also departed lairs by diving into the water in greater than 50% of instances when helicopters flew over at or below an altitude of 305 m.[1579]

[1575] DEIS at 3-135.

[1576] DEIS vol. 1 at 3-139.

[1577] Kelly et al., *Ringed Seal Winter Ecology and Effects of Noise Disturbance* at ii. (1986).

[1578] Kelly et al., *Responses of Ringed Seals to Noise Disturbance* (1988).

[1579] Kelly et al., *Ringed Seal Winter Ecology and Effects of Noise Disturbance* at ii.

Also, the brief mention of vessel operations concerns only noise and overlooks other factors. Vessels associated with oil and gas exploration activities represent a suite of stressors that pose several potential hazards to ice seals in the Beaufort and Chukchi Seas. For example, the size and speed of transiting vessels pose some probability of collisions between ice seals.[1580] Ringed seals may be at the greatest risk from shipping threats in areas of the Arctic where geographic constriction concentrates seals and vessel activity into confined areas, such as the Bering Strait and other areas.[1581]

Aggregations of ringed seals have been seen in Kotzebue Sound, near Nome, and along the central Beaufort Sea coast from Kaktovik west to Brownlow Point along Camden Bay.[1582] Vessels transiting to the Beaufort Sea from Dutch Harbor at the start or finish of the open water season, or transiting between sites or for resupply during the season, may pose the most risk to ringed seals because that is when the vessels are traveling at high speeds and covering areas where ringed seals are known to aggregate.[1583] Some seals are thought to have been struck and killed by ship propellers, and some have been killed by icebreakers moving through fast-ice breeding areas.[1584] The DEIS fails to disclose this risk or provide measures to mitigate against it.

BLM must add the best available science to its discussion of reasonably foreseeable impacts to ringed seals from seismic exploration and other industrial activities, particularly their noise impacts. It must then develop associated lease stipulations and ROPs based thereon, and draw a rational connection between the two.

3. The DEIS Fails to Analyze Adequate Mitigation To Protect Seals.

Required Operation Procedure (ROP 10), which is included in Alternative D only, requires lessees working in polar bear denning and seal birthing habitat in winter to conduct a survey for polar bear dens and seal birthing lairs, in consultation with the USFWS, or NMFS, or both, as appropriate, throughout the planned area of activities and before initiating activities.[1585] The provision is silent as to how seal lairs would be detected. As is the case with polar bear dens, detecting lairs is a difficult task and it is critical that BLM explain the methods by which dens will be detected, the best available methods and track record of success in doing so, and what percentage of lairs can reasonably be expected to be detected in the program area during pre-seismic surveys.

ROP 10 also requires a sound source verification test in advance of seismic survey work to measure the distance of vibroseis3 sound levels through grounded ice to the 120 decibels (dB)

[1580] NMFS, Biological Opinion on Oil and Gas Leasing and Exploration Activities in the U.S. Beaufort and Chukchi Seas, Alaska (2013) at 211.

[1581] *Id*. at 212.

[1582] *Id*.

[1583] *Id*.

[1584] *Id*.

[1585] DEIS vol. 1 at 2-21.

re 1 μPa threshold in open water. The distance will be used to buffer all on-ice seismic survey activity operations from any open water or ungrounded ice throughout the project area.[1586]

BLM fails to explain the basis for the 120 dB threshold. Its apparent premise – that staying below this threshold will avoid impacts to seals – does not appear to be supported by the best available science. Instead, contextual factors such as subject behavioral state, spatial orientation of source and receiver, subject motivation or familiarity with a sound source, and similarity of noise to potential predators strongly influence response probability across a range of noise levels.[1587] BLM must consider the contextual factors relevant for ringed seals near the coastal plain, including the likely unfamiliarity with industrial noise sources, and must explain the basis for establishing a 120 dB threshold.

The DEIS states that "[u]nder ROP 10, the pre-activity surveys required to locate dens, plus the 0.5-mile and 1-mile buffers for seismic and heavy equipment operation around occupied dens of grizzly and polar bears, respectively, would help to reduce the impacts of behavioral disturbance on denning bears (as well as birth lairs of ringed seals on landfast ice along the coast) throughout the entire program area."[1588]

But as noted above, the DEIS mentioned a 2.5-3.7 mile zone where noise impacts to seals can be expected, and the referenced buffers apply only to bear dens, not seal lairs. The DEIS thus overstates the protection provided to seals under ROP 10. 0.5-mile and 1-mile buffers are simply insufficient.

Finally, operations after May 1 would employ a full-time trained protected species observer (PSO) on vibroseis vehicles to ensure all basking seals are avoided by vehicles by at least 500 feet and would ensure that all equipment with airborne noise levels above 100 dB re 20 μPa were operating at distances from observed seals that allowed for the attenuation of noise to levels below 100 dB. The rationale behind these metrics is again not provided in the DEIS, and they do not appear to reflect the best available information.

Seals are departing lairs earlier in the season, so basking seals can be expected before May 1 and this standard should be modified accordingly.[1589] As detailed above, many sources of noise cause behavioral responses in seals from distances greater than 500 feet, so keeping that distance will not be effective in avoiding those responses. And while it may be a worthy goal, the effort to keep attenuated noise levels below 100 dB for observed seals would seem difficult to achieve as a practical matter. BLM should explain how this can be achieved, and/or include this in the required sound source verification test, so that distances that specified equipment must be kept from basking seals can be understood prior to undertaking the activity.

[1586] *Id*.

[1587] Encyclopedia of Marine Mammals (2018) at 701.

[1588] DEIS vol. 1 at 3-146.

[1589] Kelly 2006 (p. 48, Table 15); s*ee also* Von Duyke et al., Ringed seal spatial use, dives, and haul-out behavior in the Beaufort, Chukchi and Bering Seas (2011-2016) (using satellite transmitters to demonstrate haul-out behavior well in advance of May 1).

4. The DEIS to Fails Adequately Consider Impacts to Whales

The DEIS has also failed to describe adequately the range of potential impacts to cetacean species, particularly large whales, from vessel traffic, both in marine waters within 5 nautical miles (nm) of the program area as well as along the 1,600 nm marine barge route (Fig. 3-6, Marine Barge Route—Dutch Harbor to Program Area, Appendix A). The DEIS acknowledges that two whales, the bowhead (*Balaena mysticetus*) and the beluga (*Delphinapterus leucas*) are commonly found within 5 nm of the coastline of the Arctic Refuge.[1590] The bowhead is listed as an endangered species under the ESA and as a depleted species under the MMPA, while the beluga is listed as a depleted species under the MMPA.[1591] Along the marine barge route, the DEIS also states that vessels may encounter eight additional large whale species: blue, fin, humpback, minke, North Pacific right, sperm, and killer whales.[1592] All eight species are protected by the MMPA; in addition, the blue, fin, sperm, North Pacific right, and Western North Pacific distinct population segment (DPS) of humpback whales are listed under the ESA as endangered, while the Mexico DPS of humpback whales is listed as threatened.[1593] Puzzlingly, the DEIS later discounts any impacts from vessel collision to the western North Pacific DPS of gray whales, also listed as endangered under the ESA, although the DEIS never identifies this species as occurring along the marine barge route and fails to include any further discussion regarding the species.[1594]

As detailed below in Section V.W,, Shipping, the DEIS improperly limits the geographic scope of the "affected environment" and inappropriately focuses on the "program area" rather than providing the necessary baseline descriptions of marine areas, and the species that occur in those areas, along the marine barge route. [1595] The DEIS also fails adequately to discuss the environmental impacts that could occur along the marine barge route to large whales, specifically: oil and hazardous substance spills,[1596] noise,[1597] and ship strikes.[1598] We reiterate those concerns by reference here, and urge BLM not only to rectify the DEIS' errors in this regard but also to clarify and improve its proposed mitigation measures,[1599] and add the National Marine Fisheries Service as a cooperating agency,[1600] to ensure that the DEIS, lease stipulations, and required operating procedures are grounded in the best available scientific information on large whales and that lease stipulations and required operating procedures scrupulously adhere to the requirements of the ESA and MMPA.

[1590] Table 3-20, DEIS at 3-123; *see also* Map 3-25, Appendix A

[1591] DEIS at 3-123.

[1592] DEIS at 3-130.

[1593] https://www.fisheries.noaa.gov/alaska/endangered-species-conservation/endangered-threatened-and-candidate-species-alaska

[1594] DEIS at 3-142.

[1595] *Id.* at Section V.W.

[1596] *See infra* Part W.B.1.

[1597] *See infra* Part W.B.2.

[1598] *See infra* Part W.B.3.

[1599] *See infra* Part W.C.

[1600] *See infra* Part W.D.

M. BLM'S ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON ARCTIC REFUGE LANDOWNERSHIP AND USE IS INADEQUATE.

The Coastal Plain of the Arctic National Wildlife Refuge are federal public lands owned by all Americans for our common use and benefit. There are some private lands within the boundaries of the Coastal Plain, including native allotments and corporation land. Additionally, all Alaska Native Claims Settlement Act (ANCSA)-conveyed lands contain a limitation on use and disposition, imposed by section 22(g) of that act. Groups raised the need for BLM to analyze the impacts of an oil and gas program on private lands, including the need to consider activities on these private lands in its cumulative impacts analysis.[1601] BLM's analysis of this issue in the draft EIS is deficient.

BLM fails to specifically analyze the impacts of an oil and gas program on the Native allotments. There are over 900 acres of allotments spread across the Coastal Plain, but concentrated primarily along rivers and the coast.[1602] Many of these allotments support subsistence activities and uses. Some of the allotments have not been conveyed yet. BLM has not analyzed the impacts of oil and gas development on the use of allotments or the potential to impact selections. It is reasonable that a person may no longer be interested in using a specific area and allotment if that area is highly impacted by oil and gas activities. BLM has also not proposed any measures to protect these allotments, like a buffer or seasonal restrictions that are specific to the allotments. Relatedly, BLM's characterization of the NSO provision as providing protections for private lands is also questionable, as the NSO provision only prohibits permanent oil and gas infrastructure, but not significant other activities like exploration, it does not appear to apply to all areas where there are allotments, and BLM can grant waivers to allow pipelines and roads to cross rivers.

It also appears from BLM's discussion that BLM is making the various stipulations and required operating procedures it will adopt for the Federal lands applicable to the private lands.[1603] Section 22(g) of ANCSA makes Refuge laws generally applicable to private lands within the Refuge. To ensure clarity, BLM should more clearly state that its stipulations and limitations developed to protect Refuge values and resources on Federal lands are applicable to all private lands in the Refuge through section 22(g).

BLM notes that there may be interest in conveying lands out of federal ownership "to accommodate new community development" and "to support . . . a demand for land uses associated with energy or mineral development."[1604] It is unclear what BLM means by this or what authority DOI has to convey lands in the Coastal Plain out of federal ownership. Past legislation has very clearly and specifically provided for land selections by Alaska Native Corporations, and those selections have been made. And in 1988, Congress passed legislation

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[1601] Group Scoping Letter at 160–62.
[1602] DEIS vol. 1 at 3-149; CCP EIS Map 4-1
[1603] DEIS vol. 1 at 3-150.
[1604] DEIS vol. 1 at 3-151.

that prohibits land exchanges within the Coastal Plain absent Congressional approval.[1605] BLM must explain this and related statements and specifically identify the legal authority it believes it could use to transfer additional federal lands in the Coastal Plain. BLM should also identify what additional lands it thinks may be sought for exchange based on its conclusions and assumptions. Additionally, BLM notes multiple times that an oil and gas program may lead to an expansion of infrastructure and facilities in the City of Kaktovik,[1606] but BLM does not analyze what those impacts would be on Coastal Plain resources. BLM must analyze all reasonably foreseeable impacts.

1. ASRC Lands

BLM has not adequately explained or analyzed the legal status and impacts of oil and gas on ASRC lands. Under ANCSA, Kaktovik Inupiat Corporation (KIC) — an Alaska Native village corporation — could select 92,160 acres of surface land. Originally, only 69,120 of those acres could be within the Arctic Refuge.[1607] That changed in 1980 with the passage of the Alaska National Interest Lands Conservation Act (ANILCA). In ANILCA, Congress authorized KIC to select an additional 23,040 surface acres within the Arctic Refuge. In general, regional corporations like ASRC were entitled to acquire the subsurface rights to lands selected by village corporations like KIC.[1608] But Congress prohibited regional corporations — like ASRC — from acquiring the subsurface rights to surface lands selected by a village corporation if those surface lands were within a pre-ANCSA refuge like the Arctic Refuge.[1609]

Despite these legal prohibitions barring ASRC from gaining the subsurface estate in the Arctic Refuge, in 1983 DOI Secretary Watt entered into a legally questionable land exchange with ASRC called the Chandler Lake Agreement that also addressed oil and gas development on private lands within the Arctic Refuge. As a result of this exchange, ASRC obtained an interest in 92,160 acres of subsurface estate below the KIC surface lands and most allotments within the Arctic Refuge. Congress amended ANILCA in 1988 to specifically prohibit the Secretary from conveying or exchanging any additional lands within the Arctic Refuge without congressional approval (other than lands selected prior to 1987).[1610] The General Accounting Office later found that the land exchange was not in the public interest for multiple reasons.[1611]

[1605] 16 U.S.C. § 1302(h)(2).
[1606] DEIS vol. 1 at 3-150–3-151.
[1607] *See* 43 U.S.C. §§ 1611(a)(1), 1613(a).
[1608] 43 U.S.C. § 1613(f).
[1609] 43 U.S.C. §§ 1611(a)(1), 1613(f).
[1610] 16 U.S.C. § 3192(h)(2) & Public Law 100-395 (Aug. 16, 1988).
[1611] *See* U.S. General Accounting Office, Federal Land Management, Chandler Lake Land Exchange Not in the Government's Best interest, Report to the Chairman, Subcommittee on Water and Power Resources, Committee on Interior and Insular Affairs, House of Representatives, GAO/RCED-90-5 (Oct. 1989) [GAO Report], *available at*: https://www.gao.gov/products/RCED-90-5.

The Chandler Lake Agreement extensively addresses possible oil and gas development on the lands in the Arctic Refuge that ASRC obtained under that Agreement. Provisions of the Chandler Lake Agreement clearly and definitively state that no exploratory drilling, production, leasing, or other development leading to production of oil and gas is allowed on ASRC lands until Congress authorizes such activities on Refuge lands, the Coastal Plain or on ASRC lands, or both. The Chandler Lake Agreement also acknowledged that the land was always subject to section 22(g) of ANCSA.[1612] The Chandler Lake Agreement also sets out extensive details on how oil and gas could be developed on the ASRC lands, including some stipulations and practices that may no longer be considered desirable or advisable. Importantly, the Agreement specifies that its provisions can be superseded by Congress or regulations.

During scoping, Groups asked BLM to explain the legal status of these lands and, if DOI believes that these lands are now open to oil and gas, explain the legal basis for that conclusion as well as account for the impacts to the Coastal Plain from any activities that may take place on the corporation lands. BLM has failed to do so in the draft EIS.[1613] It appears from the draft EIS discussion that BLM believes that all of these lands are now open to oil and gas activities, but BLM also states that land ownership and use is similar to how it was in 2015 as described in the CCP.[1614] ASRC lands are clearly and definitively described as being closed to oil and gas activities in the CCP.[1615] ASRC lands potentially being open to oil and gas is a major change in private land use that must be clearly addressed in the EIS. BLM must be clear on this point. This means that BLM must also explain how it interprets the application of the stipulations and conditions in the 1983 Agreement and other environmentally protective measures adopted pursuant to this process to apply to these lands in light of the 1983 Agreement. BLM must explain what is open or not, and also explain what activities may proceed or not, and under what restrictions on these lands. BLM should also clearly state that Title XI of ANILCA applies to activities proposed for ASRC lands. To date, BLM has not clearly set these points out. It must do so, as it is a critical piece to understand the full extent of oil and gas activities and potential impacts on the Coastal Plain and its resources.

N. BLM'S ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON SUBSISTENCE USE AND RESOURCES IS INADEQUATE.

The Arctic National Wildlife Refuge's Coastal Plain has irreplaceable subsistence importance for the Gwich'in people, and every community connected to this landscape through ecological and social systems. BLM grossly discounts how an oil and gas program will significantly impact human connections to the lands, waters, and resources of the region through subsistence activities. BLM failed to meaningfully analyze the complexity of subsistence resources and practices, and analyze how a leasing program will impact the cultural and

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[1612] 43 U.S.C. § 1621(g).

[1613] *See supra* Part III.B.5 (explaining why BLM cannot exclude consideration of development of these lands).

[1614] DEIS vol. 1 at 3-149, vol. 2 Appendix F at F-11.

[1615] CCP EIS vol. 1 at 4-4–4-5.

traditional values,[1616] and economic,[1617] social,[1618] public health,[1619] and environmental systems that make subsistence the central aspect of rural life for people of the region.[1620] NEPA requires BLM to take a hard look at subsistence resources and practices and the proposed oil and gas leasing program's impacts on subsistence, a standard the DEIS fails to meet.

1. The DEIS does not Adequately Describe the Affected Environment

The DEIS fails to consider the significant subsistence impacts in affected communities. BLM ignores many potentially affected communities in its analysis, does not incorporate traditional knowledge throughout the DEIS, arbitrarily limits the scope to post leasing activities, fails to be transparent about its consultation with Porcupine Caribou Management Board, does not consider effects on numerous, important subsistence species, and does not adequately consider a baseline on migratory species such as caribou and bowhead whales. BLM's analysis lacks rigor without consideration of these subsistence aspects.

The Gwich'in people live in fourteen villages extending across northeast Alaska, northern Yukon, and Northwest Territories. Though the Inupiat community of Kaktovik is the only community located on the Coastal Plain, other villages such as Arctic Village, Fort Yukon, Venetie, Chalkyitsik, Beaver, and Canadian villages such as Old Crow and Fort McPherson, are located within the range for the Porcupine Caribou Herd and will be impacted by any oil and gas activities on the Coastal Plain.[1621] The draft EIS recognizes that many other communities, such Wiseman, Birch Creek, and Stevens Village, have reported geographic, historic/prehistoric, or cultural ties to the Arctic Refuge as a whole.[1622] BLM further acknowledges that subsistence harvesting and sharing patterns for "22 Alaskan communities and seven Canadian user groups are relevant if post-lease oil and gas activities changes caribou resource availability or abundance for those users."[1623] Despite this, BLM arbitrarily limits its analysis of subsistence impacts to four communities: Kaktovik, Nuiqsut, Arctic Village, and Venetie.[1624] This is egregious, particularly in light of the fact that Canadian users account for the vast majority — in the past up to 85 percent — of the harvest of the Porcupine Caribou Herd.[1625] BLM did not adequately

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[1616] *See supra* Parts V.P, VQ.
[1617] *See supra* Part V.Y.
[1618] *See supra* Part V.P.
[1619] *See supra* Part V.Z.
[1620] DEIS vol. 1 at 3-160.
[1621] Gwich'in Steering Committee, Primary Habitat of the Porcupine Caribou Herd Map.
[1622] DEIS vol. 1 at 3-160.
[1623] DEIS vol. 1 at 3-167.
[1624] DEIS vol. 2 Appendix E at E-3.
[1625] DEIS vol. 1 at 3-168; DEIS vol. 2 at M-27 to M-32; Agreement Between the Government of Canada and the Government of the United States of America on the Conservation of the Porcupine Caribou Herd, E100687 - CTS 1987 No. 31 (July 17, 1987), *available at* http://www.treaty-accord.gc.ca/text-texte.aspx?id=100687. Additionally, this analysis does not comply with international treaty obligations, which requires consultation and input from the

assess whether oil and gas leasing on the Coastal Plain would significantly restrict subsistence uses in the remaining potentially affected communities.

BLM errs by not incorporating and utilizing traditional knowledge when developing the DEIS. The Gwich'in people's understanding of the Coastal Plain and its relationship with the health of the land goes far beyond the passing mention in the DEIS, which recognizes that "any development in the program area would have devastating effects on the population of the PCH and other resources, such as migratory birds, that have key habitat in the coastal plain."[1626] The Porcupine Caribou Herd uses the Arctic Refuge throughout the year, with the Coastal Plain providing essential calving, post-calving, insect relief, and other summer habitat.[1627] The Gwich'in of Alaska and Canada are culturally and spiritually connected to the Porcupine Caribou Herd, and their knowledge of the Coastal Plain as calving and post-calving habitat should be incorporated in caribou studies. Similarly, BLM mentions Iñupiat traditional knowledge, but does not utilize this knowledge as a resource.[1628] Merely recognizing, but not addressing and incorporating available insights from the people who have lived in and relied on the area for a millennia is unacceptable. BLM must obtain traditional knowledge through government-to-government consultation, ANILCA section 810 hearings, and other outreach efforts, and incorporate findings throughout not only subsistence section of the DEIS, but all other relevant sections of the DEIS.

Additionally, BLM relies on outdated subsistence use data in its baseline analysis, calling its findings into question. BLM relies on data from Steven R. Braund and Associates covering 1996-2006. This data is 13 years out of date as of the time of the DEIS comment period and cannot reasonably be relied upon for purposes of BLM's analysis.

BLM also arbitrarily and improperly limits the scope of its subsistence analysis in the same way it improperly limited the scope of its NEPA and ANILCA 810 analysis: BLM only looks at post-lease activities that include seismic and drilling exploration, development, and transportation.[1629] BLM should not limit its analysis of the impacts to only post-leasing activities and needs to include the full range of direct, indirect, and cumulative impacts to subsistence use that could occur from the program. This includes from any proposals to conduct pre-leasing seismic exploration on the Coastal Plain. Seismic damage can significantly harm wildlife through the degradation of their habitat. BLM also improperly excluded other forms of infrastructure and activities from what it considered as part of its 2,000 acres of impacts. This includes pipelines, which could cross large areas of the Coastal Plain and have the potential to divert caribou away from key areas. BLM also failed to account for other activities like gravel mining, which have severe sound and other environmental impacts that could deter caribou and other species from important habitat areas. BLM's deficient analysis of the full range of resource impacts from the broad scope of activities likely to occur on the Coastal Plain and to nearby

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Porcupine Caribou Board to consider the interests of both Alaskan and Canadian Porcupine Caribou subsistence users. *See supra* Part III.E (re: international treaty obligations).

[1626] DEIS vol. 1 at 3-173.

[1627] *See supra* Part V.I (re: impacts to caribou); Caikoski. 2015.

[1628] DEIS vol. 1 at 3-173.

[1629] DEIS vol. 2 Appendix E at E-2.

areas means BLM has dramatically underestimated the potential impacts from the oil and gas program and related activities. BLM needs to revise and reissue its EIS to ensure it actually takes into consideration the full range of potential impacts for purposes of its subsistence analysis.

Furthermore, the BLM fails to be transparent about its consultation with the Porcupine Caribou Management Board, as required by international treaty. The Porcupine Caribou Management Board consists of members who use the herd from Alaska, the Yukon Territory, and Northwest Territories. The Canadian Gwich'in, in northern Yukon and Northwest Territories, rely heavily on the Porcupine Caribou Herd, and have previously accounted for up to 85 percent of the harvest.[1630] Incorporating information and suggestions obtained through consultation is essential to inform BLM's subsistence analysis of caribou, and not doing so results in significant risk to the subsistence users.[1631] By failing to be transparent about the consultation process, BLM falls short of international treaty obligations, and does not explain how concerns of the people, science, and traditional knowledge from indigenous residents of the Yukon Territory and Northwest Territories were incorporated. As a result, BLM fails meaningfully to consider the input of affected communities in Canada, who represent over half of the Herd's use will experience impacts related to their subsistence use.

BLM's overall analysis of specific subsistence resources is also insufficient. The DEIS fails to consider the extensive resources used for subsistence by communities reliant upon Arctic Refuge resources. Appendix M provides known levels of subsistence harvest for Kaktovik, Nuiqsut, Venetie, and Arctic Village.[1632] But analysis of impacts on these resources is substantially lacking, and BLM does not look beyond these four communities. The DEIS provides very little consideration of any resource besides caribou and marine mammals, even though Bering cisco, Dolly Varden, Arctic Char, Dall sheep, ptarmigan, and wood are all considered "major resources" for Kaktovik residents.[1633] Moderate resources for Kaktovik also include Arctic cisco, Arctic fox, Arctic grayling, beluga whale, blueberry, broad whitefish, Canada geese, common eider, cranberry, King eider, lake trout, least cisco, long-tailed duck, moose, muskox, polar bear, saffron cod, salmonberry/cloudberry, snow geese, squirrel, walrus, whitefronted geese, wolf, and wolverine.[1634] Minor resources for Kaktovik include bird eggs, brown bear, halibut, humpback whitefish, red fox, and spotted seal.[1635] All these resources are biologically diverse and impacts to them from oil and gas will be unique. The DEIS generally lists which resources are most important, but does not tie those assertions to any analysis. All resources listed in Appendix M Subsistence Uses and Resources, including all major, moderate, and minor resources for not only Kaktovik, but the communities of Nuiqsut, Venetie, and Arctic Village must be given meaningful consideration for impacts to subsistence.

[1630] DEIS vol. 1 at 3-168; DEIS vol. 2 at M-27–M-32;
[1631] *See infra* Part III.E (describing BLM's international treaty obligations).
[1632] DEIS vol. 2 at Appendix M.
[1633] DEIS vol. 2 at Appendix M, M-10.
[1634] DEIS vol. 2 at Appendix M, M-10–M-11.
[1635] DEIS vol. 2 at Appendix M, M-11

In addition, the DEIS must provide substantive consideration of marine mammals and caribou, and the effects they will have on communities beyond those on and directly adjacent to the project area. Marine mammals used for subsistence include bowhead whale, beluga whale, seal, walrus, and polar bear.[1636] All marine mammals listed in the DEIS are either major or moderate subsistence resources for the community of Nuiqsut and Kaktovik.[1637] Yet the DEIS provides inadequate consideration of subsistence impacts to these resources beyond mentioning reliance in passing, failing to consider levels of consumption and the importance of harvesting marine mammals to Iñupiaq communities. The DEIS should consider all specific marine mammals, as they present the largest percentage of harvest for subsistence for Kaktovik and Nuiqsut.[1638] BLM should incorporate the best available science related to harvest practices for each marine mammal to obtain an accurate baseline from which to consider potential subsistence impacts. Similarly, the baseline information for communities' reliance on caribou as a subsistence resource requires further explanation. For example, the DEIS merely states that data is not available for subsistence caribou harvest in Arctic Village, however, the DEIS estimates that 90% of the community's subsistence harvest is caribou and moose and "the assumption is that caribou are source of primary subsistence."[1639] BLM must explain how its treatment of this missing or unavailable information comports with the requirements of 40 CFR § 1502.22.

2. *BLM's Environmental Consequences Analysis Inaccurately Describes Subsistence Impacts*

a. BLM Fails to Adequately Address Impacts to Subsistence Resources.

BLM must provide meaningful analysis of impacts to Gwich'in subsistence use of the Porcupine Caribou Herd by incorporating the best available science and considering hunter avoidance from infrastructure. In addition, BLM must consider impacts to fish and other aquatic subsistence resources, marine mammals, aircraft disturbance, sharing systems, compounded loss of subsistence areas, the subsistence cycle, and respect the differences in communities.

BLM's analysis on impacts to caribou and associated subsistence use are lacking. Despite acknowledging that oil and gas can have impacts on the Porcupine Caribou Herd, BLM concludes that there will not be an impact on the subsistence resources for the Gwich'in. This ignores best available science, traditional knowledge, and the human rights of the Gwich'in people. Caribou are a major resource for all the listed study communities, and use is high — over 50% of the food source for nine of the 22 caribou study communities.[1640] Despite this importance, BLM's overall analysis is general and does not adequately account for the impacts.

[1636] DEIS vol. 1 at 3-161.

[1637] DEIS vol. 2 at Appendix M, M-10–M-11, M-18–M-19.

[1638] DEIS vol. 1 at 3-162, 164 (Marine mammals are 62.7% of total harvest for the community of Kaktovik, with 72% of households attempting to harvest. Marine mammals are the highest harvested species for Nuiqsut as well at 33.8% and 54% of households attempting to harvest.)

[1639] DEIS vol. 1 at 3-165.

[1640] *See* DEIS vol. 2 at Appendix M, M-5; DEIS vol. 1 at 3-167.

The DEIS recognizes that calf survival and herd growth are impacted by oil and gas disturbances resulting in reduced numbers to the Porcupine Caribou Herd leading to reduced harvest success among the Iñupiaq, Gwich'in, and Inuvialuit caribou hunters.[1641] While the agency makes this finding, BLM fails to quantify, or further analyze these effects. The DEIS should include this analysis.

BLM's findings for the Porcupine Caribou Herd are particularly concerning due to the fact that the DEIS's caribou studies do not use the best available science and improperly minimize impacts to caribou. For example, the DEIS does not place the Porcupine Caribou Herd in the context of the global condition of caribou populations, ignoring the risks posed by global declines of caribou.[1642] In addition, the DEIS omits important baseline studies, does not explain its assumptions in analyzing road, pipeline, air traffic, noise and human activity impacts on caribou, and the sources of data used to understand distribution of the herd are not transparent.[1643] Further, impacts are insufficiently considered, including development like seismic exploration and road effects, which would greatly alter the current condition of the Porcupine Caribou Herd that lacks any major transportation networks. Understanding how the Porcupine Caribou Herd will be affected is essential to analyzing subsistence impacts for availability and distribution, which are essential to understanding harvest opportunities. The caribou studies need to incorporate the best-available science in order to accurately discern impacts to subsistence.

Further, the BLM must account for the fact that the Porcupine Caribou Herd's range is currently without any major transportation networks and the PCH have not had any previous exposure to oil and gas infrastructure in their calving and post-calving areas. The fact that impacts "are expected to be more intense" for this herd is acknowledged, [1644] but not considered throughout the impacts analysis, including its omission from analysis in the subsistence discussion. There is little evidence that caribou actually habituate to infrastructure, as BLM assumes in the DEIS. Rather, infrastructure could displace caribou availability farther from the project area, and generally alter migratory paths.[1645] BLM's lackluster caribou analysis does not sufficiently examine the impacts from and oil and gas program to caribou and, therefore, to subsistence, in a meaningful way.

Subsistence hunters will travel away from industry in order to avoid pipelines and other signs of oil and gas activity while participating in subsistence activities. While the DEIS acknowledges this phenomenon, it provides no meaningful analysis of the extent of avoidance and fails to incorporate it into the subsistence findings. The visual impacts from the production facilities and pipelines would be significant.[1646] BLM needs to discern how avoidance of visual impacts will impact subsistence. In addition, subsistence hunters often cite to issues and harm

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[1641] DEIS vol. 1 at 3-173.
[1642] *See supra.*
[1643] *See supra.*
[1644] DEIS vol. 1 at 3-169.
[1645] *See supra* Part V.I.
[1646] *See infra* Part V.W (re: visual impacts).

from aircraft disturbance to subsistence hunting. BLM must ascertain whether hunters alter their subsistence activities due to flight schedules and what impacts will result from future, increased traffic.[1647] When considering physical barriers to subsistence imposed by infrastructure to subsistence, BLM underestimates these impacts as a result of improper exclusion of infrastructure and activities from its definition of "2,000 acres," thereby limiting consideration of pipelines and gravel mines. BLM must consider pipelines as physical barriers for caribou that will alter their migration patterns and cause avoidance during certain points in their lifecycles. BLM fails to adequately explain how oil and gas infrastructure may alter availability, not just as a result of deflection for animals, but also as deterrence for subsistence hunters.

Moreover, the assumption of potential impacts of noise on fish is incorrect and based on a faulty premise that because seismic activity and pile driving will likely occur in winter that there will be no impact. Many fish of subsistence importance, including Dolly Varden and grayling, overwinter in large congregations. If these overwintering locations are not known, these subsistence resources could be significantly impacted by winter exploration and development activities. Overwintering locations for fish of subsistence importance must be identified within BLM's analysis. Moreover, how pile driving, seismic activities, and other winter activities may impact the success of winter fishing should be described in detail.[1648] Without this information, BLM's analysis not only of fish, but also of subsistence, is inadequate.

Additionally, BLM fails to adequately consider impacts to marine mammals, another important subsistence resource. The DEIS considers all marine mammals, including bowhead whales, seals, and polar bears in the analysis together, making general assertions about how potential air or vessel traffic and seismic exploration might impact subsistence use. As separate species with significantly different biological needs, migration patterns, and impacts, each of these should be considered individually. In addition, development from other projects in the area, such as Liberty and Point Thompson must be considered. BLM needs to provide each marine mammal with an independent consideration using the best available science, as each will have unique impacts due to disturbance from oil and gas activity and subsistence impacts will look different for each species.

b. BLM Fails to Adequately Consider Impacts to Subsistence Users.

The DEIS does not fully account for the impacts of increased aircraft traffic to subsistence harvesting of caribou and other resources. Aircraft traffic, including plane and helicopter traffic, reduce subsistence harvest opportunities by diverting caribou. Air traffic patterns are difficult to foresee and can cause "acute stress and disruption" to subsistence hunters.[1649] When participating in subsistence activities, hunters' success is linked to their food security and cultural wellbeing. In Nuiqsut, aircraft traffic is considered by many to be the most

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[1647] *See infra* Parts V.H, I, L (describing changes from air traffic noise on caribou, birds, and marine mammals, these disruptions may influence species availability for subsistence hunting).

[1648] *See infra* Parts V.G (re: fish inventories and distribution), V.C (re: acoustic impacts).

[1649] GMT-1 Final SEIS vol. 1 at 437.

common impact to caribou, and may divert or delay their movements.[1650] Here, the DEIS does not currently identify airport locations, which does not allow for meaningful consideration the alternatives. It is impossible to compare and substantively analyze traffic patterns when it is unknown what the flight patterns will look like. Additionally, the DEIS errs by saying aircraft disturbance will not significantly impact caribou when BLM has not identified airport locations, therefore it is uncertain exactly where disturbances will occur. In addition, the DEIS must consider potential air traffic impacts on subsistence activities for birds as well, including the endangered spectacled eider — previously found to be impacted in Nuiqsut.[1651] The DEIS must fully analyze the impacts of increased air traffic to subsistence hunters by considering hunter avoidance and using the best available science to consider the impacts on caribou and other species.

Further, BLM has failed to adequately analyze how the fluidity (sharing, trading, bartering, etc.) of resources between communities will be impacted by the leasing program. As sharing and participating in sharing networks is considered a substance activity, BLM must consider how reductions in the ability to share are in fact a reduction to subsistence. The complete loss or reduction of resources in one community may impact the exchange of resources with other communities within the region. Existing sharing networks distribute food widely, where communities are able to receive resources they are otherwise unable to obtain. When availability of subsistence foods decreases, sharing also decreases as households experience reduced harvests and availability. The DEIS merely mentions that reduced harvests could disrupt sharing networks, there is no substantive consideration of effects, merely that changes would occur and "disruptions of social connections could thus increase vulnerability in communities."[1652] The DEIS should look at specific communities sharing practices and the relative wealth of households to accurately determine impacts from reductions in fluidity of resources. The potential impacts to these social networks should be explained in much greater detail; simply acknowledging it is insufficient to serve as the required NEPA analysis.

The DEIS does not sufficiently consider the compounded impacts to subsistence hunters. When subsistence users are unable to engage in subsistence activities or their opportunities are limited, their ability to pass on traditional knowledge about subsistence activities also becomes limited. As discussed above, opportunities or subsistence areas may become limited because of infrastructure, avoidance by subsistence hunters, and reduced subsistence resources. The initial reduction of traditional use areas will limit the ability to pass on traditional knowledge to younger generations and traditional use and knowledge of the use areas will be lost. The DEIS should measure this impact as long-term or permanent, and consider the loss of knowledge as a significant subsistence impact.

Additionally, in several instances, including within Appendix M, BLM identifies the annual cycle of subsistence resource harvesting.[1653] BLM does not, however, identify how these

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[1650] DEIS vol. 1 at 3-170.
[1651] GMT-1 Final SEIS vol. 1 at 367, 374.
[1652] DEIS vol. 1 at 3-175.
[1653] DEIS vol. 2 at Appendix M.

resources may be impacted by oil and gas activities associated with this leasing program during these particular times of year. BLM should articulate in detail how the leasing program will impact resources and practices during each month. Subsistence users generally rely on healthy subsistence resources being present in traditional use areas at specific times, and some harvesters are often limited in their ability to access resources beyond traditional use areas at the expected time of year.[1654] Even if the potential impact to wildlife resources may be slight, changes in resource access and availability, including perceived changes in fish and wildlife health due to development, may affect subsistence.[1655] Further, harvest cycle analysis must include and account for climate change impacts to the subsistence harvest and resulting limits to subsistence resources availability. For example, BLM must consider how surveying for ice road season damage by helicopter in June may impact caribou hunting.

Finally, BLM relies heavily on the experiences of Nuiqsut to describe likely circumstances for communities reliant upon the Arctic Refuge. In doing so, however, BLM fails to articulate the major differences temporally and physically between these two contexts. First, Nuiqsut is being significantly affected as a result of being surrounded by oil development.[1656] BLM cannot rely on other EISs, which incorrectly minimize subsistence impacts to Nuiqsut, as a way of shirking its NEPA obligations to fully and accurately consider the potential impacts to subsistence uses on the Coastal Plain.[1657] Second, development around Nuiqsut is ongoing and the full scope of impacts have yet to be realized. Even so, the impacts from the handful of projects that are starting to surround the community are already having significant impacts to subsistence users' ability to continue their way of life. BLM should not assume hunters have or will successfully adapt to resource development, especially since there are a number of large projects around Nuiqsut that are anticipated but have not yet been constructed. These include, among others, Greater Mooses Tooth Two, Willow, and Nanushuk. Drawing conclusions from such a dynamic set of circumstances presents limitations to knowing what will happen in the context of oil and gas leasing on the Coastal Plain. BLM does not acknowledge or otherwise account for these limitations in its efforts to correlate Nuiqsut's experiences to that which may occur to other communities. Finally, the geography and resources relevant to the NPR-A and Coastal Plain are very different, and affected communities are located in different landscapes with very different resource patterns. An analysis specific to communities relying upon the resources of the Arctic National Wildlife Refuge is necessary. BLM must evaluate the potential long-term or permanent impacts to the Porcupine Caribou Herd and other subsistence uses on the Coastal Plain by relying on the best science available, not by relying on unfounded analogies and unsupported conclusions.

[1654] Point Thompson FEIS vol. 3 at 5-602.

[1655] *Id*.

[1656] *See* GMT-1 Final SEIS at 456–58.

[1657] *See*, GMT-1 Final SEIS at 435. The Kuukpik Corporation comments (on behalf of shareholders and other community institutions) to the BLM on the NPR-A Draft IAP/EIS in 2012 noted that BLM's analysis: "…often dramatically understates the actual impacts of oil and gas development on Nuiqsut" and that "the conclusion is usually a by the dismissal of its implications, in spite of its undisputed scope." (I. Nukapigak 2012).

c. BLM Failed to Adequately Analyze Cumulative Impacts.

The DEIS analysis of cumulative impacts on subsistence is deficient. BLM's analysis fails to consider cumulative impacts to communities that rely on Refuge resources from development, climate change, and the potential for contamination.

In addition, the DEIS does not include cumulative effects from the Point Thompson and Liberty developments. The proposed action must be considered in the context of current development. Both Point Thompson and Liberty will have impacts on bowhead whales, seals, and polar bears.[1658] The DEIS should consider the cumulative impacts on bowhead whale hunts, whale availability, changes in migratory patterns and deflection of bowhead whales from development and increased traffic. BLM must also consider the potential for Liberty construction to interfere with Kaktovik subsistence harvest of caribou during construction as projected by the project's EIS.[1659] Any disruption of the Porcupine Caribou Herd from these development projects would likewise disrupt harvest patterns for Gwich'in communities, as well. Liberty found that the additive effects on polar bears may result in moderate to major effects on the species.[1660] Point Thompson also found a loss in critical habitat for polar bears.[1661] As a moderate subsistence source for both Kaktovik and Nuiqsut, polar bear must be considered in the cumulative for subsistence. The proposed action must be considered the context of current development including the Point Thompson and Liberty projects and their impacts on marine mammal subsistence availability.

Additionally, in describing impacts of oil and gas development, BLM focuses on impacts resulting from oil and gas development activities just on the Coastal Plain. There is no discussion of the reasonably foreseeable future actions of a road and pipeline between Kaktovik and the Dalton Highway/Trans-Alaska Pipeline and oil and gas development in the Colville-Canning area and Alpine area. BLM completed failed to analyze or even discuss impacts from development activities in the Colville-Canning Area, Alpine, a road and pipeline between Kaktovik and the Dalton Highway/Trans-Alaska Pipeline. This does not adequately account for the potential cumulative impacts to subsistence users or reasonably foreseeable projects, such as ConocoPhillips' Willow project near Nuiqsut. BLM needs to explicitly lay out these foreseeable projects and impacts.

BLM also assumes that hunters would "adapt, to varying extents, to the changes occurring around them."[1662] How BLM foresees hunters adapting should be described. It is also necessary to consider that all hunters may not be able to adapt because of factors like increased cost of travel to more distant subsistence use areas. The DEIS also recognizes that some subsistence hunters choose not to use roads. Not using roads is a subsistence hunter's prerogative, and BLM must not only mention these hunters, but consider the effects on hunters

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[1658] Liberty Development and Production Plan Final EIS at 4-214, 4-226–4-228; Point Thompson ROD at 108-109.

[1659] Liberty Development and Production Plan Final EIS at 4-231, 4-233.

[1660] Liberty Development and Production Plan Final EIS at 5-36.

[1661] Point Thompson ROD at 92, 111.

[1662] DEIS vol. 1 at 177.

who choose to not utilize roads for subsistence practices. BLM should analyze and describe the limitations of adaptation to changed subsistence practices, resources, and conditions on the landscape.

BLM also fails to accurately describe how subsistence uses and resources will be impacted by a changing climate. BLM should include an analysis of how subsistence resource abundance and habitat quality have been impacted by a changing Arctic. Relatedly, BLM must discuss how a changed climate is expected to impact subsistence practices in the future. These changes should be coupled with the cumulative industrial impacts of oil development on the North Slope and Arctic Ocean. Currently, BLM's cumulative analysis consists of the broad statement that climate change "could influence the rate or degree of potential impacts."[1663] In addition, the baseline analysis only finds that "climate change could contribute to resource availability caused by development in and around the program area, further reducing their availability to subsistence users."[1664] These statements are too broad and general to capture the real impacts that are already happening across the North Slope of Alaska. As discussed elsewhere in these comments, the best available science demonstrates that climate change is already impacting important subsistence resources like caribou, fish, and marine mammals. Instead of conducting an analysis specific to how subsistence use in this area could be impacted by climate change, BLM instead relies on ambiguous statements to merely acknowledge potential impacts. BLM's analysis should incorporate the best available climate science, include site specific analysis for all communities. BLM must analyze impacts to communities along the migratory path of the Porcupine Caribou Herd who will experience reduced subsistence harvest opportunities if the migratory path of the herd is altered or shifts. BLM's current climate change cumulative impacts analysis lacks rigor and fails to meaningfully account for climate change.

BLM does not address the potential risk of contamination from potential oil spills on subsistence activities. Mentioned as a potential risk in all scenarios,[1665] the impact of a large spill would be widespread is not included in the cumulative impacts analysis. The size of proposed spills and can have effects on marine wildlife and both smaller and larger spills need to be considered in the DEIS, especially during whaling season and bowhead migration times. Onshore spills may contaminate hydrological systems, tundra and vegetation, and in turn the wildlife and people that rely upon these ecological systems. Spill trajectories and risk must be weighed in the cumulative sense.

In sum, the Coastal Plain of the Arctic Refuge is a vital subsistence area. BLM's analysis failed to take a hard look at all impacted subsistence resources, as well as the human factors of subsistence, including deterrence from development, and use the best available science to consider impacts to subsistence resources. The DEIS is deficient and must be revised.

[1663] DEIS vol. 1 at 3-178.
[1664] DEIS vol. 1 at 3-168.
[1665] DEIS vol. 1 at 3-174.

3. *BLM Failed to Consider Effective Mitigation Measures.*

Although BLM claims some impacts to subsistence resources, such as caribou, can be mitigated with timing and surface limitations, BLM acknowledges that mitigation measures can merely minimize, and cannot eliminate impacts to subsistence. BLM does not attempt to explain what the shortcomings of these mitigations measures may be in terms of restrictions on subsistence availability. BLM also does not adequately account for the fact that the mitigation measures are potentially subject to waivers, exceptions, and modifications. The effectiveness of any mitigation measures is in part directly tied to whether or not they are enforceable or could be waived. BLM needs to account for the potential waiver of these provisions as part of its analysis, as that could negate any of the purported protections and benefits of such provisions.

For instance, Stipulation 6 seeks to protect habitat of both the Porcupine and Central Arctic Herds by minimizing disturbance and hindrance of movements.[1666] However, for its requirements and standards, it simply points to ROP 23 for Alternatives B and C, with only the addition of suspension of major construction activities using heavy equipment for a short period under Alternative D. This means that this stipulation does not provide any independent protection for caribou movements across the Coastal Plain. (It is unclear what is meant by "major construction activity" and also noteworthy that even that protection is subject to waiver.) Stipulation 7 seeks to protect the "PCH primary calving habitat area." However, BLM has not supported the delineation of that area in the DEIS with any level of robust scientific justification.[1667] Additionally, areas outside of the most commonly used concentrated calving areas are still very important for caribou for post-calving needs as well as calving during particular years. BLM needs to protect both key calving and post-calving habitat, as well as protect migration corridors and movements. Protecting only the "primary calving area" as defined here will provide little protection in some years, potentially increasing calf mortality and threatening the caribou population. This is especially a concern if warming conditions under climate change leads to "a western shift in concentrated calving areas," as the DEIS indicates.[1668]

Moreover, BLM's mitigation measures which are specifically targeted to address impacts to subsistence users fall far short of avoiding and minimizing impacts to affected communities. ROP 36, "Subsistence Consultation for Permitted Activities" completely ignores the need to provide opportunities for Gwich'in communities to participate in planning and decision-making to prevent unreasonable conflicts between subsistence uses and other activities. Similarly, ROP 39 requires that "Before starting exploration or development, lessees/operators/contractors are required to develop a subsistence access plan, in coordination with the Native Village of Kaktovik and the City of Kaktovik…" It is unacceptable for BLM to arbitrarily limit these coordination and consultation opportunities to Kaktovik and the North Slope Borough, in light of the abundant evidence that Gwich'in subsistence users will be significantly impacted from oil and gas leasing on the Coastal Plain.

[1666] DEIS vol. 1 at 2-11.
[1667] *See supra*.
[1668] DEIS vol. 1 at 3-110.

We further note that ROP 36 contains no clear mechanism for actually reducing impacts to subsistence activities. There is no provision that allows a local community to prevent any oil and gas activity from moving forward if there would be significant impacts on subsistence use – rather, the community would merely be informed ahead of time. Without providing for any type of "veto" power to local communities, such measures are essentially meaningless. Moreover, subsection (c) requires that applicants prepare a plan to describe how they will avoid subsistence impacts, and submit that plan to the BLM Authorized Officer. For such a plan to have any value whatsoever, it must be shared will all potentially affected communities to determine whether the plan would effectively avoid unreasonable conflicts with subsistence. The BLM Authorized Officer should not be given carte blanche to make such determinations. Finally, we note that several of the "requirements" of this ROP merely parrot existing legal mandates and should not be considered mitigation measures for purposes of this section. This includes the requirement for BLM to do government-to-government consultation in subsection (b) and the requirement for barge operators to avoid unmitigable adverse impacts, as determined by NMFS, on the availability of marine mammals to subsistence hunters in subsection (c)(vi).[1669]

O. BLM'S ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON SOCIOCULTURAL SYSTEMS IS INADEQUATE.

Assessment of sociocultural systems is essential for understanding the effects of a proposed action on affected communities. The Gwich'in and Iñupiat people have strong cultural ties to the Coastal Plain of the Arctic Refuge, the program area considered by BLM. Alaska Native people have lived on and used the Coastal Plain since time immemorial. The Gwich'in people live in fourteen communities across northern Alaska and Canada along the migratory path of the Porcupine Caribou Herd. The Gwich'in identify as the Caribou people, and consider any disturbance to the calving grounds of the Porcupine Caribou Herd an affront to their human rights — the Coastal Plain is so sacred to the Gwich'in that they do not set foot in this area. Oil and gas development on the Coastal Plain will cause disruptions to land and subsistence activities and uses, which will have severe social, cultural, and health impacts that BLM must analyze.

BLM must engage in a robust and meaningful analysis of all cultural impacts from an oil and gas program on the Coastal Plain. BLM has failed to make positive ANILCA 810 findings for any communities besides Kaktovik, in spite of countervailing evidence of broader impacts. The DEIS does not fully address comments made by the Gwich'in Steering Committee during scoping. In addition the DEIS does not sufficiently consider transboundary effects, local and regional changes to the economies of effected communities, traditional lands and resources, effects to social, health, and cultural environments, and cumulative impacts. BLM must substantially revise the DEIS after consulting with affected communities and reissue the revised DEIS.

[1669] See Part III.G.2 (describing the requirements of the Marine Mammal Protection Act). It should also be noted that FWS should be included alongside NMFS as having regulatory authority over marine mammal take.

1. *BLM Fails Incorporate Input from Affected Communities and Stakeholders for the Affected Environment*

Overall, the DEIS is deficient for failing to address input required to make a robust sociocultural analysis. BLM's analysis is inadequate for finding no significant restrictions under ANILCA 810, declining to address comments raised by the Gwich'in Steering Committee during scoping, and failing to comply with the requirements of the International Porcupine Caribou Herd Treaty.

First, BLM's finding of no significant restrictions on subsistence for Gwich'in communities under ANILCA section 810 is in error. The ANILCA 810 analysis improperly finds that impacts to the Porcupine Caribou Herd do not impose significant restrictions on the Gwich'in's subsistence hunting activities.[1670] It is critically important that BLM release preliminary findings and recommendations in a revised 810 analysis so that the agency can receive input on them before the agency finalizes them. These findings and recommendations will allow BLM to appropriately consider of sociocultural impacts to subsistence hunting and reduced opportunities to participate in other subsistence activities. The deficiency from not completing an adequate 810 analysis is reflected in BLM's incomplete analysis of impacts to the Gwich'in people's sociocultural systems.

Additionally, BLM did not fully address the Gwich'in Steering Committee previous scoping comments. The Gwich'in Steering Committee was established to protect the sacred calving and post calving grounds of the Porcupine Caribou Herd — the Coastal Plain of the Arctic Refuge. The Gwich'in Steering Committee represents the communities of Arctic Village, Venetie, Fort Yukon, Beaver, Chalkyitsik, Birch Creek, Stevens Village, Circle, and Eagle Village in Alaska, and Old Crow, Fort McPherson, Tsiigehtchic, Aklavik, and Inuvik in Canada. The Gwich'in Steering Committee presented extensive comments during scoping, which were not sufficiently addressed.[1671] BLM must address all issues raised by the Gwich'in Steering Committee during scoping.

Finally, BLM's failure to comply with International Porcupine Caribou Herd Treaty requirements renders its sociocultural background discussion and analysis deficient. As explained above, BLM fails to comply with international treaty obligations by not being transparent about its consultation with the Porcupine Caribou Board. This deficiency results in significant risk to the Canadian subsistence users' nutritional, cultural, and other essential needs. The Canadian Gwich'in, in northern Yukon and Northwest Territories, rely heavily on the Porcupine Caribou Herd, and have previously accounted for up to 85 percent of the harvest.[1672] The DEIS recognizes "seven Canadian user groups of the [Porcupine Caribou Herd]: Inuvialuit (Aklavik, Inuvik, and Tuktoyaktuk), Northwest Territory (NWT) Gwich'in people (Aklavik,

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[1670] *See infra*, at Part VI.

[1671] Gwich'in Steering Committee, Scoping Comments re: Notice of Intent to Prepare an Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program (June 19, 2018).

[1672] DEIS vol. 1 at 3-168; DEIS vol. 2 at M-27–M-32;

Inuvik, Fort McPherson [*Tetlit Zheh*], and Tsiigehtchic), Vuntut Gwich'in people (Old Crow), Tr'ondek Hwech'in (Dawson City), Nacho Nyak Dun (Mayo), and other residents living in the Yukon Territory and the NWT."[1673] By not being transparent about the consultation process, BLM fails to not only comply with international treaty obligations, but fails to acknowledge or consider the cultural values Gwich'in in the Yukon and Northwest Territories in the DEIS. As a result, BLM fails meaningfully to consider the impacts on affected communities in Canada, who represent over half of the Herd's use will experience impacts related to their food security, nutrition, spiritual, and other essential needs.

2. The DEIS's analysis of impacts to sociocultural systems is insufficient.

BLM does not sufficiently analyze sociocultural impacts of the proposed action on affected communities. The DEIS must consider impacts to all communities that will feel the effects of oil and gas leasing and development on the Coastal Plain. The DEIS is deficient for not incorporating sociocultural concerns throughout the analysis, failing to provide meaningful alternatives, limiting the analysis to post-leasing impacts, and providing insufficient consideration of transboundary impacts, changes in local and regional economies, changes to traditional subsistence lands and resources, and changes to the social, health, and cultural environment.

a. Sociocultural systems analysis is lacking throughout the DEIS

Broadly, the DEIS does not adequately incorporate the values of the affected communities into the analysis. When considering important values in the abstract, the DEIS states that BLM's proposed oil and gas program opens 66%–100% of the Coastal Plain to leasing, "while balancing biological and ecological concerns."[1674] BLM specifically fails to mention impacts to human-based resources, including subsistence, cultural resources, sociocultural values, and spiritual beliefs. These impacts must be considered as well. In order to resolve this omission, BLM must not only highlight the importance of human resources generally, but must also revise its analysis to include these components. For example, the DEIS should incorporate traditional knowledge into all scientific analysis for any relevant resources. Overall, BLM downplays impacts to sociocultural systems and fails to account for many communities which would be most affected by development.

b. Lack of meaningful analysis of the impacts of alternatives on sociocultural systems

The sociocultural systems section's alternatives analysis is not rigorous as it does not provide enough detail to compare the alternatives on their merits. The DEIS is required to "[d]evote substantial treatment to each alternative considered in detail . . . so that reviewers may evaluate their comparative merits."[1675] The sociocultural alternatives section lists some

[1673] DEIS vol. 1 at 3-167.
[1674] DEIS vol. 1 at 5.
[1675] 40 C.F.R. § 1502.14(b)

"potential" impacts under Alternative B.[1676] A general list of "potential" impacts does not constitute a meaningful analysis.

The DEIS's analysis of Alternative C is similarly substantially lacking. The entirety of analysis for Alternative C states:

> The types of potential impacts under Alternative C would be the same as those described under Alternative B. Because fewer acres of calving grounds would be available for leasing, the intensity of potential sociocultural impacts related to caribou under Alternative C would be less than Alternative B.[1677]

This analysis is problematic for a myriad of reasons. First, it is incorrect that under Alternative C less calving acreage is offered — alternatives B and C offer the same acreage in the same areas for lease. The DEIS acknowledges in Alternative B that any disruption, perceived harm, contamination, or degradation to the Porcupine Caribou Herd's calving grounds will have a sociocultural impacts to the Gwich'in people.[1678] But BLM does not explain why it believes that the "intensity of potential sociocultural impacts related to caribou" would be less under Alternative C given the importance of the entire Coastal Plain to caribou and the Gwich'in.[1679] Additionally, BLM cannot claim reduced impacts to the Gwich'in people's identity, as any harm to the Coastal Plain will constitute an impact to the Gwich'in based on their traditional knowledge.

Second, this analysis does not distinguish which caribou herd may have reduced "potential sociocultural impacts."[1680] Both the Porcupine Caribou Herd and the Central Arctic Herd are affected by oil and gas leasing and the availability of both herds is tied to subsistence and sociocultural activities. Impacts on the community of Nuiqsut, which relies on the Central Arctic Herd is not mentioned in this comparison.

Third, the analysis to caribou must not only clarify and examine the impacts to both the Porcupine Caribou Herd and the Central Arctic Herd, but the analysis must be robust, and consider how the diminished availability of caribou for subsistence purposes alters sociocultural impacts on the Gwich'in, who rely heavily on the Porcupine Caribou Herd.

The analysis for Alternatives D1 and D2 are similarly deficient. BLM merely states the "intensity of potential sociocultural impacts" will be different under the alternatives, but provides no analysis that would allow the differences in the alternatives to be meaningfully considered.[1681] For this reason, BLM must respond to the issues raised in the preceding paragraph in order to allow reviewers to analyze the alternatives on their comparative merits for Alternatives D1 and

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[1676] DEIS vol. 1 at 3-191.
[1677] DEIS vol. 1 at 3-192.
[1678] DEIS vol. 1 at 3-191.
[1679] DEIS vol. 1 at 3-192.
[1680] DEIS vol. 1 at 3-192.
[1681] DEIS vol. 1 at 3-192.

D2. Merely stating that the intensity of impacts will change does not constitute a rigorous evaluation.[1682] The sociocultural systems cursory alternatives analysis does not allow reviewers to assess their comparative merits and impacts.[1683]

c. Analysis improperly limited to post-leasing

BLM also arbitrarily and improperly limits the scope of its sociocultural systems analysis in the same way it improperly limited the scope of its NEPA analysis: BLM only looks at post-lease activities that include seismic and drilling exploration, development, and transportation.[1684] BLM should not limit its analysis of the impacts to only post-leasing activities and needs to include the full range of direct, indirect, and cumulative impacts to subsistence use and resources that could occur from the entire oil and gas program. This includes from any proposals to conduct pre-leasing seismic exploration on the Coastal Plain. As discussed elsewhere, BLM is currently in the process of reviewing an extensive seismic proposal from SAExploration that could cause lasting damage to tundra, vegetation, soils, permafrost, and other resources. That damage can in turn significantly harm wildlife through the degradation of their habitat. BLM also improperly excluded other forms of infrastructure and activities from what it considered as part of its 2,000 acres of impacts. This includes pipelines, which could cross large areas of the Coastal Plain and have the potential to divert caribou away from key areas. BLM also failed to account for other activities like gravel mining, which have severe sound and other environmental impacts that could deter caribou and other species from important habitat areas. BLM's deficient analysis of the full range of resource impacts from the broad scope of activities likely to occur on the Coastal Plain and to nearby areas means BLM has dramatically underestimated the potential impacts from the oil and gas program and related activities. These impacts and activities will all have sociocultural impacts. As BLM acknowledges "any disruption to that herd or perceived contamination or degradation of calving grounds in the program area would have sociocultural impacts on the Gwich'in people, in terms of their belief systems, cultural identity, and the impact of development in the sacred calving grounds of the [Porcupine Caribou Herd]."[1685] BLM must do more than just acknowledge that there will be impacts; BLM must actually analyze the impacts, including those from preleasing seismic activity that will create potential impacts to subsistence activities by deterring caribou and other species and will cause direct harm to the Gwich'in people by damaging the Coastal Plain. BLM needs to revise and reissue its EIS to ensure it takes into consideration the full range of potential impacts to subsistence and sociocultural systems are considered.

d. The DEIS fails to consider the transboundary effects

BLM's analysis falls short by not considering transboundary effects, and therefore the sociocultural repercussions on Gwich'in people who live in the fourteen villages across northern Alaska and Canada. As explained above, BLM is required to take a hard look at all impacts to

[1682] 40 C.F.R. § 1502.14(a).
[1683] 40 C.F.R. § 1502.14(a), (b).
[1684] DEIS vol. 1 at 3-188–3-193.
[1685] DEIS vol. 1 at 3-191.

the affected environment and cutting off this analysis at the Canadian border is improper as the intensity of the impacts are not fully considered. The DEIS does not mention transboundary impacts nor does it consider any sociocultural impacts to Canadian communities such as Old Crow, Aklavik, or Fort McPherson.[1686] Caribou do not recognize borders. The Porcupine Caribou Herd is relied upon heavily by all Gwich'in people, Canadian and American, for subsistence.

To take a hard look at sociocultural impacts, the DEIS must consider transboundary effects, as Gwich'in span Alaska, northern Yukon, and the Northwest Territories and all communities along the migratory route of the Porcupine Caribou Herd will feel affects.

e. Changes in local and regional economies

The DEIS fails to consider financial impacts for all Gwich'in communities

The DEIS does not meaningfully analyze sociocultural impacts for Gwich'in villages given the lack of economic activity that it likely to occur while the villages experience shifts in subsistence resource availability. The DEIS must take a hard look at the effects on all Gwich'in communities that rely on the Porcupine Caribou Herd to sustain their way of life. The section analyzing the changes in income and employment levels focuses on the community of Kaktovik's likely shift of community roles, changing social ties and altering income and employment disparities. It fails to look at the financial impacts to all affected communities, including Gwich'in villages, given the likely impacts to subsistence resource availability and use. The DEIS notes that:

> The comparative lack of economic activity for the Gwich'in people, especially the communities of Arctic Village and Venetie, could make those communities more vulnerable to social impacts, particularly those associated with disruption of subsistence activities. Without the increased economic activity associated with development, communities are more vulnerable to its impacts and less able to adapt to environmental and social changes resulting from the development.[1687]

This is not a substantive analysis for the fourteen Gwich'in communities who rely on the Porcupine Caribou Herd and will experience impacts. Even though the Gwich'in are not directly adjacent to proposed development, their communities are located along the migratory path of the Porcupine Caribou Herd and the Gwich'in rely on the herd for subsistence. It is therefore improper for the DEIS to suggest that only two of the Gwich'in communities, Arctic Village and Venetie, will be made more vulnerable by receiving none of the "benefits" from financial gain, while incurring impacts to their subsistence lifestyle and cultural identity. As stated above, Canadian Gwich'in communities account for the majority of Porcupine Caribou Herd harvest, and will feel such impacts well and other Gwich'in villages in Alaska hunt and share Porcupine

[1686] *See supra*.
[1687] DEIS vol. 1 at 3-189.

Caribou.[1688] Importantly, the DEIS does acknowledges that the economic impacts will be amplified by the current financial situation of the Gwich'in villages, as the communities experience limited economic development and rely heavily on subsistence activities to sustain their way of life.[1689] However, BLM's analysis of the financial impacts to Gwich'in communities is not meaningful, and this analysis does not account for the magnitude of impacts the Gwich'in will experience from any reductions in caribou harvest. The DEIS must analyze the changes in community subsistence harvest and economic impacts upon all fourteen Gwich'in communities.

Changes to economy mischaracterized as short term

The changes in Income and Employment Levels analysis contains a direct contradiction that must be resolved. The DEIS finds that the adjustment away from the current distribution of hunters in "could cause short-term social stresses in a community."[1690] This analysis incorrectly downplays the impacts, considering them told be "short term" when in actuality, all alternatives will be impose significant restrictions on subsistence resources and will forever change community dynamics. In fact, when comparing alternatives the DEIS provides that "the duration of impacts would be long term for all types of impacts."[1691] BLM must resolve this inconsistency in terms of the gravity and lasting nature of impacts to communities on a timeline consistent with that described above regarding BLM's impacts analysis.

In addition, BLM must explain exactly how increases in employment opportunities are expected to result in a shift away from subsistence activities. The DEIS recognizes that historically very few residents of effected communities hold oil and gas jobs.[1692] BLM must reconcile this with the sociocultural analysis which considers changes in social structures will be altered as certain individuals shift to "nonsubsistence roles."[1693] BLM needs to further consider the intensity of this impact in order to analyze changes in employment.

Further, BLM describes a "tipping point" where the impacts to "residents would no longer be able to adjust to such changes [and t]he potential sociocultural impacts of such an occurrence would likely be negative and long term."[1694] BLM must identify such points using the best available science to determine the scale and scope of impacts to sociocultural systems. What

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[1688] *See supra*, at Part III.E.1.

[1689] DEIS vol. 1 at 3-185 ("[T]here is little economic development in the Gwich'in area and few opportunities for local employment. In most cases, seasonal employment rather than full-time or permanent employment directly supports the subsistence activities of individuals. . . . The relative lack of cash to support subsistence activities would make these communities more vulnerable to changes in the availability of resources, such as caribou. This is because residents have less capacity to travel great distances in search of subsistence resources or to purchase alternative foods that are less desirable.").

[1690] DEIS vol. 1 at 3-188.

[1691] DEIS vol. 1 at 3-191.

[1692] DEIS vol. 1 at 3-229.

[1693] DEIS vol. 1 at 3-190.

[1694] DEIS vol. 1 at 3-188.

level of impact results in a tipping point is not further discussed; it needs to be identified to better understand the proposed alternatives and mitigate impacts.

f. Changes to traditional subsistence lands and resources

i. Disruptions to Subsistence Activities and Uses must specifically consider individual communities

The DEIS analysis errs by grouping all affected communities together when considering how subsistence uses will be disrupted. By considering all communities together, BLM does not provide a robust analysis for subsistence impacts, as user access and availability will look very different in many communities. For example, Kaktovik will have to directly avoid infrastructure during subsistence activities while Gwich'in communities will likely experience subsistence impacts from altered migratory caribou behavior, lower herd population, and reduced overall animal health. Infrastructure in Kaktovik may force subsistence hunters to change their hunting areas, strategies, and potentially hunting methods.[1695] BLM's analysis does not take a hard look at impacts, instead making broad statements about potential impacts on subsistence resource availability. The DEIS must take a detailed look at the sociocultural impacts, which requires so level of differentiation between affected communities.

ii. Subsistence patterns and roads

BLM must account for changing subsistence patterns due to roads.[1696] Roads will fragment caribou habitat and the DEIS fails to fully consider the risks roads pose to the Porcupine and Central Arctic Caribou Herds. BLM's current caribou analysis is deficient for failing to account for the reasonably foreseeable impacts to the herds and by neglecting to address issues such as snowdrifts along roads which delay and reduce the availability of local forage for caribou.[1697] BLM needs to address these concerns with the best available science. After BLM updates this analysis and clearly explains the consequences for caribou, the DEIS must be further updated to reflect the subsequent sociocultural implications to caribou.

iii. Implications from reduced availability of marine mammals

BLM must fully address the implications of impacts to bowhead whales and other marine mammals for subsistence access and the subsequent sociocultural implications that stem from reduced sharing practices and passing of traditional knowledge. The DEIS's environmental justice section acknowledges that there are impacts to subsistence use of bowhead whales and other marine mammals from oil and gas activities.[1698] Hunters are required to travel further as a result of noise and traffic.[1699] Reduced harvest of whales would interrupt and alter sharing and

[1695] DEIS vol. 1 at 3-190.
[1696] DEIS vol. 1 at 3-190.
[1697] *See supra*.
[1698] DEIS vol. 1 at 3-202.
[1699] DEIS vol. 1 at 3-130.

trading networks with different communities and regions in Alaska and Canada.[1700] The DEIS fails to account for any of these impacts and merely concludes that large vessel traffic could temporarily disturb or displace whales or bearded/ringed seals. Generally, the DEIS notes that negative social consequences will result if harvest of key resources, such as bowhead whales are reduced, but does not analyze the likelihood and severity of these impacts.[1701] BLM's analysis fails to adequately consider how harvest interruptions would restrict the availability of marine mammals for subsistence use.

iv. Changes in harvester dynamics from increased competition

BLM makes brief mention, but fails to provide actual analysis about how reduced availability of subsistence resources may cause tensions between user groups who harvest the Porcupine Caribou Herd.[1702] There is no description for how BLM foresees these conflicts developing, how they will play out, and what larger implications they may have on social cohesion. The Porcupine Caribou Herd and Central Arctic Herd are harvested by twenty-two communities in total. BLM should analyze and describe how the reduction of resources will change social dynamics amongst communities.

e. Changes to the social, health, and cultural environment

i. Analysis must consider impacts to the Iñupiat and Gwich'in cultures

As separate peoples with unique beliefs, histories, and traditions, BLM should provide robust independent analysis of cultural impacts to the Iñupiat and Gwich'in people. The DEIS considers how Disruptions to Subsistence Activities and Uses will degrade social ties and cohesion universally for both the Iñupiat and Gwich'in. While disruption is inevitable in both cultures, it is improper to consider the impacts in such broad strokes. For example, the Iñupiat of Kaktovik will experience changes from structural development around their community and reductions in availability of terrestrial and marine species. Alternatively, Gwich'in communities will see impacts to the Porcupine Caribou Herd and may have to travel farther, and utilize different locations for subsistence harvest. As currently written, the DEIS errs by failing to consider the distinctive impacts to Iñupiat and to Gwich'in people from disruptions to their subsistence activities.

ii. Disruptions to sharing networks and cultural activities

The DEIS does not sufficiently consider decreased ability to participate in the cultural practices of sharing and processing of subsistence resources. The DEIS notes that for Kaktovik Iñupiat residents "[s]haring the harvest is an important objective in subsistence lifestyles; 42 percent of households shared half or more of their harvests with others in the community."[1703]

[1700] DEIS vol. 1 at 3-171.
[1701] DEIS vol. 1 at 3-190.
[1702] DEIS vol. 1 at 3-192.
[1703] DEIS vol. 1 at 3-420.

Similarly, "Nuiqsut residents consider sharing to be central to their identity; the bowhead whale hunt, in particular, centers on sharing, as evidenced by the 97 percent of households who receive bowhead whale meat annually."[1704] Gwich'in culture utilizes sharing networks which are important to for resiliency and community — sharing not only with other Gwich'in, but Iñupiat communities as well.[1705] Even though the DEIS recognizes the existence and importance of sharing networks, there is no actual analysis that considers how these networks might be altered from oil and gas development on the Coastal Plain. BLM must provide a robust analysis of how oil and gas development will alter sharing networks.

f. The DEIS does not sufficiently consider the Gwich'in's cultural identity and their spiritual connection with the Porcupine Caribou Herd

The Gwich'in people are spiritually connected and inexorably tied to the Porcupine Caribou Herd, and thus the Coastal Plain as the calving and post-calving habitat of the Herd.[1706] The DEIS recognizes the Gwich'in and Porcupine Caribou Herd relationship,[1707] but does not interweave the serious and detrimental effects from development on the Coastal Plain to the Gwich'in people's spirituality into the sociocultural analysis. The Gwich'in's continued spiritual connection with the Porcupine Caribou Herd needs to be analyzed as a substantial impact in BLM's Disruptions to Subsistence Activities and Uses section and in its section 810 analysis. By

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[1704] DEIS vol. 1 at 3-164.

[1705] DEIS vol. 1 at 3-167 ("Venetie sharing networks extending throughout the state, but with a focus on nearby interior communities, such as Arctic Village, Fort Yukon, Eagle, Chalkyitsik, Stevens Village, Beaver, and Birch Creek. Venetie residents also have sharing networks with multiple North Slope communities, including Utqiaġvik, Nuiqsut, and Anaktuvuk Pass. The study notes the importance of the close kinship ties between Venetie and Arctic Village as a source of resiliency, as caribou harvested in Arctic Village are often shared with Venetie, sometimes in exchange for resources, such as salmon, which are less available in Arctic Village. The importance of caribou in Venetie sharing networks is evidenced by the 22,445 pounds of caribou that flowed between households (nearly half of all subsistence food flows).").

[1706] *See* Gwich'in Steering Committee, Scoping Comments re: Notice of Intent to Prepare an Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program (June 19, 2018).

[1707] DEIS vol. 1 at 3-156 ("Any potential impacts on the [Porcupine Caribou Herd] would constitute a cultural effect."); *id*. at 3-183 (internal citations omitted) ("Despite the various changes to social and political organization over time, much of the traditional Gwich'in people's social and political structure remains intact. Subsistence remains central to their identity. The people of Arctic Village and Venetie are primarily descendants of the Neets'aii band of the Gwich'in and, along with other Gwich'in, identify as the "caribou people" in reference to their main source of food and cultural and spiritual identity. They view their primary cultural tradition as living with the caribou, with an emphasis on the reciprocal nature of their relationship with this important resource."); *id*. at 3-187 ("The importance of reciprocity in human and animal relationships is evident . . . the strong belief in the sacredness of places like the Coastal Plain, due to its integral connection to caribou calving and migratory bird nesting grounds.").

not analyzing the significant impacts to Gwich'in spirituality, BLM does not acknowledge the full scope of negative social consequences for the Gwich'in people.

g. BLM's consideration of cumulative impacts to sociocultural systems is deficient

The DEIS cumulative analysis errs by not adequately considering past, present, and foreseeable future impacts on sociocultural systems. The section purporting to assess cumulative impacts on sociocultural systems acknowledges that in the cumulative instance, the potential for sociocultural impacts would increase yet contains no quantified or detailed information.[1708] BLM identifies the following issues that "would increase the potential for sociocultural impacts" in the cumulative case:

- changes in income and employment levels
- changes in available technologies
- disruptions to subsistence activities and uses
- and increased interactions with outsiders
- abundance of subsistence resources
- safety of subsistence hunters[1709]

Merely listing broad issues that may be "potentially" implicated or "could contribute to changes" does not constitute a hard look. The DEIS does not explain or analyze whether these potential impacts have had negative or positive effects or their expected duration. NEPA requires analysis with greater specificity in order to sufficiently analyze cumulative impacts.

Similarly, BLM finds that "[p]ast and present actions that have affected sociocultural systems among the Iñupiat and Gwich'in people include:

- oil and gas development
- onshore and offshore transportation and infrastructure projects
- scientific research
- increased recreation and tourism
- demographic changes
- changes in land status
- modernization"[1710]

The DEIS does not tie these actions to the cumulative effects analysis — there is no mention of a current project or explanation of how these broad categories impact future activities. The inclusion of this list in the cumulative impacts section implies they are part of the cumulative analysis, but they are not incorporated in any meaningful way. BLM not only needs to provide a baseline for each action listed above, but needs to meaningfully analyze how these actions play a role in the cumulative impacts to sociocultural systems. For example, BLM should clarify what scientific research is used, where increased recreation and tourism are taking place,

[1708] DEIS vol. 1 at 3-192.
[1709] DEIS vol. 1 at 3-192.
[1710] DEIS vol. 1 at 3-192.

how much of an increase in recreation and tourism will occur, what types of demographic changes are projected, exactly how land status would change, and what types and how much modernization would occur. In addition, BLM must clarify what onshore and offshore projects they are considering, and include the possibilities of Alpine, Greater Mooses Tooth One, Greater Mooses Tooth Two, Liberty, the proposed Willow project, and the revision of NPR-A Integrated Activity Plan/EIS. BLM must then actually analyze the cumulative impacts of these projects. Broadly suggesting that impacts exist does not constitute the detailed analysis required by NEPA.

BLM seems to characterize future development on the Coastal Plain as a cumulative impact rather than and direct and indirect impact of its proposed lease sales. BLM simply states "[t]he proposed oil and gas leasing program, *in addition to future activities*, could lead to additional oil and gas development and other development and infrastructure projects."[1711] Besides being illogical, this assumption leads to BLM focusing primarily on direct and indirect impacts to subsistence uses, rather than taking a hard look at the cumulative impacts of other reasonably foreseeable future actions. BLM also does not identify what future activities it is referring to. Other cumulative impact sections of the DEIS, such as the ANILCA 810 section, point to specific development such as a road and pipeline between Kaktovik and the Dalton Highway/Trans-Alaska Pipeline, oil and gas development in the Colville-Canning Area, and oil and gas activity in the vicinity of Alpine.[1712] The DEIS also does not discuss how future development beyond the Coastal Plain would cumulatively impact communities. For instance, it is highly likely that offshore oil and gas development will exacerbate impacts from any oil and gas activities on the Coastal Plain by negatively impacting subsistence whaling. Additionally, other cultural implications that are not specifically tied to subsistence activities must be considered as well. For example, the cumulative analysis impacts section must address the harm to Gwich'in identity form oil and gas development on the Coastal Plain. The effects of increased development in the region from a variety of resource development and infrastructure projects will by additive and synergistic impacts to subsistence use, the economy, and social cohesion. BLM's failure to adequately analyze cumulative impacts from reasonably foreseeable future projects renders its analysis deficient.

<u>The DEIS downplays the cumulative impacts to certain communities</u>

BLM uses Arctic Village and Venetie as examples of communities that will experience none of the economic benefit from oil and gas, but will see decreased subsistence harvest.[1713] BLM fails to clarify whether the decreases in subsistence harvest stem from reductions to the Porcupine Caribou Herd or other subsistence resources that are likely to be impacted by oil and gas on the Coastal Plain, such as waterfowl and migratory birds. If this reference does pertain to the Porcupine Caribou Herd, the analysis fails to account for all of the communities that will be harmed by impacts to the Porcupine Caribou Herd and a reduction in subsistence resources. BLM fails to account for not only reductions in individuals' ability to obtain caribou, but also

[1711] DEIS vol. 1 at 3-192 (emphasis added).
[1712] DEIS vol. 2 Appendix E at E-16.
[1713] DEIS vol. 1 at 3-192–3-193.

reductions and impacts to community sharing practices within and between communities. For the Gwich'in people, "sharing is central to maintaining social and kinship ties."[1714] All Gwich'in communities, Alaskan and Canadian, will experience these impacts and must be accounted for in this analysis. Further, it is improper for BLM to assume for purposes of its sociocultural impacts analysis that communities who have relied on subsistence practices for countless generations will simply "adapt to such changes, while maintaining cultural traditions and values, such as subsistence, humility, respect for elders, family and kinship, and avoidance of conflict." [1715] BLM cannot shirk its obligations to take a hard look at these impacts by irrationally assuming that entire sociocultural systems will adapt.

Climate Change

The DEIS is flawed by not mentioning climate change in the cumulative impacts analysis, or the entirety of the sociocultural systems analysis. Climate change impacts are currently altering the Arctic at a rapid pace and will continue to shape the future of subsistence hunting and other cultural practices in the Arctic. Through omission, the DEIS ignores the very real impacts which are already happening across the North Slope and Interior Alaska. As discussed elsewhere in these comments, the best available science demonstrates that climate change is already impacting important subsistence resources like caribou, fish, and marine mammals. In other sections of the DEIS, BLM relies on the decision document for the Greater Mooses Tooth Two development to bypass providing any meaningful analysis of the impacts of climate change instead of conducting an analysis specific to how subsistence use in this area could be impacted by climate change.[1716] The Greater Mooses Tooth Two analysis relates to a landscape hundreds of miles away with different resources and use patterns and does not contain an analysis of the potential impacts of climate change specific to the Coastal Plain and its resources. BLM cannot rely on that analysis to analyze the impacts to sociocultural systems from climate change. It is inappropriate to wholly omit climate change effects, as they will exacerbate the impacts to sociocultural systems from oil and gas activities and must be analyzed. The best available science for climate change must be considered in the cumulative impacts and throughout the sociocultural systems analysis.

Requirement to analyze all alternatives

BLM provides no meaningful analysis of all alternatives in the context of cumulative impacts. The alternatives analysis indicates that some impacts will be more severe than others, but the analysis is so vague it is unclear how BLM is actually analyzing impacts and does not account for the complexity of sociocultural issues.[1717] The analysis fails to mention Alternative C or D1, only stating that Alternative B and Alternative D2 respectively have the largest and smallest impacts. Merely noting that one option would likely have the most impact and another would have the least is not a meaningful analysis Further, without actual analysis, it is not clear that BLM's conclusion is correct or what it is based on. This renders BLM's cumulative impacts

[1714] DEIS vol. 1 at 3-183.
[1715] DEIS vol. 1 at 3-192–3-193.
[1716] DEIS vol. 2 Appendix E at E-19.
[1717] DEIS vol. 1 at 3-193.

analysis deficient. BLM must compare the alternatives in a robust way, where specific features of the alternatives are considered.

In sum, BLM fails to adequately discuss the impacts from the oil and gas leasing program on sociocultural systems, including restrictions and impacts to key resources such as caribou that are vital to subsistence. Oil and gas leasing on the Coastal Plain will forever alter subsistence practices for the Gwich'in. BLM's cumulative analysis of Sociocultural Systems impacts falls far short of adequately considering the impacts of other past, present, and reasonably foreseeable future actions in conjunction with oil and gas leasing on the Coastal Plain. BLM needs to revise its analysis of the direct, indirect, and cumulative impacts and reissue the EIS it to ensure that it fully accounts for these impacts.

P. BLM'S ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON ARCHEOLOGICAL AND CULTURAL RESOURCES IS INADEQUATE.

There is significant information missing for BLM to be able to accurate describe cultural and archeological resources and for the agency to be able to accurately analyze the impacts of an oil and gas program on these resources. BLM needs to do extensive studies in order to make informed decisions protecting cultural resources and comply with National Historic Preservation Act (NHPA) Section 106.[1718] NHPA Section 106 requires the BLM to [i]dentify historic properties and assess the effects of the undertaking on such properties.[1719] Completing an accurate review and analysis of cultural and archeological resources will required a revised EIS.

There has been only one attempt to systematically survey the Coastal Plain and ascertain cultural resources, and that study was conducted in 1982.[1720] Otherwise, research on cultural resources is minimal, and concentrated around the village of Kaktovik.[1721] As BLM recognizes, this is limited, and does not encompass large areas of the Coastal Plain: "vast inland areas of the program area have received little to no systematic investigation for cultural resources."[1722] The coastal region presents a unique challenge, where the area has been "subject of a greater number of survey efforts, [but] dynamic coastal erosion processes are affecting those resources."[1723] Additionally, research on heritage sites is scant, as the Alaska Heritage Resources Survey includes only "10 literature reviews, 12 reconnaissance surveys, and one intensive survey."[1724] The EIS acknowledges only 89 Alaska Heritage Resource Sites, three RS 2477 trails (#1649, #1043, and #914), and two NOAA shipwrecks, one located off Barter Island and the other in Camden Bay.[1725] Of the 89 identified sites, only one third are prehistoric or historic sites

[1718] 36 C.F.R. § 800.8.
[1719] 36 C.F.R. § 800.8(c)(1)(ii).
[1720] DEIS vol. 1 at 3-152.
[1721] DEIS vol. 1 at 3-152.
[1722] DEIS vol. 1 at 3-152.
[1723] DEIS vol. 1 at 3-153.
[1724] DEIS vol. 1 at 3-152.
[1725] DEIS vol. 1 at 3-157.

(including sod houses lithic scatters, tent rings and artifact scatters).[1726] The rest of the sites are historic, including military sites and historic Iñupiaq structures.[1727] All identified archaeological resources must be protected consistent with Archaeological Resources Protection Act (ARPA) to ensure there is no "[u]nauthorized excavation, removal, damage, alteration, or defacement of archaeological resources."[1728] The DEIS currently makes no reference to the ARPA and how BLM will comply with its mandates — this is an unacceptable omission and must be remedied.

BLM cannot engage in cultural resource protection without surveys and a baseline understanding of the resources. The EIS is deficient as it presents and incomplete picture of the Coastal Plain's prehistoric and historic sites, and cannot sufficiently protect the unknown. Information currently available is outdated, insufficient, and incomplete. A full, comprehensive study of the Coastal Plain's cultural resources, including specific consideration archeological resources and historic resources is required, not only to make informed decisions, but it is required by NHPA.[1729]

BLM must document the broader cultural ties to the coastal plain for the Iñupiat and Gwich'in. Ethnographic resources also require protections, including ethnographic landscapes, traditional cultural properties, Native American sacred sites, and intangible cultural resources (e.g. oral traditions, indigenous knowledge, and traditional skills).[1730] Currently BLM recognizes:

> Both the Iñupiat and the Gwich'in people have cultural and ethnographic ties to the program area, as evidenced by cultural sites, traditional and contemporary uses, oral histories, and current beliefs and values. When these are viewed as a whole, these ties to land and place are often documented and identified in the cultural resource regulatory framework as TCPs or cultural landscapes. These types of cultural resources have not been documented to date in the program area under the existing regulatory frameworks.[1731]

Additionally the EIS states that [a]ny potential impacts on [*Iizhik Gwats'an Gwandaii Goodlit*, "The Sacred Place Where Life Begins"] would constitute a cultural effect" on the Gwich'in people.[1732] Deference should be given to traditional knowledge, which "is built on millennia of residence in the region."[1733] The lack of research must be remedied before BLM undergoes any disruption or oil and gas activities that could potentially harm the Coastal Plain, a significant ethnographic cultural resource. BLM identifies that the Gwich'in people in Arctic

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[1726] DEIS vol. 1 at 3-153; DEIS vol. 2, Appendix L at L1–L2.
[1727] DEIS vol. 1 at 3-153; DEIS vol. 2, Appendix L at L1–L2.
[1728] 16 U.S.C. § 470ee(a).
[1729] 36 C.F.R. § 800.8.
[1730] DEIS vol. 1 at 3-154.
[1731] DEIS vol. 1 at 3-156–3-157.
[1732] DEIS vol. 1 at 3-156.
[1733] DEIS vol. 1 at 3-156.

Village and Venetie requested consultation, specifically on ethnographic knowledge.[1734] The NHPA requires BLM to meaningfully comply, not only with regard to the communities of Arctic Village and Venetie's requests, but it must pursue consultation for all Gwich'in communities along the historic migration path of the Porcupine Caribou Herd and for Iñupiat communities as well.[1735]

The BLM's Current Lease Stipulations are insufficient to protect for cultural resources. The DEIS states that there is "[n]o potential for adverse effects" as BLM is able to protect cultural resources with "[l]ease stipulations already proposed include[ing] conducting cultural surveys prior to ground-disturbing activities, a plan for unanticipated discovery stoppage, and cultural awareness training and orientation."[1736] All Lease Stipulations that purport to protect cultural resources, namely, Lease Stipulation 2, 3, and 4, contain carve outs for development in sensitive areas on a case-by-case basis.[1737] These limits the ability of these measures to achieve the goal of protecting cultural resources. These provisions are also insufficient to protect unsurveyed cultural resources and meaningfully determine the effects of the alternatives because it is currently unknown what is in each program area.

Significant amounts of additional research must be done to identify resources, evaluate alternatives, and develop adequate protections for cultural resources. Currently, in its rush to hurry forward this EIS, BLM has not completed "surveys and research to identify and document potential sacred sites, TCPs, ethnographic landscapes, or intangible resources have not been completed to date in the program area."[1738] Any archeological resources discovered through the required studies are also protected by the ARPA as an "irreplaceable part of the Nation's heritage."[1739] BLM must perform obtain the necessary information and conduct the required surveys to accurately analyze the impacts of an oil and gas program on cultural resources. By not completing these surveys, BLM fails to comply with NEPA and Section 106 NHPA, and cannot adequately consider the impacts of the proposed alternatives it has set forth in the EIS.[1740]

Q. BLM'S ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM FAILS TO ADEQUATELY CONSIDER THE IMPACTS ON ENVIRONMENTAL JUSTICE COMMUNITIES.

BLM's environmental justice analysis fails to sufficiently evaluate whether the leasing program will have "disproportionately high and adverse human health or environmental effects … on minority populations and low-income populations."[1741] BLM's analysis is deeply flawed and fails to account for the full scope of potential impacts to minority and low-income

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[1734] DEIS vol. 1 at 3-155.
[1735] 36 C.F.R. § 800.8(c)(3).
[1736] DEIS vol. 1 at 3-157.
[1737] DEIS vol. 1 at 2-5–2-7.
[1738] DEIS vol. 1 at 3-155.
[1739] 16 U.S.C. § 470aa *et seq*.
[1740] 36 C.F.R. § 800.8(c)(1)(ii).
[1741] EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

populations from all phases of oil and gas activities and fails to consider impacts to all potentially affected populations.

Executive Order No. 12898, issued in 1994, requires that all federal agencies "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." BLM has failed to do so.

Communities associated with the Arctic Refuge are rural, contain many low-income households, and retain subsistence lifestyles in a mixed, subsistence cash-income economy with high levels of unemployment.[1742] Continued traditional and cultural uses of their lands and waters contribute to the physical and spiritual well-being of people and communities helping to maintain their close relationship to the land and sustain their "sense of place."[1743] Oil and gas development activities would result in the gradual loss, decline, or change in subsistence resources upon which local low-income and minority residents depend.[1744] This would place a disproportionate weight of any adverse effects on low-income and/or minority populations.

The Gwich'in people live in fourteen small villages across a vast area extending from northeast Alaska to the northern Yukon and Northwest Territories in Canada. Though the Inupiat community of Kaktovik is the only community located on the Coastal Plain, other villages such as Arctic Village, Fort Yukon, Venetie, Chalkyitsik, Beaver, and Canadian villages such as Old Crow and Fort McPherson, are located within the range for the Porcupine Caribou Herd and will be impacted by any oil and gas activities on the Coastal Plain.[1745] The draft EIS recognizes that many other communities, such Wiseman, Birch Creek, and Stevens Village, have reported geographic, historic/prehistoric, or cultural ties to the Arctic Refuge as a whole.[1746] BLM further acknowledges that subsistence harvesting and sharing patterns for "22 Alaskan communities and seven Canadian user groups are relevant if post-lease oil and gas activities changes caribou resource availability or abundance for those users."[1747] All of these communities — in Alaska and Canada — meet the criteria as for being minority or low-income populations, as these are primarily communities of indigenous people with a subsistence-cash economy. As such, all of these communities should have been properly considered in BLM's environmental justice analysis.

BLM recognizes that "environmental justice impacts related to potential adverse impacts on subsistence resources extend well beyond the immediate program area, and they encompass the social and cultural value of subsistence resources (and their uses), as described in ANILCA,

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[1742] CCP EIS vol. 1 at 5-121.

[1743] *Id*.

[1744] *See supra* Part V.N, O.

[1745] Gwich'in Steering Committee, Primary Habitat of the Porcupine Caribou Herd Map, *available at*: http://ourarcticrefuge.org/wp-content/uploads/2012/10/mappch.pdf.

[1746] DEIS vol. 1 at 3-160.

[1747] DEIS vol. 1 at 3-193.

as well as the value of direct reliance on these resources for physical sustenance."[1748] Despite this, BLM arbitrarily limits its environmental justice analysis to four communities: Kaktovik, Nuiqsut, Arctic Village, and Venetie.[1749] BLM did not adequately assess whether oil and gas leasing on the Coastal Plain would significantly impact minority populations and low-income populations, as required by relevant executive orders and BLM's own guidance.

Regarding BLM's analysis of the environmental consequences, BLM arbitrarily and improperly limits the scope of its environmental justice analysis in the same way it improperly limited the scope of its NEPA and ANILCA 810 analysis. BLM only looks at post-lease activities that include seismic and drilling exploration, development, and transportation.[1750] BLM should not limit its analysis of the impacts to only post-leasing activities and needs to include the full range of direct, indirect, and cumulative impacts to minority and low-income populations that could occur from the program. This includes from any proposals to conduct pre-leasing seismic exploration on the Coastal Plain. As discussed elsewhere, BLM is currently in the process of reviewing an extensive seismic proposal from SAExploration that could cause lasting damage to tundra, vegetation, soils, permafrost, and other resources. That damage can in turn significantly harm wildlife through the degradation of their habitat. BLM also improperly excluded other forms of infrastructure and activities from what it considered as part of its 2,000 acres of impacts. This includes pipelines, which could cross large areas of the Coastal Plain and have the potential to divert caribou away from key areas. BLM also failed to account for other activities like gravel mining, which have severe sound and air quality impacts that could deter fish and wildlife from important habitat areas and directly impact nearby communities. BLM's deficient analysis of the full range of resource impacts from the broad scope of activities likely to occur on the Coastal Plain and to nearby areas means BLM has dramatically underestimated the potential impacts from the oil and gas program and related activities. BLM needs to revise and reissue its EIS to ensure it actually takes into consideration the full range of potential impacts to minority and low-income populations for purposes of its environmental justice analysis.

BLM further downplays the potential environmental justice impacts from oil and gas leasing by relying on its own flawed analysis throughout the EIS to justify its findings. BLM correctly notes that CEQ guidance directs the agency to consider any multiple or cumulative effects on human health and the environment, even if certain effects are not in the control or subject to the discretion of the agency. [1751] BLM further notes that impacts to economy, subsistence, sociocultural, and public health and safety are largely, if not exclusively, also of importance to environmental justice.[1752] BLM then briefly summarizes its conclusions from these sections of its DEIS. As described in detail above, BLM failed to adequately analyze impacts to

[1748] DEIS vol. 1 at 3-195.

[1749] DEIS vol. 2 Appendix E at E-3.

[1750] DEIS vol. 2 Appendix E at E-2.

[1751] CEQ, Environmental Justice Guidance Under the National Environmental Policy Act, 1997.

[1752] DEIS vol. 1 at 3-196.

subsistence,[1753] sociocultural systems,[1754] the economy,[1755] and public health.[1756] These flawed analyses result in BLM's inadequate discussion of environmental justice impacts.

Critically, we note that BLM should have also considered impacts to cultural resources, visual resources, acoustics and soundscapes, air quality, fish, and caribou in terms of importance to environmental justice. These additional resources and issues have the potential to significantly impact minority and low-income populations dependent upon the Arctic Refuge. Thus, BLM failed to consider many of the factors that determine environmental justice impacts.

In the cumulative effects portion of its environmental justice discussion, BLM recognizes that on the North Slope "decades of oil exploration and development conducted by the federal government and industry…[have] directly affected habitat use and behavior of subsistence species and resulted in additive impacts on subsistence resources, harvest patterns, and users. These effects have altered livelihoods and ways of life and account for some of the social disruptions seen in villages today."[1757] BLM does not, however, fully analyze how such similar direct and indirect impacts may affect communities on the Coastal Plain or that rely on Coastal Plain resources, which has been historically protected from oil and gas development. BLM fails to take a hard look at the ways in which specific minority and low-income communities would be similarly impacted by oil and gas leasing development in the Arctic Refuge, merely relying on conclusory statements which cite to other findings in its EIS.

We note that, where BLM does correctly find a potential negative effect, the agency still falls far short of providing a meaningful analysis under NEPA and of meeting its environmental justice obligations. BLM acknowledges "[c]ommunities that are most likely to experience negative sociocultural impacts would be those that experience impacts on subsistence, while not having increased income or employment opportunities, such as Arctic Village and Venetie; therefore, the action alternatives would constitute a disproportionate, adverse impact on the environmental justice communities of Arctic Village and Venetie."[1758] It is unclear whether this statement is tied only to cumulative impacts or to the direct and indirect impacts of oil and gas leasing and development on the Coastal Plain. BLM should clarify this. BLM must also explain why this finding does not include all communities whose subsistence way of life is closely tied to the resources of the Coastal Plain, and why no similar finding was made cumulatively for Nuiqsut, where environmental justice impacts are already occurring.[1759] Additionally, BLM must explain how this conclusion is consistent with its ANILCA 810 findings, which do not find a

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[1753] *See supra*.
[1754] *See supra*.
[1755] *See supra*.
[1756] *See supra*.
[1757] DEIS vol. 1 at 3-201.
[1758] *Id*.
[1759] GMT1 SEIS, *supra*, Vol. 1 at 472.

significant restriction on subsistence uses for Arctic Village or Venetie.[1760] (As we explain below, the agency's section 810 finding is flawed).

Despite this finding, BLM discusses no mitigation measures whatsoever to address such a disproportionate, adverse impacts. This is contrary to CEQ guidance, which states that "agencies should elicit the views of the affected populations on measures to mitigate a disproportionately high and adverse human health or environmental effect on a low-income population, minority population, or Indian tribe and should carefully consider community views in developing and implementing mitigation strategies." The environmental justice analysis contains absolutely no discussion of how BLM intends to mitigate this finding, contrary to CEQ guidance. The only stipulations and ROPs mentioned are those relevant to other resource categories such as subsistence and public health. BLM wholly failed to consider specific mitigation measures to address disproportionate, adverse impacts to environmental justice communities.

Finally, BLM has failed to meaningfully engage communities in this EIS process, worsening the environmental justice implications of its proposed leasing program. Despite recognizing that "Federal agencies also are required to give affected communities opportunities to provide input into the environmental review process, including the identification of mitigation measures,"[1761] BLM has repeatedly failed to engage affected communities.[1762] BLM's timeframes for review of the draft EIS are insufficient to allow for meaningful public involvement. Ensuring that the public has sufficient time to receive and review all of the documents and understand their relationship to what is being proposed is essential to the public's ability to analyze and provide meaningful comments to the agency on the project. BLM has stated that it intends to hold a lease sale this year and is rushing toward that goal at the expense of the public participation and environmental justice. Rushing the analysis and public review is not consistent with BLM's obligations when considering an issue which will gravely impact minority and low-income populations. In addition to its hasty timeframes, BLM has not coordinated with all affected communities in Alaska to hold public meetings or government-to-government consultation. Further, there is no indication that BLM contacted any communities in Canada for purposes of consultation or public meetings.

Overall, BLM's environmental justice analysis is deeply flawed and contrary to the evidence. BLM needs to substantially revise its entire EIS to fully account for the broad range of direct, indirect, and cumulative impacts to all potentially affected minority and low-income communities, which warrants a finding for significant impacts to environmental justice for all of these communities.

[1760] *See* DEIS vol. 2 Appendix E at E-10, E-19 (finding that the action alternatives will not result in a significant restriction to subsistence uses, and finding that the cumulative case may significantly restrict subsistence uses and needs *solely* for the community of Kaktovik).

[1761] DEIS vol. 1 at 3-196.

[1762] *See supra* Part III.B.9 (explaining that BLM and DOI's process is insufficient to meet legal requirements for public participation and consultation).

R. BLM'S ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON RECREATIONAL USES OF THE COASTAL PLAIN IS INADEQUATE.

Preservation of wilderness and recreation values are among the original purposes of the Arctic Refuge.[1763] As the DEIS recognizes, the Coastal Plain "offers recreationists primitive recreation experiences, such as expedition-length float hunts and polar bear viewing, that are unique on a global scale and that depend largely on the physical setting."[1764] These world-class recreational opportunities are dependent on maintaining the area's primitive recreation settings. A 2009 report based on surveys of Arctic Refuge visitors found that the primary reason people visit the Refuge are to experience its wilderness character, see wildlife, and experience solitude.[1765] As the CCP recognizes:

> Arctic Refuge provides a superlative setting for a variety of compatible recreational activities, and, consistent with maintaining the wilderness resource values upon which their special character depends, the Service will continue to provide opportunities for visitor access.[1766]

Thus, the CCP requires minimal management to "emphasize natural, unaltered landscapes and natural processes."[1767] The DEIS fails to include a thorough analysis of the reasonably foreseeable direct, indirect, and cumulative impacts of all phases of an oil and gas program on recreational uses.

First, the description of the affected environment is incomplete and inaccurate. Our scoping comments requested that BLM compile accurate and up-to-date visitor use and recreation data, along with associated economic benefits. While the DEIS includes some basic information on visitor use and recreation data, it fails to include information about the direct and indirect economic benefits associated with wilderness-dependent recreation.[1768] The affected environment section also includes errors, such as describing most recreation in the program area being in the Kongakut, Canning, and Hulahula River corridors.[1769] In fact, the Kongakut River does not cross the Coastal Plain at all and instead flows entirely through the Mollie Beattie Wilderness from its origin in the Brooks Range to the Beaufort Sea.

[1763] PLO 2214 at 1.

[1764] DEIS vol. 1 at 3-205.

[1765] Neal Christensen & Lynette Christensen, Arctic National Wildlife Refuge Visitor Study, p. 16 (2009), available at https://www.fws.gov/uploadedFiles/Region_7/NWRS/Zone_1/Arctic/PDF/visitorstudy.pdf.

[1766] CCP EIS at 2-16.

[1767] CCP ROD at 4 (explaining that minimal management and wilderness recommendation of the Coastal Plain "strives for a more permanent commitment to perpetuating the Refuge's natural conditions and processes and wilderness-associated recreational opportunities").

[1768] *See also infra* Part V.Y.

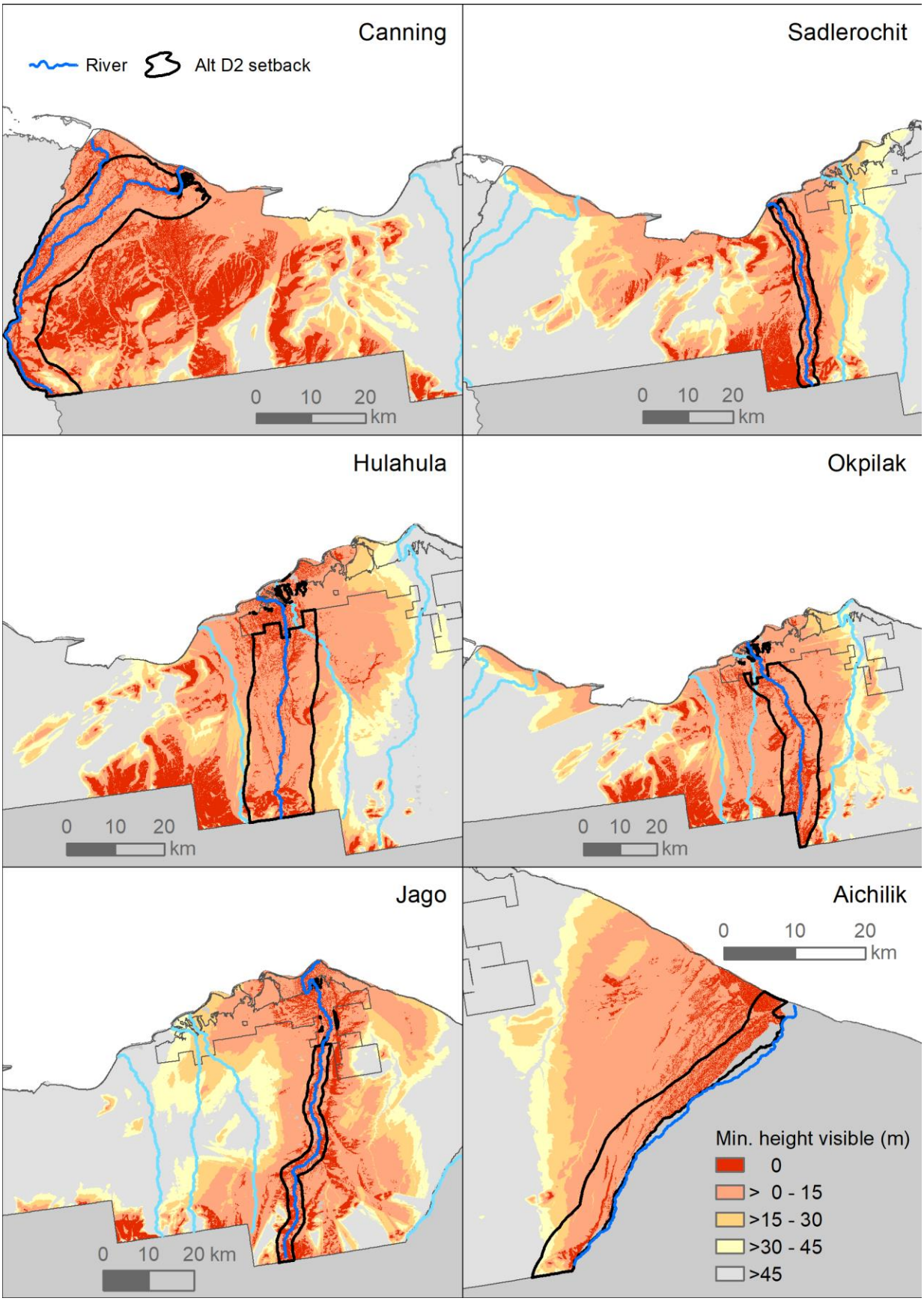
[1769] DEIS at 3-203.

Second, the DEIS impacts analysis fails to include sufficient information about the scope and extent of recreational impacts and incorrectly suggests that protective measures will minimize impacts. The impacts analysis does properly recognize that adverse impacts will be unavoidable:

> Because visitors to the program area generally expect a physical setting consisting of little to no human disturbance and a social setting with little to no interaction with other visitors or human activity, small changes to the physical and social setting can have disproportionately large impacts on user experience. . . .
>
> Even with the protective measures to minimize potential visual impacts, surface disturbance and infrastructure development would modify the existing character of the landscape, diminish visual quality, and directly affect the quality of the recreation setting and associated experiences.[1770]

As described below, BLM cannot, however, analyze the scope and extent of the impacts to recreational settings and opportunities absent a more robust analysis on visual impacts, including the type of visibility analysis described in that section and included in Appendix D (Stuart Smith, Ph.D, Comments on Draft EIS for Coastal Plain Oil and Gas Leasing Program (Jan. 11, 2019). Such an analysis demonstrates, for instance, that even the larger NSO buffers around certain rivers under Alternatives C and D are completely ineffective at preventing or significantly mitigating visual impacts:

[1770] DEIS at 3-204–3-205.


Canning
River
Alt D2 setback
0 10 20 km
Sadlerochit
0 10 20 km
Hulahula
0 10 20 km
Okpilak
0 10 20 km
Jago
0 10 20 km
Aichilik
0 10 20 km
Min. height visible (m)
0
> 0 - 15
>15 - 30
>30 - 45
>45

Map Explanation: Visibility surfaces for six major rivers along the Coastal Plain of the Arctic National Wildlife Refuge and corresponding no surface occupancy setback buffers under Alternative D2 (Alt D2). Visibility surfaces were obtained from Stuart Smith at True North GIS and indicate how tall a structure could be in a given location before becoming visible to a person traveling along the indicated river. The setback buffers from Alternative D2 were used as these present the largest setbacks in the DEIS. The resulting maps show that even these largest buffers are inadequate to mitigate visual impacts to recreationalists as even small structures (≤ 15 m) beyond these setbacks would be visible to people floating the indicated rivers.

Accordingly, conclusions like that on page 3-207 of the DEIS that, under Alternative C, "[f]our-mile NSO setbacks from rivers, such as the Canning and Hulahula Rivers, would maintain recreational opportunities and avoid the displacement of visitors in those popular recreation corridors" are unsupported. Moreover, that statement in the recreational impacts analysis is inconsistent with the articulation of Stipulation 1 in Chapter 2, Table 2-2, which lists the setback as two, not four, miles from either the edge of the active floodplain (for the Canning and Hulahula) or the bank's ordinary high-water mark (for the Okpilak) under Alternative C. Even setting aside the inconsistencies between the impacts analysis and Table 2-2, BLM may not rely on the most protective setback (4 miles) for a single river (the Hulahula) under one alternative (Alternative D) to claim there will be no or minimal impacts to recreation. As the map above depicts, even that setback is inadequate.

Other components of the analysis of visual impacts as they pertain to recreation are also incomplete. For instance, the DEIS acknowledges the importance of night sky conditions to recreation settings and user experiences and the adverse impacts associated with artificial light, but then attempts to discount those impacts by stating that they will primarily occur during winter and spring and so will affect fewer visitors and that unspecified protective measures may reduce light pollution.[1771] As with other visual impacts, the DEIS includes no information about the reasonably foreseeable scope or extent of light pollution.

Beyond aesthetic impacts to recreational uses, the DEIS recognizes that noise impacts, physical displacement and prevention of access, and impacts on physical resources and biological conditions will also affect recreational settings and opportunities.[1772] But the analysis of those reasonably foreseeable significant impacts is so generalized and cursory as to be meaningless. Nor does the impacts analysis address the economic impacts associated with the permanent degradation of the area's primitive recreation setting. In a few places, the DEIS acknowledges that the ability of operators to provide clients with desired recreation experiences would affect commercial operators.[1773] But it fails to even address — much less quantify — the

[1771] DEIS vol. 1 at 3-205 (concluding that "measures that prevent the placement of aboveground infrastructure or that specify the use of downcast lighting or other trespass mitigation measures would minimize impacts on the quality of nighttime recreation" without specifying the measures and if and how they would apply).

[1772] DEIS vol. 1 at 3-206.

[1773] DEIS vol. 1 at 3-206.

associated economic impacts.[1774] Nor does the DEIS include any information about how it will monitor and respond to changes in recreation and visitor experiences to ensure that Refuge purposes are met, as we requested in our scoping comments.

Finally, BLM's cumulative impacts analysis includes confusing and unsupported statements. For instance, it claims that "[u]nder all alternatives, there would be an increased demand for recreation use in the program area."[1775] It is unclear what support, if any, BLM has for this statement, especially where significant degradation of recreational settings can be expected under the action alternatives, which in turn would be expected to lead to decreases in wilderness recreation use and associated economic benefits. The cumulative impacts analysis also states that "[v]isitors displaced from certain areas because of oil and gas activity could choose alternate locations in the program area to recreate."[1776] This statement is also unsupported and contrary to the record, which demonstrates that the visual impacts of oil and gas development will likely extend across most of the Coastal Plain, regardless of where infrastructure is located.[1777] Moreover, the narrow geography of the Coastal Plain and established locations of the river corridors on which most recreation depends means that visitors cannot simply relocate. To the extent that BLM is assuming visitors would tend to not visit or recreate on the Coastal Plain as a result of oil and gas development, but would instead concentrate in other areas, the agency must analyze the impacts that could occur. The concentration of visitors in an area can be highly impactful both to the ecosystem and to the users. The Kongakut River is already experiencing some of these visitor pressures and it has posed management challenges for FWS.[1778]

BLM must prepare a more robust analysis of recreational impacts to comply with NEPA and demonstrate how the oil and gas program it is proposing would be consistent with the Refuge purpose of protecting the area's wilderness-dependent recreational values. This will necessarily require the development and analysis of alternatives designed to better protect the Coastal Plain's world-class recreational values — which are dependent on the area's natural, untouched landscape. Such alternatives might include, for instance: concentrating and strictly limiting leasing and development to certain lower-impact areas identified through a visibility analysis and careful examination of recreational use data; or including non-waivable stipulations for extensive NSO setbacks around river corridors, height restrictions on infrastructure, mandatory photo simulations of proposed facilities to inform future visual resource assessments, timing limitations during popular recreational months, mandatory development of monitoring and conflict avoidance plans in coordination with recreational groups, guides, and pilots, and other measures designed mitigate aesthetic and other impacts to recreation settings and opportunities. While such alternatives are a necessary component of an adequate NEPA analysis,

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[1774] As discussed in below, in Part V.Y, this is in stark contrast to the DEIS's attempts to quantify economic *benefits* associated with development. NEPA does not permit such disparate treatment of the costs and benefits of a proposed action.

[1775] DEIS vol. 1 at 3-208.

[1776] DEIS vol. 1 at 3-209.

[1777] *See* Appendix D (Smith viewshed analysis).

[1778] CCP EIS Executive Summary at S-28, vol. 1 at 3-5.

we do not believe they would be adequate to protect the Coastal Plain's recreational values, with which oil and gas development is strictly incompatible.

S. BLM'S ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON ARCTIC REFUGE WILDERNESS RESOURCES AND DESIGNATED WILDERNESS IS INADEQUATE.

The Arctic Refuge is distinctive among refuges — it was established specifically to preserve wilderness values. The Coastal Plain has exceptional wilderness values.[1779] The Coastal Plain is a key part of the broader ecosystem and is adjacent and connected to existing Wilderness by means of watersheds, rivers, and migration corridors. The Coastal Plain also provides key habitat for migratory birds and the Porcupine and Central Arctic Caribou Herds, and is the most important land denning habitat in the U.S. Arctic for the threatened polar bear — all species which benefit from the undeveloped and undisturbed wilderness character of the area. The Coastal Plain also supports world-class primitive recreational opportunities, which are inextricably intertwined with and dependent on its wilderness character. Wilderness is defined as untrammeled, undeveloped, natural, having outstanding opportunities for solitude or a primitive and unconfined recreation, over 5,000 acres or sufficient in size to preserve wilderness characters, and containing ecological, geological, or other features of scientific, educational, scenic, or historical value.[1780] In the CCP, FWS explained that wilderness is marked by four main qualities: undeveloped, untrammeled, natural, and providing opportunities for solitude or primitive and unconfined recreation.[1781] The Coastal Plain possesses each of these characteristics in spades. It is our nation's premier wilderness Refuge.

The Coastal Plain contains outstanding wilderness, wildlife, and recreational values and fits the definition of Wilderness as defined in the Wilderness Act: "an area of undeveloped federal land retaining its primeval character and influence. . . , which generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable."[1782]

FWS stated that Wilderness designation for the Coastal Plain:

> [B]est meets the Service's purpose and need to manage the Arctic Refuge to achieve the mission of the National Wildlife Refuge System and to meet the purposes for which the Refuge was established. This alternative conserves the fish, wildlife and habitats of the Arctic Refuge and facilitates subsistence and recreation in settings that emphasize natural, unaltered landscapes and natural processes.[1783]

The agency also stated that:

[1779] *See supra* Part II.A.
[1780] 16 U.S.C. § 1131(c).
[1781] CCP EIS vol. 1 at 4-14–4-15.
[1782] 16 U.C.S. § 1131(c).
[1783] CCP ROD at 3–4, *see also id.* at 12.

> [The] Arctic Refuge is nationally recognized for its unique and wide range of arctic and subarctic ecosystems that retain a high degree of biological integrity and natural diversity. The Refuge exemplifies the idea of wilderness embodying tangible and intangible values including natural conditions, natural quiet, wild character, and exceptional opportunities for solitude, adventure, and immersion in the natural world. The Refuge represents deep-rooted American cultural values about frontiers, open spaces, and wilderness. It is one of the finest representations of the wilderness that helped shape our national character and identity.[1784]

To guide its management of the Arctic Refuge, the FWS adopted a goal of "preserv[ing] its wilderness values and characteristics, [and] maintain[ing] its natural state in unaltered condition."[1785] FWS than adopted various objectives to achieve this goal for both the designated Wilderness and wilderness characteristics more broadly.[1786] These goals and objectives are relevant to the BLM's oil and gas program and should be considered.

In selecting Alternative E in the CCP ROD, FWS stated that "[s]election of this Alternative recognizes that [the] Arctic Refuge exemplifies the characteristics of wilderness. Embodying tangible and intangible values, the Refuge's wilderness characteristics include natural conditions, natural quiet, wild character, and exception opportunities for solitude, adventure, and immersion."[1787] In advancing the Wilderness recommendation to Congress, the President stated that the Arctic Refuge "is one of the most beautiful, undisturbed places in the world. It is a national treasure and should be permanently protected through legislation for future generations."[1788]

1. *BLM Fails to Accurately Describe the Exceptional Wilderness Characteristics of the Coastal Plain.*

Despite the wealth of information on the wilderness characteristics of the Coastal Plain, BLM fails to fully acknowledge or describe them. As recognized by the FWS, the Coastal Plain has exceptional wilderness characteristics and values.[1789] To begin, BLM fails to account for the wilderness purpose of the Coastal Plain when the agency is identifying the area's purposes in the EIS.[1790] As explained above, the three purposes from PLO 2214 apply equally to the Coastal Plain, and PLO 2214 specifically includes preserving the wilderness values as a purpose. BLM must acknowledge this purpose, and also acknowledge that it is a priority purpose for the Coastal Plain. Without doing so, the agency cannot accurately describe the impacts and magnitude of

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[1784] CCP ROD at 11–12.
[1785] CCP EIS vol. at 1 at 2-6.
[1786] CCP EIS vol. 1 at 2-6–2-9.
[1787] CCP ROD at 4.
[1788] Ltr. From the President to the Speaker of the House of Representatives and the President of the Senate (Apr. 3, 2015).
[1789] CCP EIS, Appendix H at H-12.
[1790] DEIS vol. 1 at 3-209.

impacts of an oil and gas program on the wilderness characteristics of the Arctic Refuge and Coastal Plain.

Additionally, the draft EIS wholly fails to discuss the wilderness characteristics of the Coastal Plain and Arctic Refuge.[1791] The draft EIS states only that the four primary qualities of wilderness are found throughout the Coastal Plain except in certain tracts near Kaktovik.[1792] It is unclear what BLM means by "tracts" because no specific lease tracts have been identified. Additionally, BLM has not provided a map of areas with or without wilderness characteristics to support this assertion. The lack of discussion of the wilderness characteristics of the Coastal Plain in the draft EIS biases BLM's analysis and means that the reader (i.e., the public) will not be informed of the exceptional wilderness values of the Coastal Plain. BLM must fully and accurately describe the wilderness characteristics in the EIS itself. While it is true that the draft EIS cites to the CCP for its description of wilderness characteristics, there is no summary or discussion of that document, and no independent description of the wilderness characteristics of the Coastal Plain and Arctic Refuge. This must be revised.

Relatedly, BLM appears to cite only to the Wilderness Review Appendix in the CCP, but fails to identify the extensive discussions in other parts of the CCP regarding the exceptional wilderness characteristics of the Coastal Plain. For example, the CCP identified the Refuge's wilderness characteristics as among its "most prominent" special values and described them in-depth:

> Arctic Refuge exemplifies the idea of wilderness—to leave some remnants of this nation's natural heritage intact, wild, and free of the human intent to control, alter, or manipulate the natural order. Embodying tangible and intangible values, the Refuge's wilderness characteristics include natural conditions, natural quiet, wild character, and exceptional opportunities for solitude, adventure, and emersion in the natural world.[1793]

In the CCP ROD adopting Alternative E for the Arctic Refuge, FWS stated that the Arctic Refuge is "one of the finest representations of the wilderness that helped shape our national character and identity."[1794] BLM must acknowledge and include all relevant discussion on wilderness characteristics from CCP documents. The BLM also does not appear to cite to the prior studies that were done on the wilderness values of the Coastal Plain, including the 1002 baseline studies in the early 1980. This information must be included, as it provides support for the enduring wilderness values of the Coastal Plain.

[1791] DEIS vol. 1 at 3-211. BLM also only cites to the appendix of the CCP, not the discussion in volume 1 or the findings in the CCP ROD.

[1792] DEIS vol. 1 at 3-212.

[1793] CCP EIS vol. 1 at 1-23.

[1794] CCP ROD at 12.

Additionally, the area of the Arctic Refuge to the immediate east and south of the Coastal Plain is designated Wilderness: the Mollie Beattie Wilderness Area.[1795] The Mollie Beattie Wilderness is "the largest, wildest, and most diverse Wilderness in the National Wildlife Refuge System."[1796] It supports a number of uses, such as recreation, subsistence hunting and fishing, and scientific research.[1797] BLM fails to describe this area and its values. With respect to the Mollie Beattie Wilderness Area, BLM must ensure that no activities will harm its wilderness characteristics or otherwise run afoul of its management as Wilderness.

2. BLM Fails to Analyze the Impacts of Oil and Gas on the Wilderness Characteristics of the Coastal Plain and the Mollie Beattie Wilderness.

Despite the widespread and exceptional wilderness values of the Coastal Plain, BLM devotes a scant page in the draft EIS to its analysis of the impacts.[1798] BLM claims that "[i]n general, discussions of potential impacts on wilderness characteristics, qualities, and values tend to be more qualitative in nature, measured by the overall visual quality, naturalness, and wildness of an area that may be affected by changes to the types and levels of recreation, management actions, and surrounding land use."[1799] No support is given for this statement and it ignores the rich history of quantifying and depicting wildland characteristics. Wilderness is, in many ways, abstract, but this has not stopped people from finding ways to conceptualize and describe its values.[1800] As early as 2000 researchers were developing ways to quantify the components of wildness and to represent them spatially through GIS.[1801] Others have found similar ways since that time to spatially and quantitatively represent the degree of human modification[1802] or human footprint.[1803] While human modification of the natural world represents only one aspect of

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[1795] ANILCA § 702(3).

[1796] CCP EIS vol. 1 at 4-15.

[1797] CCP EIS vol. 1 at 4-16.

[1798] DEIS vol. 1 at 3-216–3-217.

[1799] DEIS vol. 1 at 3-216.

[1800] E.g., Aplet, G.H. 1999. On the nature of wildness: exploring what wilderness really protects. Denver University Law Review 76(2), 347-367.

[1801] Aplet, G., Thompson, J., Wilbert, M. 2000. Indicators of wildness: using attributes of the land to assess the context of wilderness. p.89-98 in: McCool, S.F., Cole, D.N., Borrie, W.T., O'Loughlin, J. (eds.). Wilderness science in a time of change conference – Volume 2: Wilderness within the context of larger systems; May 23-27, 1999. Missoula, MT. Proceedings RMRS-P-15-VOL-2. Ogden, UT, U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

[1802] Theobald, D.M. 2013. A general model to quantify ecological integrity for landscape assessments and US application. Landscape Ecology 28, 1859-1874.

[1803] Sanderson, E.W., Jaiteh, M., Levy, M.A., Redford, K.H., Wannebo, A.V., Woolmer, G. 2002. The human footprint and the last of the wild. BioScience 52(10), 891-904.; Venter, O., Sanderson, E.W., Magrach, A., Allan, J.R., Beher, J., Jones, K.R., Possingham, H.P., Laurance, W.F., Wood, P., Fekete, B.M., Levy, M.A., Watson, J.E.M. 2016. Sixteen years of change in the global terrestrial human footprint and implications for biodiversity conservation. Nature Communications 7:12558.

describing wildness, such approaches have been combined with other aspects of wilderness character to quantify and represent wildlands[1804] and to compare their values.[1805] While these analyses may not represent every aspect of wilderness character, it is clear that approaches exist for quantifying and representing wilderness values. BLM should apply such techniques and use them in concert with a visual resources analysis to fully analyze the impacts of proposed development on wilderness character.

BLM states that under all alternatives, oil and gas and related activities "could potentially affect an area's naturalness and opportunities for solitude in the program area"[1806] or "could be affected." These are profound understatements. Development of the Coastal Plain under all alternatives will have significant impacts on wilderness characteristics and values; BLM cannot downplay these impacts. The 1987 Report found that full or even limited leasing would have major impacts on recreation, wilderness, and esthetics.[1807] The agency must thoroughly analyze the impacts of all activities associated with an oil and gas program on the wilderness values, characteristics, and resources of the Coastal Plain, as well as the Mollie Beattie Wilderness. Brief statements of possible impacts are not sufficient.

BLM also incorrectly states that the impacts to wilderness would be site-specific, and it appears to focus only on roads and access routes as impacting wilderness characteristics. This is unreasonable and unsupported. It is also inconsistent with other findings by the agency that oil and gas facilities would have impacts in NSO areas.[1808] As the National Research Council (NRC) explained, "[t]he effects of industrial activities are not limited to the footprint of a structure or to its immediate vicinity; a variety of influences can extend some distance from the actual footprint."[1809] Relatedly, the NRC stated

> [t]he common practice of describing the effects of particular projects in terms of the area directly disturbed by roads, pads, pipelines, and other facilities ignores the spreading character of oil development on the North Slope and the consequences

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[1804] Belote, R.T., Dietz, M.S., Jenkins, C.N., McKinley, P.S., Irwin, G.H., Fullman, T.J., Leppi, J.C., Aplet, G.H. 2017. Wild, connected, and diverse: building a more resilient system of protected areas. Ecological Applications 27(4), 1050-1056.

[1805] Belote, R.T., Irwin, G.H. 2017. Quantifying the national significance of local areas for regional conservation planning: North Carolina's Mountain Treasures. Land 6, 35.

[1806] DEIS vol. 1 at 3-216–3-217.

[1807] LEIS at 166.

[1808] DEIS vol. 1 at 3-208.

[1809] NAT'L RESEARCH COUNCIL, CUMULATIVE ENVIRONMENTAL EFFECTS OF OIL AND GAS ACTIVITIES ON ALASKA'S NORTH SLOPE 9–11 (2003) ("The effects of North Slope industrial development on the physical and biotic environments and on the human societies that live there have accumulated, despite considerable efforts by the petroleum industry and regulatory agencies to minimize them… Continued expansion is certain to exacerbate some existing effects and to generate new ones.").

> of this to wildland values. All of these effects result in the erosion of wildland values over an area far exceeding the area directly affected.[1810]

BLM cannot confine its analysis of impacts to wilderness to just the direct areas developed. The agency must describe how all oil and gas activities have the ability to directly and indirectly impact the undeveloped, untrammeled, and natural characteristics and opportunities for solitude or primitive and unconfined recreation of a much broader area and account for that in the EIS.[1811] It is also not clear how narrowly or broadly BLM is considering the impacts to wilderness characteristics, as BLM has not provided a map or other graphic depicting wilderness characteristics would be impacted under its development scenarios (the maps and graphics accompanying Stuart Smith's comments, which are attached to these comments as an appendix and discussed in detail in Section V below, could be replicated for wilderness characteristics). BLM should do this in the revised EIS.

BLM's analysis of the impacts by alternative is woefully inadequate and inaccurate. Inexplicitly, BLM states that there could be fewer impacts to wilderness characteristics under Alternative C because fewer acres will be offered for lease than Alternative B.[1812] Alternatives B and C offer the exact same acres for lease.[1813] BLM's obvious statement that there will be greater impacts to wilderness characteristics under Alternative C than Alternative A is not a substitute for required analysis of impacts. Alternative A does not allow oil and gas; therefore there will be no impacts to wilderness characteristics.[1814] As a result, all three action alternatives will have greater impacts to wilderness characteristics than the no-action alternative. BLM's basic recognition that there will be greater impacts from oil and gas from its action alternatives than the no-action alternative is not an analysis.

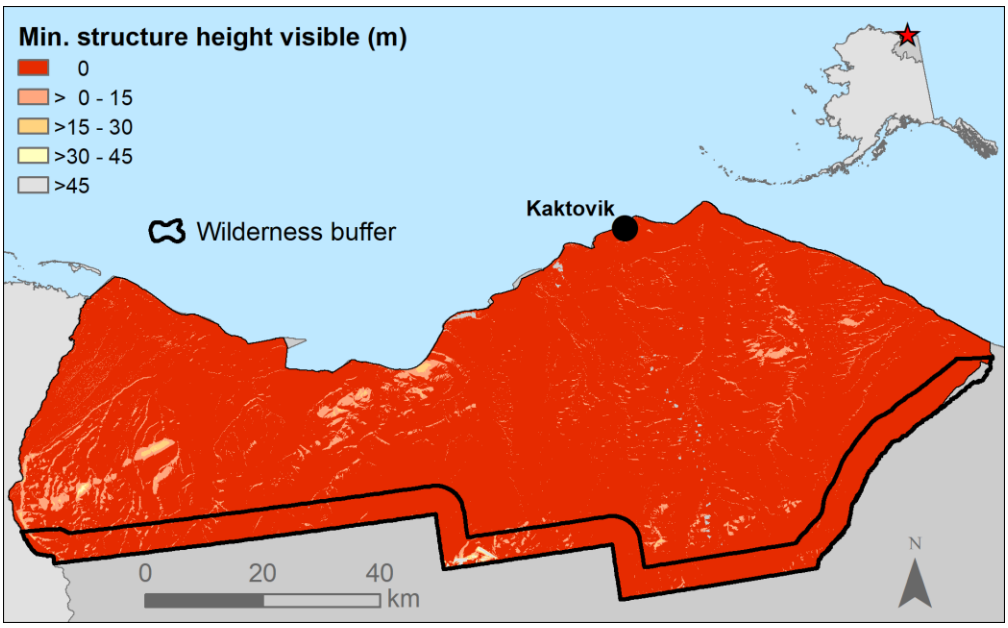
Absent from BLM's analysis of any alternative is an analysis of the impacts on the adjacent designated Wilderness. Oil and gas activities will have impacts on the Mollie Beattie Wilderness, including sound, light, visual, and natural systems (including but not limited to hydrology, migration, and permafrost). Indeed, the viewshed analysis prepared by Mr. Smith demonstrates that infrastructure of any height located in virtually any location on the Coastal Plain will be visible from high points within the Wilderness, marring the visitor's experience and greatly diminishing his or her sense of being immersed in a natural, undeveloped landscape.[1815] BLM must analyze the impacts of its proposed oil and gas program on the designated Wilderness and be sure that any program that it proposes does not degrade the qualities of the Wilderness and its management under ANILCA and the Wilderness Act.

[1810] *Id*. at 148.
[1811] CCP EIS vol. 1 at 4-14–4-15.
[1812] DEIS vol. 1 at 3-217.
[1813] DEIS vol. 1 at 2-1, Table 2-1.
[1814] DEIS vol. 1 at 3-216.
[1815] *See* Appendix D (Smith viewshed analysis at Figure 12).

3. *BLM's Measures Are Insufficient to Protect Wilderness and Wilderness Values of the Arctic Refuge*

BLM's statement that impacts to wilderness characteristics will be reduced in the areas that will be managed under NSO stipulation or areas with TLs is specious.[1816] First, these provisions can be waived, exempted, or modified.[1817] Specifically regarding the NSO provision, it still allows for infrastructure on a case-by-case basis, including for river crossings.[1818] Second, neither NSO nor TLs prohibit seismic exploration or drilling, which can have impacts to the untrammeled nature of the area, recreation, and wildness. Third, the TL is not a limitation on development, but on use during a specific time of the year. The same areas can still be developed, with the same impacts on wilderness characteristics as areas not subject to TLs.[1819] BLM's conclusion that TLs will lessen or reduce impacts to wilderness characteristics is, therefore, baseless.

BLM also proposes only one protective measure for the Mollie Beattie Wilderness that would apply under only Alternative D: a three-mile NSO buffer and suggestion that aircraft operations be planned to minimize flights below 2,000 feet within that buffer.[1820] Had BLM prepared a visibility analysis, it would have been apparent that the three-mile NSO buffer is wholly insufficient to protect wilderness values in the Mollie Beattie Wilderness under any alternatives and regardless of where development is located – since infrastructure of any height located virtually anywhere on the Coastal Plain will be visible from high points in the adjacent Wilderness:



[1816] DEIS vol. 1 at 3-216–3-217.
[1817] DEIS vol. 1 at 2-3.
[1818] DEIS vol. 1 at 2-4.
[1819] DEIS vol. 1 at 2-13.
[1820] DEIS vol. 1 at 3-217 & Lease Stipulation 10.

Map Explanation: Visibility surface for 15 points in the Mollie Beattie Wilderness south of the program area and no surface occupancy Wilderness buffer under Alternative D. Visibility surfaces were obtained from Stuart Smith at True North GIS and indicate how tall a structure could be in a given location before becoming visible to a person standing at the 15 points. This map indicates that the Wilderness buffer proposed in the DEIS is vastly inadequate to mitigate visual impacts to recreationalists in the Wilderness. Nearly the entire Coastal Plain is visible at ground level from the 15 Wilderness points, meaning that any oil and gas infrastructure would also be visible, negatively impacting the Wilderness experience.

Additionally, BLM should consider other measures as part of its alternatives to protect wilderness values, such as mandating consolidated development with very limited footprints allowed and limiting development to specific areas of the Coastal Plain.

T. BLM FAILED TO COMPLY WITH WILD AND SCENIC RIVERS ACT REQUIREMENTS AND PROTECT COASTAL PLAIN RIVERS' OUTSTANDINGLY REMARKABLE VALUES.

BLM's draft EIS fails to adequately consider the impacts of oil and gas activities on rivers and protect the rivers available for addition to the National Wild and Scenic Rivers System. Congress passed the Wild and Scenic Rivers Act of 1968 to "protect[] for the benefit and enjoyment of present and future generations" selected Wild rivers that "possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values."[1821] To qualify for inclusion in the Wild and Scenic Rivers system, a river must first be a "free-flowing stream" and the adjacent land must possess at least one outstandingly remarkable value (ORV).[1822] The BLM was required to consider for recommendation all suitable rivers located within the Arctic Refuge in the Wild and Scenic Rivers System in the leasing EIS and to ensure that the proposed project would protect their values. BLM's efforts fall short of Wild and Scenic Rivers Act requirements, do not follow required procedures, and fail to adequately protect the Coastal Plain rivers' ORVs.

The draft EIS fails to protect the Coastal Plain's eligible rivers ORVs. The Wild and Scenic Rivers Act Requires management of eligible rivers to protect and maintain their current values.[1823] BLM's cursory analysis provides different suggested buffer zones around high water marks of each river, but does not explain how those buffers protect the specific ORVs for the relevant rivers.[1824] Had BLM prepared a visual resources analysis, it would have been apparent that the proposed buffers are wholly insufficient to protect scenery- and recreation-dependent ORVs.[1825] Specifically, the Canning River has cultural, wildlife, fish, and recreational ORVs. The Canning's cultural ORV is based on both contemporary and historical use, many indigenous peoples used the river for thousands of years for harvest and trade, the river hosts an abundance of archaeological sites,[1826] and the Canning is used by modern Iñupiat intensively for subsistence

[1821] 16 U.S.C. § 1271.
[1822] 16 U.S.C. §§ 1273(b), 1271.
[1823] 16 U.S.C. §§ 1273(b); CCP EIS Appendix I at 1.
[1824] DEIS vol. 1 at 3-211, 3-214–3-216.
[1825] *See* embedded map in Part V.S.
[1826] CCP EIS Appendix I at 49.

purposes.[1827] The Canning River's wildlife values stem for the river's support of migratory birds (shorebirds, tundra swans, and the Arctic Refuge's only nesting sites of Sabrine's gulls), over fifty miles of critical polar bear denning habitat, muskoxen, grizzly bears, wolves, wolverines, and provides calving grounds for the Central Arctic Caribou Herd and use for the Porcupine Caribou Herd.[1828] Similarly, the river's fish ORV is based on the river's fish diversity, and high "densities and overwintering, spawning, and rearing populations of Arctic grayling, Arctic char, round whitefish, burbot, and a population of anadromous Dolly Varden that is genetically distinct compared to populations from other nearby drainages."[1829] In addition, the Canning's round whitefish and burbot are of particular importance to Kaktovik subsistence users.[1830] For recreation, the Canning is the longest north flowing river in the Arctic Refuge, and "offers a safe experience for less experienced boaters and opportunities for wildlife viewing, fishing, hunting, trapping, hiking, and photography."[1831]

The Hulahula has recreational and cultural ORVs. Culturally, the Hulahula was used for trade and travel, and is "identified as having important cultural values by both the Iñupiat and Gwich'in" and "the entire river corridor is intensively used by the Iñupiat people for a variety of subsistence purposes."[1832] Recreationally, the Hulahula "offers an unparalleled northern arctic recreational experience. The river is fast and challenging . . . [r]afters, kayakers, hunters, and hikers from around the world pursue adventure trips on the Hulahula. The average group size is 4.6, and the average trip length is 8.6 days. . . . Some guide companies also offer winter trips that include winter camping and cross-country skiing."[1833] The CCP found the Hulahula suitable as one of the top Coastal Plain rivers threatened by oil and gas development,[1834] and as the second most visited river.[1835]

The Jago River has outstandingly remarkable wildlife values, with "many string bogs and seepage areas laced with fens and floodplains . . . support[ing] heavy seasonal use by wildlife, including the Porcupine and Central Arctic caribou herds, wolves, muskoxen, and bears."[1836] The Jago River was "a high density calving area (50 percent of calving) in almost all (13) of the 17 years of a long-term research project . . . boasts the longest segment (61.8 miles) of polar bear denning habitat on the Refuge"[1837] and is also important to snow geese, who

> rely on thermokarst pits with healthy stands of tall cottongrass for feeding and building fat reserves for migration. These important feeding sites, known as staging

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[1827] *Id*.
[1828] *Id*. at 49–50.
[1829] *Id*. at 50.
[1830] *Id*. at 51, 53.
[1831] *Id*. at 53.
[1832] *Id*. at 74.
[1833] *Id*. at 74, 77.
[1834] *Id*. at 78.
[1835] *Id*. at 81.
[1836] *Id*.
[1837] *Id*.

areas, make up only three percent of the Refuge's coastal plain, and they primarily occur near the Jago River. After a flock of snow geese feed on a stand of cottongrass, it takes at least four years for the stand to recover.[1838]

The Okpilak River has scenic and geologic values, and is on the Arctic Refuge's most active glacial area "fed by hanging glaciers that appear precariously attached to stark, steep, rocky mountain sides . . . the river's headwaters are found in two different glaciers in two different valleys."[1839] The geologic values include a 4.4 mile, forty foot deep postglacial canyon, massive lateral moraines, and colluvial cones reaching 490 feet.[1840] The scenic ORV is based on the river's high mountain views, including snow-capped Mt. Michelson, lateral moraines, expansive views of the Coastal Plain, and the Coastal Plain's only true "hot springs allow soakers to watch Dall's sheep and caribou while looking over the floodplain."[1841]

The draft EIS merely lists the above ORV categories, providing no substantive or individual consideration for how to properly sustain the Canning, Hulahula, Jago, and Okpilak River's important ORVs.[1842] BLM merely asserts compliance with state water quality and "[m]anagement actions that prohibit surface-disturbing activities, including NSO, CSU, and TLs near the eligible and suitable WSRs would provide varying protections for ORVs."[1843] The EIS acknowledges that "developing infrastructure that is installed within 0.5 mile of any eligible or suitable river, such as bridges, have the potential to downgrade a river's eligibility and suitability of a wild river to that of a recreational river."[1844] Degrading a river's classification, as BLM does here is not consistent with maintaining ORVs.[1845] All four rivers on the Coastal Plain are eligible for "Wild" river classification, denoting minimal access and development and "represent[ing] vestiges of primitive America."[1846] Contrary to maintaining the Wild classification, the draft EIS acknowledges infrastructure could degrade values."[1847] While each alternative contains setbacks, there is no further analysis to the level of protections provided by each. The draft EIS completely disregards the preservation standard mandated by the Wild and Scenic Rivers Act.

The CCP points to oil and gas development on the Jago, Hulahula, and Okpilak rivers as having negative impacts on their recreational ORVs, listing impacts such as "noise and sight pollution, increased air traffic, and visible human influence would negatively affect the remoteness, solitude, and wildlife-viewing opportunities."[1848] As a result, FWS found the Hulahula eligible and the Jago and Okpilak protected through other mechanism, primarily

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[1838] *Id*. at 82, 85 (internal citations omitted).
[1839] *Id*. at 96.
[1840] *Id*.
[1841] *Id*.
[1842] DEIS vol. 1 at 3-211.
[1843] DEIS vol. 1 at 3-214 (internal citation omitted).
[1844] *Id*.
[1845] 16 U.S.C. §§ 1273(b).
[1846] 16 U.S.C. § 1273(b)(1); CCP EIS Appendix I at 2.
[1847] DEIS vol. 1 at 3-214.
[1848] CCP EIS Appendix I at 85, 79, 100.

through current Arctic Refuge protections and FWS regulations.[1849] The substance of BLM's analysis is encapsulated in these two sentences:

> General impacts resulting from oil and gas development in the program area could include potential soil erosion and habitat fragmentation, which could affect cultural, fish, geologic, recreation, and wildlife ORVs. The degree of impacts on WSRs would depend on the proximity of development to the WSR.[1850]

The EIS makes no specific findings to protect ORVs, merely acknowledging impact. BLM does not explain or confront the CCP's findings of negative impacts to ORVs. When forwarding oil and gas development on the Coastal Plain, BLM must consider impacts to ORVs in light of FWS's management of these rivers and values as set out in the CCP.

Particularly egregious, in Lease Stipulation I, under all alternatives, allows for "[o]n a case-by case basis, essential pipeline and road crossings to the main channel would be permitted through setback areas. The setbacks may not be practical in river deltas. In these situations, permanent facilities would be designed to withstand a 200-year flood" for the Hulahula, Canning, Okpilak and Jago Rivers.[1851] Allowing development of pipelines and roads across any of these rivers is inconsistent with protecting any ORV and are exactly the type of inappropriate development for a "Wild" river, which should be maintained "free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted."[1852]

Required Operating Procedure 35, is meant to "[e]nsure ongoing and long-term reclamation of land to its previous condition and use" and describes leaseholder requirements for abandonment of "[o]il and gas infrastructure, including gravel pads, roads, airstrips, wells and production facilities."[1853] Alternative D would require the leaseholder to "develop and implement a BLM-approved abandonment and reclamation plan . . . describ[ing] . . . wild and scenic river . . . eligibility and suitability" before final abandonment.[1854] Merely describing for the eligibility and suitability for inclusion in the Wild and Scenic River system is not substantive enough to ensure protections as required by the act. BLM's] EIS currently fails to require maintenance of Wild and Scenic rivers free flowing state and ORVs. For Alternatives B and C, leaseholders would only have to "develop and implement a BLM-approved abandonment and reclamation plan describ[ing] short-term stability, visual, hydrological, and productivity objectives and steps to be taken to ensure eventual ecosystem restoration to the land's previous hydrological, vegetation, and habitat condition."[1855] In addition, under Alternatives B and C, the reclamation must only "ensure eventual restoration," where "eventual" is not defined, so it is unclear exactly

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[1849] DEIS vol. 1 at 3-214.
[1850] *Id*.
[1851] DEIS vol. 1 at 3-214, vol. 2 at 2-4.
[1852] 16 U.S.C. § 1273(b)(1).
[1853] DEIS vol. 1 at 2-32.
[1854] *Id*.
[1855] *Id*.

how extended a time this could be. Finally, in addition to Alternatives B and C already vague and pliable parameters these alternatives allow "[t]he BLM Authorized Officer [to] grant exceptions to satisfy stated environmental or public purposes."[1856] By completely failing to account for wild and scenic river values in alternatives B and C, Required Operating Procedure 35 does not protect for any ORVs or the free flowing state of rivers. For only requiring "short-term stability," "eventual restoration," and the availability of discretionary exceptions, extended or inadequate reclamation will negatively impact rivers' classification and potential eligibility for the Wild and Scenic Rivers system.

BLM's draft EIS does not comply with Wild and Scenic Rivers Act requirements as it fails to protect the Coastal Plain's river's ORVs.

U. BLM'S ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON THE MARINE PROTECTED AREA IS DEFICIENT.

The coastal zone and waters within the Arctic Refuge constitute a Marine Protected Area (MPA) that is managed under the guidance of Executive Order 13830, which states:

> Each Federal agency whose actions affect the natural or cultural resources that are protected by an MPA shall identify such actions. To the extent permitted by law and to the maximum extent practicable, each Federal agency, in taking such actions, shall avoid harm to the natural and cultural resources that are protected by an MPA.[1857]

The DEIS does not adequately analyze impacts to the MPA's natural resources. The DEIS merely lists the impacts that could occur from oil and gas development in the project area,[1858] without providing references, and without connecting the list of impacts to specific activities or phases of development. Nor does the DEIS provide the specific location or duration of these impacts, making it difficult to assess the likely level and type of impact. Instead, the DEIS leaves specific analysis to the future.[1859] This is improper. The lack of explanation on where, when, and how these impacts would arise makes it impossible for the agency and for the public to accurately anticipate impacts to the MPA.

The DEIS does not acknowledge impacts to the MPA's cultural resources. One of the main purposes of an MPA is "the ecologically and economically sustainable use of the marine

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[1856] *Id.*

[1857] President William Clinton, Executive Order 13158 of May 26, 2000, Marine Protected Areas, Sec. 5, available at https://www.govinfo.gov/content/pkg/FR-2000-05-31/pdf/00-13830.pdf.

[1858] *See* DEIS vol. 1 at 3-212.

[1859] *See e.g.* DEIS vol. 1 at 3-212 ("A more site-specific analysis would occur during the Application for Permit to Drill (APD) phase of development.").

environment for future generations,"[1860] including the sustainable harvest and consumption of fish and other marine resources. But the DEIS lacks any reference to the importance of protecting the MPA for cultural reasons. The agency must explain that the MPA is a protected area that is intended to conserve marine resources for both natural and cultural reasons, and explain how fossil fuel development in the Coastal Plain will impact the cultural resources contained within the MPA.

The DEIS offers only a short and inadequate cumulative impacts analysis for the MPA.[1861] The DEIS does not mention coastal erosion, or other climate change effects, that are slated to occur in the coastal zone, and how this could interact with the impacts from oil and gas development activities to impact the MPA. Instead, the cumulative impacts paragraph is a list of individual direct impacts that lack specificity on duration, location, and extent. BLM must consider these other impacts as part of the cumulative impacts to the MPA.

The mitigation measures identified in the DEIS do not appear to address the likely impacts to the MPA. As articulated in paragraphs above, it is difficult to ascertain the location, duration, and level of impacts that could occur in the MPA. But the lease stipulation involving coastal areas would only require a plan under Alternative B; and would allow for barges, storage areas, and pipelines in coastal zones under Alternatives C and D.[1862] These are insufficient protections for the MPA.

V. BLM'S ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON VISUAL AND AESTHETIC RESOURCES IS INADEQUATE.

Many of the socio-economic benefits of the Coastal Plain — including those stemming from its unique, wilderness-dependent recreational values — are integrally connected to its primitive and undisturbed visual resources. Indeed, two of the three original purposes for which what is now the Arctic Refuge was designated in 1960 were to preserve its unique wilderness and recreational values,[1863] which are discussed in more detail in the previous sections. People visit and value the Arctic Refuge and its Coastal Plain in large part because of its untouched character and aesthetics; oil and gas development is simply incompatible with maintaining those visual resources — and the associated wilderness and recreational values of the Coastal Plain. A thorough analysis of the reasonably foreseeable direct, indirect, and cumulative impacts of all phases of development on visual resources — including their extent and severity — is a critical component of the NEPA process and the ability of BLM and the public to assess compliance with other laws governing management of the Coastal Plain. The DEIS fails to include such an analysis.

[1860] President William Clinton, Executive Order 13158 of May 26, 2000, Marine Protected Areas, Sec. 1, available at https://www.govinfo.gov/content/pkg/FR-2000-05-31/pdf/00-13830.pdf.

[1861] DEIS vol. 1 at 3-214.

[1862] DEIS vol. 1 at 2-15, 3-212, 3-213.

[1863] PLO 2214 at 1.

BLM acknowledges the potentially high visual sensitivity of numerous areas, including river corridors where recreational use is concentrated, and that visual resource impacts from surface disturbance will be long-term due to the slow rate of recovery of tundra vegetation and related surface conditions.[1864] As an alarming example, the DEIS describes the remaining visual impacts from limited 2-dimensional seismic exploration conducted thirty-five years ago.[1865] Yet the impacts analysis included in Section 3.4.8 of the DEIS provides only a generalized discussion of anticipated types of impacts to visual resources associated with surface disturbance, infrastructure, dust, and artificial light; it does not include a meaningful analysis of the extent, location, or severity of those aesthetic impacts.[1866] For instance, the DEIS states that visual resources inventory and contrast ratings will be deferred to post-leasing NEPA analyses.[1867] Given BLM's intent to have this EIS satisfy NEPA for purposes of the irretrievable commitment of issuing leases, the agency may not defer analysis of reasonably foreseeable aesthetic impacts associated with leasing and development activities. Nor may it segment its analysis of the significant and highly foreseeable visual impacts associated with SAExploration's application to conduct pre-leasing 3-dimensional seismic operations. Those along with all other reasonably foreseeable direct, indirect, and cumulative visual resource impacts associated with all phases of development must be fully analyzed in the leasing EIS.

A critical component of a thorough NEPA analysis of visual resource impacts associated with oil and gas development is a visibility or viewshed analysis that would forecast the extent and severity of impacts on visual resources based on the topography of the program area, locations of visitor use, and general characteristics of anticipated infrastructure. Such an analysis can readily be prepared using established and scientifically sound methodologies, even with limited information about the precise location of future infrastructure. Indeed, GIS specialist Stuart Smith of True North GIS, LLC prepared such an analysis for the Coastal Plain and submitted it to BLM as comments on the DEIS. We incorporate that analysis by reference into these comments.[1868] As Mr. Smith's comments conclude: "BLM should fully consider the visibility analysis [he] prepared and ensure that the public and decision-makers are aware of the extensive and significant viewshed impacts associated with development." Without such analysis, BLM cannot adequately analyze the extent and severity of anticipated visual impacts. The agency must incorporate Mr. Smith's analysis or prepare its own comparable visibility analysis.

Contrary to statements in the DEIS that visual resource impacts and associated degradation of recreational settings and opportunities and wilderness characteristics may be limited due to NSO stipulations, Mr. Smith's analysis shows that those impacts are likely to be extensive, regardless of where infrastructure is ultimately located. This is due to the area's topography and narrow geography between the Brooks Range and the Beaufort Sea, bisected by several major river corridors on which most recreational visitors depend. The DEIS recognizes

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[1864] DEIS at 3-219–3-220 & Appx. F at F-38.
[1865] DEIS at 3-219.
[1866] *See* DEIS at 3-220–3-224.
[1867] DEIS at 3-220.
[1868] *See* Appendix D (Smith viewshed analysis).

these realities, along with the significant and abrupt departure from the area's current aesthetics that any development would represent:

> Visitors . . . depend predominantly on use of river corridors during all or a portion of their visits. . . .
>
> Because visitors to the program area generally expect a physical setting consisting of little to no human disturbance and a social setting with little to no interaction with other visitors or human activity, small changes to the physical and social setting can have disproportionately large impacts on user experience. . . .
>
> [T]he relatively flat topographic characteristics of the program area would result in new mineral development infrastructure being visible from far distances. Also, because there is no development currently, any new development that would be visible to recreation users would modify the recreation setting and visitor experiences.[1869]

Nevertheless, the DEIS goes on to make a number of unsupported conclusions that NSO and other proposed measures would limit visual resource impacts, safeguard recreational settings and opportunities, and preserve wilderness character.[1870] Had BLM conducted the necessary visibility analysis, it would have demonstrated the inadequacy of the proposed stipulations. For instance, it would be virtually impossible to locate derricks and towers over 30 meters tall anywhere on the Coastal Plain without having them be visible from six major recreational river corridors.[1871] And to avoid viewshed impacts from those six river corridors, infrastructure of 15 meters or less in height would need to be located within a small 12% of the Coastal Plain.[1872] Notably, those limited locations that might shield infrastructure of less than 15 meters in height from the major river corridors include virtually no overlap with the high potential area and little overlap with whatever might reasonably be defined as the "medium potential area south of Kaktovik," which according to BLM's Reasonably Foreseeable Development Scenario would be the likely location of 3 of the 4 central processing facilities (CPFs) under Alternatives B, 2 of the 3 CPFs under Alternative C, and both CPFs under Alternative D:[1873]

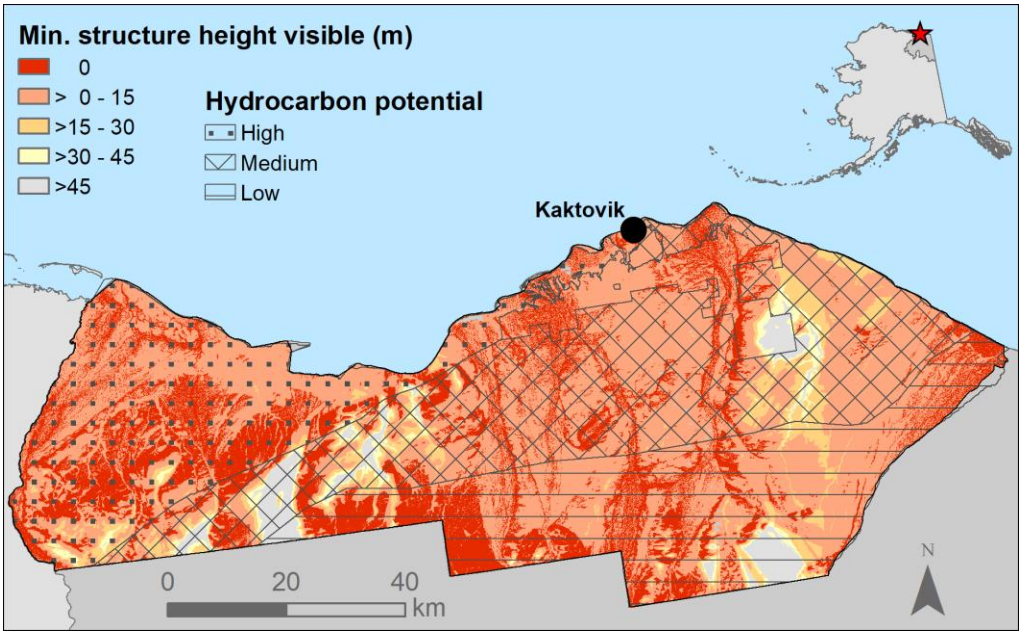
[1869] DEIS vol. 1 at 3-203–3-205.

[1870] *See, e.g.*, DEIS vol. 1 at 3-205 ("Protective measures intended to limit ground disturbance and associated impacts on resources would improve recreation by limiting or prohibiting surface-disturbing activities . . . ."); *id.* at 3-207 (suggesting that NSO setbacks from rivers under Alternative C "would maintain recreation opportunities and avoid displacement of visitors"); *id.* at 3-216 (suggesting that "the area would likely retain its overall wilderness character"); *id.* at 3-217 (relying on 3-mile-NSO-buffer under Alternative D to protect wilderness character of the Coastal Plain and adjacent Mollie Beattie Wilderness).

[1871] *See* Appendix D (Smith viewshed analysis at Figure 11).

[1872] *See id*. at Figure 11.

[1873] DEIS vol. 2 Appx. B at B-19–B-20.



Map Explanation: Combined visibility surface for six major rivers along the Coastal Plain of the Arctic National Wildlife Refuge overlaid with the three hydrocarbon potential zones described in the DEIS. Visibility surfaces were obtained from Stuart Smith at True North GIS and indicate how tall a structure could be in a given location before becoming visible to a person traveling along the six rivers. This map demonstrates that there are very few places in the high hydrocarbon potential area where derricks and towers over 30 m tall could be placed without impacts to river recreationalists. Similarly, there is limited area in the medium-potential zone south of Kaktovik where such infrastructure could be located without visual impact.

In short, major infrastructure will be visible from the major river corridors under each of the action alternatives, impacting visual resources and recreation. This must be accurately analyzed in the EIS.

When it comes to infrastructure visible from highpoints located within the Mollie Beattie Wilderness to the South, infrastructure of any height would generally be visible no matter where it is located.[1874] The visibility analysis also shows that infrastructure of any height located across nearly 1/3 of the Coastal Plain would be visible from Kaktovik, thereby impacting the aesthetics and experience of residents and subsistence users, the growing number of tourists who visit Kaktovik to view polar bears, and others entering or exiting the Coastal Plain via that community and its airport.[1875] Other applications of Mr. Smith's visibility analysis are included in the previous sections on recreational uses and wilderness values, further illustrating the inadequacy of BLM's NSO stipulations to safeguard those values and the necessity of such an analysis to the agency's ability to adequately and accurately evaluate reasonably foreseeable aesthetic impacts under each alternative.

Compounding its failure to conduct a visibility analysis showing the extent of anticipated viewshed impacts, the DEIS also fails to include sufficient information to allow decision makers or the public to conceptualize the visual impacts that can be expected. The two photographs the

[1874] *See* Appendix D (Smith viewshed analysis at Figure 12).
[1875] *See* Appendix D (Smith viewshed analysis at Figure 13).

DEIS includes as examples of what infrastructure might look like (one of a typical layout for a central processing facility with airstrip and pipeline from the Alpine CPF on State lands and one of a typical layout for an exploration well with ice pad and ice road from the Stoneyhill site in NPR-A)[1876] are insufficient to depict how the unique aesthetics of the Coastal Plain are likely to be impacted by the development program being contemplated. For instance, the 2012 Point Thomson Development Project EIS conducted a visual resources analysis that superimposed visual simulations of the proposed action on photographs of key observation points at varying distances from the proposed infrastructure, at night, and from the air.[1877]

Under each of the action alternatives, infrastructure and associated aesthetic impacts can be expected across significant portions of the Coastal Plain, including in NSO areas.[1878] The DEIS fails to sufficiently analyze those impacts, which in turn renders the analysis of impacts on recreational uses, wilderness, and wild & scenic rivers inadequate, as discussed above.

W. BLM'S DESCRIPTION OF SHIPPING AND ANALYSIS OF ITS ADVERSE IMPACTS ARE INADEQUATE.

An EIS must "[d]evote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits."[1879] The DEIS does not adequately describe shipping activities associated with the proposed action, including the various alternatives. There is no clear discussion of what kinds of vessels will be used, how many vessel transits are expected, what cargo and materials they will carry, or how fast they are expected to travel. The limited information provided is scattered throughout the DEIS, and it is misleading in suggesting that shipping traffic will be limited to two barge convoys per year carrying project modules.[1880] In the absence of any road, or proposal for a road, connecting Kaktovik and Deadhorse, however, it is clear that the vast majority of project supplies and materials, including bulk fuel and hazardous materials, will need to be shipped to the site. Yet there is virtually no discussion in the DEIS describing the nature and extent of shipping activity or properly analyzing associated risks and environmental impacts based on this anticipated scope. It is not appropriate to postpone meaningful discussion of shipping activities and related impacts until future site-specific NEPA reviews because those will not capture the big picture of cumulative shipping impacts over the 50-year timeframe for the proposed action.

Moreover, the absence of information regarding shipping and shipping-related impacts in the DEIS is especially problematic because the number of vessels transiting the Arctic is

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[1876] DEIS vol. 1 at 2-223 & vol. 2 Appx. A Figures 3-8 & 3-9.

[1877] U.S. Army Corps of Engineers, Point Thomson Development Project Final Environmental Impact Statement, Section 5.19.1.1 Visual Impact Assessment (2012).

[1878] *See, e.g.*, DEIS vol. 1 at 3-208 (acknowledging that "some impacts . . . would occur inside of the NSO areas," including "changes to the recreation setting from artificial lighting and alteration of the recreation setting and visitor experience from the visual presence of infrastructure and vehicles.").

[1879] 40 C.F.R. § 1502.14(b).

[1880] *See, e.g.*, DEIS, vol. 1, at 3-93, 3-95, 3-97, 3-99, 3-141, 3-148, and 3-238.

increasing over time, including vessels serving oil and gas exploration areas in the Beaufort and Chukchi Seas, as well as vessels serving the military, research, tourism, mining, and other industries.[1881] The DEIS must describe and analyze oil and gas-related shipping associated with the proposed action in conjunction with a meaningful discussion of this larger picture of dramatically increasing shipping activities in the Arctic over the next 50 years.

1. Affected Environment

An EIS must "describe the environment of the area(s) to be affected" by the proposed action.[1882] Moreover, "[i]n analyzing the affected environment, NEPA requires the agency to set forth the baseline conditions" because, otherwise, there would be "no way to determine what effect the proposed action will have on the environment."[1883] The baseline information must, therefore, be sufficient in scope to serve as a point of comparison for the direct, indirect, and cumulative impacts of the proposed action.[1884]

The geographic scope of the various "affected environment" discussions in the DEIS is too narrow.[1885] These discussions focus heavily on the "program area," which is much smaller than the area that will experience effects from the proposed action.[1886] While the program area encompasses the "[f]ederal lands and waters ... of the Coastal Plain within the ... Arctic Refuge"[1887] and includes approximately 125 miles of coastline from the Staines River to the Beaufort Lagoon,[1888] shipping activities connected with the proposed action will take place, and

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[1881] *See* McWhinnie, L., *et al*, *Vessel traffic in the Canadian Arctic: Management solutions for minimizing impacts on whales in a changing northern region*, 160 Ocean & Coast. Mgmt. 1-17 (2018), *available at* https://pdfs.semanticscholar.org/53e3/ef8bf4ff65d8705d47bfd80a45e2df33d929.pdf; Huntington, H., *et al*, *Vessels, risks, and rules: Planning for safe shipping in the Bering Strait*, 51 Marine Policy 119 (2015), *available at* https://www.sciencedirect.com/science/article/pii/S0308597X14002012?via%3Dihub.

[1882] 40 C.F.R. § 1502.15.

[1883] *Western Watersheds Project v. U.S. Bureau Land Mgmt*., 552 F. Supp. 2d 1113, 1126-27 (D. Nev. 2008) (citing *Half Moon Bay Fishermans' Marketing Ass'n v. Carlucci*, 857 F.2d 505, 510 (9th Cir. 1988)).

[1884] *See* 40 C.F.R. §§ 1508.7, 1508.8 (defining "direct" and "indirect" effects and "cumulative impact").

[1885] In an unusual approach, the "affected environment" is not addressed in a stand-alone discussion in the DEIS. Instead, it is discussed throughout Chapter 3 in conjunction with the "environmental consequences" of particular topics. *See* DEIS, vol. 1, at 3-1.

[1886] *See generally id.*, ch. 3. One exception is the seabird section, which discusses species found along the shipping route. *See id.* at 3-84 to 3-92. The marine mammal section briefly lists species found along the shipping route and includes a few brief references to the broader region in the narrative, but overall the affected environment and impact discussions focus heavily on the program area. *See id.* at 3-122 to 3-149.

[1887] *Id*. at 1-1. *See id.*, vol. 2, appx. A, map 1-1.

[1888] *See id.*, vol. 2, appx. A, map 1-1.

their impacts will be felt, along the entire 1,600-nautical mile (nm) marine barge route from Dutch Harbor to Kaktovik, Alaska.[1889]

Due to the narrow scope of the affected environment discussions, there is very little baseline information in the DEIS regarding the important marine areas along the marine shipping corridor to the west and south of the program area that could be adversely affected by shipping activities associated with the proposed action. Some important marine areas left out of the DEIS are in the Beaufort Sea and Chukchi Sea regions, including the Chukchi Corridor, Hanna Shoal, Herald Shoal, Barrow Canyon East, Smith Bay, Harrison Bay-Colville Delta, Beaufort Shelf Break, and Oliktok Point to Demarcation Bay, which are described in the attached reports.[1890] Other important marine areas not addressed in the DEIS are in the Bering Sea region, such as the Bering Strait and the waters surrounding King Island, St. Lawrence Island, and Nunivak Island, as described in the attached report prepared by the U.S. Coast Guard.[1891] Including baseline descriptions of these important marine areas in a revised DEIS will facilitate appropriate discussions regarding the direct, indirect, and cumulative impacts arising from the shipping activities associated with proposed Coastal Plain oil and gas operations.

The DEIS has also failed to provide adequate baseline information regarding cetacean species, particularly large whales, and their vulnerability to impacts from vessel traffic, either in marine waters within 5 nm of the program area or along the 1,600 nm marine barge route. The DEIS acknowledges that two whales—the bowhead (*Balaena mysticetus*) and the beluga (*Delphinapterus leucas*)—are commonly found within 5 nm of the coastline of the Arctic Refuge.[1892] The bowhead is listed as an endangered species under the Endangered Species Act (ESA) and as a depleted species under the Marine Mammal Protection Act (MMPA), while the beluga is listed as a depleted species under the MMPA.[1893] The DEIS also acknowledges that vessels may encounter seven additional large whale species along the marine barge route, including blue, fin, humpback, minke, North Pacific right, sperm, and killer whales.[1894] All of

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[1889] *See id.*, fig. 3-6.

[1890] *See, e.g.*, Pew Charitable Trusts, *et al*, *A Synthesis of Important Areas in the U.S. Chukchi and Beaufort Seas: Best Available Data to Inform Management Decisions* (April 2016), *available at* https://www.pewtrusts.org/-/media/assets/2016/05/synthesis_of_important_areas_us_chukchi_beaufort_seas.pdf; Natural Resources Defense Council, *et al*, *Environmental Risks with Proposed Offshore Oil and Gas Development off Alaska's North Slope* (Aug. 2012), *available at* https://www.nrdc.org/sites/default/files/drilling-off-north-slope-IP.pdf.

[1891] *See, e.g.*, U.S. Coast Guard, *Port Access Route Study: In the Chukchi Sea, Bering Strait, and Bering Sea*, Docket Nos. USCG-2014-0941 and USCG-2010-0833 (Dec. 23, 2016), *available at* https://www.regulations.gov/contentStreamer?documentId=USCG-2014-0941-0040&attachmentNumber=1&contentType=pdf.

[1892] *See* DEIS, vol. 1, at 3-123, tbl. 3-20; *see also* DEIS, vol. 2, appx. A, map 3-25.

[1893] *See* DEIS, vol. 1, at 3-123, tbl. 3-20.

[1894] *See* DEIS, vol. 1, at 3-130.

these species are protected by the MMPA.[1895] In addition, the blue, fin, sperm, North Pacific right, and Western North Pacific distinct population segment (DPS) of humpback whales are listed under the ESA as endangered, while the Mexico DPS of humpback whales is listed as threatened.[1896] Puzzlingly, the DEIS later discounts any impacts from vessel collision to the western North Pacific DPS of gray whales, also listed as endangered under the ESA, even though the DEIS never identifies this species as occurring along the marine barge route and fails to include any further discussion regarding the species.[1897]

2. Environmental Consequences

The discussion below explains that vessel traffic poses three primary risks to marine mammals and other wildlife in the Arctic—oil and hazardous substance spills, noise, and ship strikes.[1898] These risks and associated impacts are not adequately analyzed in the DEIS and should be given substantially greater attention in a revised DEIS.

a. Oil & Hazardous Substance Spills

Shipping-related oil and hazardous substance spills and resulting impacts are not discussed in any substantive way in the DEIS. While the potential for oil and hazardous substance spills is evaluated in the solid/hazardous waste section of the DEIS, this section focuses on terrestrial and freshwater impacts resulting from spills associated with onshore operations.[1899] There are also a few sentences referring to the potential for marine impacts from oil spills in the water resources section, but this language refers to spills from onshore barge docking sites, not from shipping.[1900]

The apparent rationale for the general exclusion of shipping-related spills from the DEIS analysis is buried in the marine mammal section. The narrative strongly downplays the potential likelihood, extent, and harm of any oil or hazardous substance spill by suggesting that (1) there is a "low risk" of spilled fuel if a vessel carrying fuel were to run aground during barging, (2) a large oil spill in the Arctic marine environment is unlikely because "[t]o date," such as a spill has "not occurred," (3) spill risks will be reduced through "safeguards" specified in the required oil spill prevention and contingency plans, (4) the quantities of oil or hazardous substances likely to be released would be "relatively small," and (5) potential spills during refueling at sea would be

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[1895] *See generally* MMPA, 16 U.S.C. § 1361 *et seq*; FWS Webpage, International Affairs, https://www.fws.gov/international/laws-treaties-agreements/us-conservation-laws/marine-mammal-protection-act.html (accessed Feb. 26, 2019).

[1896] *See* NMFS Webpage, Endangered, Threatened, and Candidate Species in Alaska, https://www.fisheries.noaa.gov/alaska/endangered-species-conservation/endangered-threatened-and-candidate-species-alaska (accessed Feb. 26, 2019).

[1897] *See* DEIS, vol. 1, at 3-142.

[1898] *See generally* McWhinnie, *Vessel traffic in the Canadian Arctic;* Huntington, *Vessels, risks, and rules*.

[1899] *See id.* at 3-61 to 3-65.

[1900] *See id.* at 3-59.

only "small, accidental" spills.[1901]

This rationale is deeply flawed. While bulk fuel has historically been delivered to the North Slope by tanker truck along the haul road, bulk fuel deliveries by barge have commenced and are likely to become the preferred option in the future. The first large-scale fuel delivery by barge took place in September 2018, and it carried 2 million gallons of fuel from Valdez to Deadhorse.[1902] A collision, grounding, or other accident resulting in the discharge of even half the cargo of a fuel barge of this size (i.e., 1 million gallons) would be 10 times greater than BLM's own threshold for a "very large" spill,[1903] and it would constitute a major spill by any other estimation as well. Moreover, as the ice-free, open water season lengthens due to warming temperatures in the Arctic, transporting fuel by barge is likely to be viewed as a more convenient and/or cost-effective method of transporting fuel compared to the much smaller and more frequent 10,000-gallon increments that can be transported via tanker truck.[1904] Barge deliveries may even be the only feasible way of transporting fuel in support of Coastal Plain oil and gas operations because of the lack of a road between Deadhorse and Kaktovik.[1905]

Notably, the shipping industry appears to be gearing up for more large-scale fuel deliveries to polar waters. Crowley Fuels, for instance, just announced a contract to build a new articulated tug-barge with a 100,000-barrel (4.2 million-gallon) capacity that will be specifically designed for icy waters and dedicated for fuel deliveries throughout Alaska, and the contract includes an option to build a second barge of this type.[1906]

Furthermore, since the practice of bulk fuel barging to the Arctic is relatively new to this region, the lack of historic spills is not a viable metric or indicator of future risk, and the existence of oil spill prevention and contingency planning requirements does not eliminate the risk of a spill and does not excuse BLM from its duty to analyze and explain such risks in an EIS. In 2016, for instance, despite being subject to U.S. and Alaska contingency planning requirements, a tug hauling an empty fuel barge from Ketchikan, Alaska back to British Columbia was grounded and spilled 26,000 gallons of diesel fuel and other fluids, contaminating subsistence clam beds and preventing them from being harvested thereafter.[1907] The spill could have been far worse if the attached fuel barge had still been carrying its 10,000-ton (approx. 3

[1901] *See id.* at 3-141 to 3-142, 3-143.

[1902] *See* KTUU, *Barge delivers historic fuel shipment to Alaska's North Slope* (Sept. 6, 2018), *available at* https://www.ktuu.com/content/news/Barge-delivers-historic-fuel-shipment-to-North-Slope-492658221.html.

[1903] *See* DEIS, vol. 1, at 3-64 (identifying spills over 100,000 gallons as "very large").

[1904] *See* KTUU, *Barge delivers historic fuel shipment*.

[1905] *See* DEIS, vol. 1, at 3-224.

[1906] *See* Tug Tech. & Bus., *Crowley orders new Alaskan ATB*, (Jan. 16, 2018), *available at* https://www.tugtechnologyandbusiness.com/news/view,crowley-orders-new-alaskan-atb_50461.htm.

[1907] *See* Alaska Public Media, *B.C. tribe sues U.S. barge company over 2016 spill* (Oct. 11, 2018), *available at* https://www.alaskapublic.org/2018/10/11/b-c-tribe-sues-u-s-barge-company-over-2016-spill/.

million-gallon) fuel cargo.[1908] Indeed, it is worth noting the upcoming 30th anniversary of the *Exxon Valdez* oil spill on March 24, 2019. The *Exxon Valdez* released 11 million gallons of oil into the pristine waters of Prince William Sound and left a ruinous legacy from which the region has never fully recovered. A spill of this magnitude in the Arctic would have similarly devastating consequences on marine and coastal ecosystems and subsistence resources. Accordingly, the spill analysis in section 3.2.11 of the DEIS must be expanded to encompass large-scale spills into the marine environment from bulk fuel barges, both near the program area and along the marine barge route from Dutch Harbor to Kaktovik.

Additionally, as the DEIS acknowledges, toxic chemicals and other hazardous materials are used in oil and gas operations and have been known to kill polar bears through accidental ingestion.[1909] In fact, on the North Slope of Alaska, substantial quantities of acidic, explosive, poisonous, flammable, and corrosive materials are transported into the area each year, including several substances designated "extremely hazardous," such as sulfuric acid, hydrochloric acid, hydrogen peroxide, and chlorine.[1910] The same types of chemicals can be expected to be used at new oil and gas facilities on the Coastal Plain. While trucks have been used to transport chemicals to the North Slope historically,[1911] marine transportation is likely to be used for Coastal Plain operations given the lack of a road between Kaktovik and Deadhorse.[1912] The spill analysis in section 3.2.11 of the DEIS must therefore be expanded to encompass toxic chemical spills into the marine environment from shipping activities both near the program area and along the marine barge route from Dutch Harbor to Kaktovik.

Finally, the DEIS must consider the marine impacts of potential oil spills on keystone Arctic species, such as the Arctic cod. Arctic cod (*Boreogadus saida*) are an energy-rich Arctic keystone forage fish that serve as primary prey species for marine mammals, seabirds, and fish. A recent study by scientists at Oregon State University and NOAA found that exposure of Arctic cod eggs to low dosages of Alaskan North Slope crude oil resulted in sublethal cardiac abnormalities and deficits in energetics that lasted into the juvenile stage.[1913] The scientists found that developing Arctic cod exposed to oil as embryos entered the overwintering period with less energy reserves, contributing to high mortality rates during a period critical to their survival.

[1908] *See* Hakai Magazine, *The Lingering Legacy of the Nathan E. Stewart* (April 10, 2017), *available at* https://www.hakaimagazine.com/news/lingering-legacy-nathan-e-stewart/.

[1909] *See, e.g.*, DEIS, vol. 1, at 3-64 and 3-141.

[1910] *See* U.S. Coast Guard, *et al*, *Arctic & Western Alaska Area Contingency Plan*, at 282-83 (version 1.0, Aug. 2018), *available at* http://dec.alaska.gov/media/10703/arctic-western-plan.pdf.

[1911] *See id.*

[1912] *See* DEIS, vol. 1, at 3-224.

[1913] Laurel, B., *et al*, *Acute and latent bioenergetic impacts of oil on a keystone Arctic forage fish (Boreogadus saida)*, PNAS 22 (forthcoming) (research presented at Soc'y Envtl. Tech. & Chem. N. Amer., 39th Ann. Mtg. (Sacramento, CA, Nov. 2018); Alaska Mar. Sci. Symp. (Anchorage, AK, Jan. 2019); and 20th Int'l Symp. Poll. Resp. Mar. Orgs. (scheduled Charleston, SC, May 2019)), *more information available at* http://ceoas.oregonstate.edu/profile/copeman/.

Reduced survival and fat content are irreversible impacts that make Arctic cod, and in turn, the maritime Arctic ecosystem that depends on them, highly vulnerable to an oil spill.

Furthermore, Arctic cod eggs are buoyant,[1914] as is oil, making them additionally sensitive to potential oil spills. Although scientific understanding of Arctic cod's early stages remains limited, recent modeling suggests that eggs likely move with ice front, floating just underneath the ice, from the Bering Strait into the Chukchi Sea where there are high populations of developing Arctic cod.[1915] If the Coastal Plain were to be developed, and Arctic cod embryos came into contact with oil from a future spill, the eggs would be in contact with the oil for an extended period of time. Thus the eggs are highly vulnerable to exposure. The spill analysis in section 3.2.11 of the DEIS must also therefore be expanded to encompass the impacts of oil spills on the survival of keystone species at critical life stages and the marine ecosystems whose life they support.

b. Noise

Underwater noise is recognized by the International Whaling Commission (IWC) as one of six priority threats to cetaceans globally.[1916] In 2018, the IWC agreed by consensus a Resolution recognizing the increasing concern over ocean noise.[1917] Underwater noise has also been a topic of dedicated attention under the United Nations Convention on Biological Diversity[1918] and as part of the United Nations Consultative Process on Oceans and the Law of the Sea.[1919] Specific to the shipping sector, the International Maritime Organization (IMO) has

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[1914] *See* Sundby, S., *Factors affecting the vertical distribution of eggs*, 192 ICES Mar. Sci. Symp. 33 (1991), *available at* http://www.ices.dk/sites/pub/Publication%20Reports/Marine%20Science%20Symposia/ICES%20Marine%20Science%20Symposia%20-%20Volume%20192%20-%201991%20-%20Part%2007%20of%2041.pdf.

[1915] Vestfals, C., *et al.*, *Modeling Growth and Transport of Arctic Cod and Saffron Cod Early Life Stages in the Pacific Arctic Under Variable Climate Forcing*, Alaska Mar. Sci. Symp. (presentation) (Anchorage, AK, Jan. 2019, *abstract available at* https://static1.squarespace.com/static/596e8ac529687ff6231cda81/t/5c48f20288251b738e022a00/1548284448641/2019_AMSS_abstractbook.pdf.

[1916] *See* IWC Cons'n Committee, Strategic Plan 2016-2026 (Oct. 2016), *available at* https://iwc.int/document_3644.download.

[1917] *See* IWC, Resolution on Anthropogenic Underwater Noise (Brazil, Sept. 2018), *available at* https://iwc.int/document_3685.download.

[1918] *See generally, e.g.*, Secretariat Conv. Biol. Diversity, CBD Expert Workshop on Underwater Noise and its Impacts on Marine and Coastal Biodiversity, Meeting Documents (UK, Feb. 25-27, 2014), https://www.cbd.int/meetings/MCBEM-2014-01.

[1919] *See, e.g.*, U.N. General Assembly, *Report on the work of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea at its nineteenth meeting*, 73d sess., item 78(a) (distrib. July 9, 2018), *available at* https://documents-dds-ny.un.org/doc/UNDOC/GEN/N18/216/69/DOC/N1821669.DOC.

made underwater noise a key subject of its agendas and work programs since 1992.[1920] In 2014, for example, the IMO adopted guidelines to help protect marine life from the harmful impacts of noise from commercial shipping.[1921] The IMO guidelines state that the "international community recognizes that underwater-radiated noise from commercial ships may have both short and long-term negative consequences on marine life, especially marine mammals."[1922]

The DEIS contains several important gaps in discussion and evaluation of the scope and impacts of underwater noise generated by shipping activities associated with the proposed action, including the following:

Geographic Scope. The discussions in the DEIS regarding the impacts of noise in general and on fish, birds, marine mammals, and subsistence focus heavily on noise-generating activities within or near the program area, especially in the vicinity of Kaktovik.[1923] As a result, they largely fail to address shipping noise along the marine barge route and its resulting impacts on wildlife, habitat, and subsistence activities in the many important marine areas along that route. The DEIS should be revised to address noise impacts from shipping along the marine barge route.

Icebreaking. The DEIS identifies propeller cavitation as the "primary" source of noise associated with vessel operations.[1924] This is generally consistent with the IMO guidelines, which identify propeller cavitation as the main source of noise from commercial ships and recognize onboard machinery and operation as relevant sources as well.[1925] Noise from shipping in the Arctic, however, is also generated from icebreaking operations, both as underwater and airborne noise. Moreover, vessel traffic is expected to continue increasing in the region and, even with the longer ice-free season, vessel traffic is still expected to require significant ice-breaker capacity.[1926] The July 1 seasonal restriction helps avoid ice during spring break-up, but since there is no seasonal restriction limiting vessel operation during or after fall freeze-up, there is a very real likelihood of vessel operations when ice is present and icebreaking is needed. Yet

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[1920] *See* IMO Webpage, Ship Noise, http://www.imo.org/en/MediaCentre/HotTopics/Pages/Noise.aspx (accessed Jan. 2019); E. Kleverlaan, IMO-MED, Presentation, *IMO and its role in protecting the marine environment in the Mediterranean Sea*, at 53 (Dec. 2016), *available at* http://www.medmpaforum.org/sites/default/files/pres.fsob3a_kleverlaan_0.pdf.

[1921] IMO Marine Envt. Prot. Comm., *Guidelines for the Reduction of Underwater Noise from Commercial Shipping to Address Adverse Impacts on Marine Life*, MEPC.1/Circ.833, Gothenburg-Sweden (July 30, 2014), *available at* http://www.ascobans.org/sites/default/files/document/AC21_Inf_3.2.1_IMO_NoiseGuidelines.pdf.

[1922] *Id*., annex § 1.1.

[1923] *See* DEIS vol. 1, at 3-19 to 3-23 (general), 3-82 (fish), 3-96 to 3-98 (birds), 3-135 to 3-139 (marine mammals), and 3-170 to 3-172 (subsistence).

[1924] *Id*. at 3-139.

[1925] *See* IMO Guidelines, annex § 3.2.

[1926] *See* McWhinnie, *Vessel traffic in the Canadian Arctic*.

there is no discussion in the DEIS of potential impacts of noise resulting from icebreaking. Furthermore, there is no recognition of icebreaking noise as causing sea ice habitat loss or alteration. Studies document impacts of icebreaking by ships on Arctic cetaceans, for instance, beluga whales have been deflected by icebreaker noise and have left the area with active icebreaking for as long as two days thereafter.[1927] Ringed and bearded seals hauled out on ice showed avoidance behavior when an icebreaking vessel was more than 1 kilometer away,[1928] and icebreakers can also adversely affect ice-breeding seals during pupping and lactation periods through direct collision or separation of mothers and pups.[1929] Icebreaking noise and disturbance are not addressed anywhere in the DEIS, and this represents a major substantive gap. The DEIS should be revised to include a substantial discussion of icebreaking noise impacts near the program area and along the marine shipping route, and an analysis of the impact of icebreaking on sea ice habitat loss and alteration should be added in section 3.3.5 of the DEIS.[1930]

Acoustic Environment. The general section on noise in the DEIS addresses impacts resulting from ground-based operations and aircraft, but it fails to address shipping and icebreaking noise impacts at all.[1931] While there is some discussion of shipping-related noise later in the DEIS, its exclusion from this section inappropriately suggests it is not an important consideration. The general section should be revised to include at least an overview of shipping noise impacts, including those associated with icebreaking.

Fish. Much like the general acoustic impacts section, the fish section of the DEIS fails to address shipping-related noise impacts at all.[1932] This is a significant omission because fish have exhibited avoidance behaviors when confronted with noisy vessels, and noise levels from icebreaking can reach levels of up to 190 decibels (dB), which is above the threshold for fish to initiate avoidance behavior.[1933] An analysis of the potential shipping and icebreaking noise

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[1927] Finley, K. J., *et al, Reactions of belugas, Delphinapterus leucas, and narwhals, Monodon monoceros, to ice-breaking ships in the Canadian high arctic*, 224 Can. B. Fish. Aquat. Sci. 97 (1990); Erbe, C., *et al, Zones of Impact Around Icebreakers Affecting Beluga Whales in the Beaufort Sea*, 108 J. Acoust. Soc. Am. 1332 (Sept. 2000), *available at* https://icefloe.net/aicc/icebreaker_beluga_whales.pdf.

[1928] *See id.*

[1929] Univ. Washington, *et al, Vulnerability of Arctic marine mammals to vessel traffic in the increasingly ice-free Northwest Passage and Northern Sea Route*, 115 PNAS 7619 (June 4, 2018), *available at* https://www.pnas.org/content/pnas/115/29/7617.full.pdf; S. Wilson, et al, *Assessment of impacts and potential mitigation for icebreaking vessels transiting pupping areas of an ice-breeding seal*, 214 Biol. Cons. 213 (Oct. 2017), *available at* https://www.sciencedirect.com/science/article/pii/S0006320717301672/pdfft?md5=253cb391e3fc3856397e8f90a8c4440a&pid=1-s2.0-S0006320717301672-main.pdf.

[1930] *See* DEIS, vol. 1, at 3-133–3-135.

[1931] *See id*. at 3-19 to 3-23.

[1932] *See id.* at 3-82.

[1933] *See* NMFS, Alaska Region, *Impacts to Essential Fish Habitat from Non-Fishing Activities in Alaska, EFH 5 Year Review: 2010 through 2015*, at 149-50 (May 2017), *available at*

impacts on fish and essential fish habitat (EFH) near the program area and along the marine shipping route should thus be included in a revised draft EIS.

Birds. The DEIS devotes a few sentences to the shipping-related disturbance and displacement of birds and their habitat, but these statements are very cursory and general.[1934] Additional analysis of shipping and icebreaking noise impacts on birds near the program area and along the marine shipping route should be included in a revised draft EIS.

Marine Mammals. The most extensive discussion of noise impacts is in the marine mammal section of the DEIS.[1935] The discussion is flawed, however, because it relies too heavily on the presumed effectiveness of the proposed ROPs. As a result, it understates the potential impacts and inappropriately concludes that they will be minimal. Conclusions that there will be no population-level impacts resulting from disturbance (e.g., seals[1936]) also lack justification and evidence. Additionally, as discussed in Section V(K) above with respect to polar bears, the DEIS fails to analyze the impacts of underwater noise arising from the construction of shipping-related facilities offshore, such as pile-driving, which can harm cetaceans and other marine mammals.[1937] The discussion should be revised to provide a more realistic analysis of shipping, icebreaking, and construction noise impacts on marine mammals near the program area and along the marine shipping route.

Subsistence. The discussion of noise impacts in the subsistence section of the DEIS similarly assumes that the ROPs will be highly effective in mitigating impacts,[1938] and thus the DEIS understates the potential adverse effects. Where subsistence activities involving marine mammals are expected to be disturbed, the discussion focuses on whales and mentions other marine mammals only in passing.[1939] This is inadequate. For example, BLM predicts the effects of noise disturbance on seals will be temporary (less than 5 years), with no lasting demographic effects.[1940] Presumably, however, displacement of the majority of seals from the project area in response to noise would have a notable impact on subsistence activities. The discussion should be revised to provide a more accurate analysis of shipping and icebreaking noise impacts on subsistence near the program area and along the marine shipping route.

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ftp://ftp.library.noaa.gov/noaa_documents.lib/NMFS/TM_NMFS_AFKR/TM_NMFS_FAKR_14.pdf.

[1934] *See* DEIS, vol. 1, at 3-97 to 3-98.

[1935] *See id.* at 3-135 to 3-139.

[1936] *See id*. at 3-139.

[1937] *See* Bailey, H., et al, *Assessing underwater noise levels during pile-driving at an offshore windfarm and its potential effects on marine mammals*, 60 Mar. Poll. B. 888 (2010).

[1938] *See id.* at 3-170 to 3-172.

[1939] *See id.* at 3-170 to 3-171.

[1940] *See id.* at 3-139.

c. Ship Strikes

The DEIS's conclusion that ship strikes of whales and seals would be "unlikely"[1941] is based in large part on BLM's assumption that vessel traffic would be traveling slowly, i.e., at less than around 10 knots.[1942] There is presently nothing in the leasing stipulations or ROPs, however, generally requiring ships to adhere to a 10-knot speed limit. This section of the DEIS should be completely revised. The revised version needs to present a more realistic, scientifically-based analysis of the risk and impacts, including at individual and population levels, of vessel strikes based on overlap of whale habitat with shipping routes and the actual speeds at which vessels are expected to travel, both within or near the program area and along the marine barge route. Even if a speed limit is added in certain areas as a required and enforceable mitigation measure (as discussed below), revision of the analysis would still be needed. This is especially important given that worldwide records of ship strikes on whales show that all large whales are at risk, particularly right whales and bowhead whales, and ship strikes can significantly affect small populations of whales.[1943] Both bowhead and right whales occur along the proposed shipping route, including an extremely at-risk population of North Pacific right whales. Whales do not necessarily avoid transiting ships because they may be distracted by their engagement in other behaviors and because they may have difficulty determining a ship's approach angle under certain circumstances.[1944]

The DEIS's reliance on the paucity or absence of records or evidence of ship strikes to conclude that strikes are unlikely is not satisfactory.[1945] As noted by the IWC, ship strikes often go unnoticed, unreported, or undiscovered,[1946] so relying on recorded strikes alone is likely to substantially underestimate actual incidences of ship strikes. Indeed, documenting ship strikes is especially challenging in Alaska, and such collisions are vastly under-reported.[1947] Nevertheless, a recent study summarizes 108 reported whale-vessel collisions that occurred in Alaska from 1978 to 2011, 25 of which are known to have been fatal.[1948] The most commonly struck species were humpback whales.[1949] While most vessel strikes were by small vessels, medium vessels

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[1941] *See id.* at 3-143.

[1942] *See id.* at 3-142.

[1943] Laist, D. W., *et al, Collisions between ships and whales*, 17 Mar. Mamm. Sci. 35 (Jan. 2001), *available at* https://www.greateratlantic.fisheries.noaa.gov/shipstrike/whatsnew/laist%20et%20al_2001.pdf.

[1944] *See* Williams, S., *et al, Factors affecting whale detection from large ships in Alaska with implications for whale avoidance*, 30 End. Species Res. 209, 210 (June 15, 2016), *available at* https://www.int-res.com/articles/esr2016/30/n030p209.pdf.

[1945] *See* DEIS, vol. 1, at 3-142.

[1946] *See* IWC Webpage, Conservation and Management: Ship Strikes, https://iwc.int/ship-strikes (accessed Feb. 26, 2019).

[1947] *See* Neilson, J., *et al, Summary of Reported Whale-Vessel Collisions in Alaskan Waters*, 2012 J. Marine Biol., Article ID 106282 (2012), *available at* https://www.hindawi.com/journals/jmb/2012/106282/.

[1948] *See id.*

[1949] *See id.*

(50- to 260-foot) and large vessels (greater than 260-foot) also struck whales.[1950]

3. BLM's mitigation measures are inadequate.

The mitigation measures most relevant for shipping are set forth in lease stipulations 4 and 9 and ROPs 10, 36, and 46. To strengthen these provisions, we urge BLM to adopt the modifications described below.

Advance Consultation. Lease stipulations 4 (Alt. D) and 9 (Alts. C and D) require that, before engaging in open water activities, the lessee/operator/contractor must consult with the Alaska Eskimo Whaling Commission, the North Slope Borough, and local whaling captains' associations to minimize adverse impacts on subsistence activities.[1951] Similarly, ROP 36 requires permittees who propose transporting materials to the Coastal Plain in support of oil and gas activities to engage in advance consultation with the entities listed above in order to minimize subsistence impacts.[1952] We believe advance consultation as a means to prevent conflicts and adverse impacts is a beneficial approach.[1953] We urge BLM to expand these requirements to all action alternatives and to clarify that bulk fuel and hazardous substances are among the materials for which marine transport requires advance consultation. We further urge BLM to require the lessee/operator/contractor to engage in prior consultation with the U.S. Coast Guard before engaging in shipping activities. The Coast Guard has the expertise and resources to help prevent collisions, groundings, and other incidents that could lead to oil and hazardous substance spills, marine mammal strikes, or other adverse impacts. Additionally, we urge BLM to require advance consultation with the Bering Sea Elders Group, Kawerak, Inc., and Maniilaq Association before transporting materials through the Bering Sea region to the program area. These entities have access to extensive information concerning local marine mammals, sea ice conditions, and vessel traffic that would be invaluable in ensuring safe transit and preventing spills, collisions, and other adverse impacts. Prior consultation would help minimize such impacts by facilitating communication and information-sharing regarding topics such as: planned ship routing, scheduling, weather and ice conditions, visibility, topographic hazards, vessel equipment functionality, adequacy of vessel staffing, proximity of nearest emergency response facilities, presence of other nearby vessels, and recent sightings of marine mammals or other wildlife.

Polar Bear Den Avoidance. ROP 10 prohibits oil and gas activity within one mile of known or observed polar bear dens, subject to limited exceptions.[1954] We note that this ROP is only effective to the extent polar bear dens are accurately detected, and detection techniques have many shortcomings that BLM failed to consider. We further note that this ROP appears

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[1950] *See id.*

[1951] *See* DEIS, vol. 1 at 2-8 and 2-15.

[1952] *See id.* at 2-33.

[1953] *See generally* Huntington, *Vessels, risks, and rules* (discussing impacts to indigenous communities not just from availability of whales for subsistence uses but also from vessel conflicts, increased swamping/collision risks between small and large vessels, and other issues).

[1954] *See id.* at 2-20.

limited in scope to onshore oil and gas operations. We urge BLM to expand its applicability to encompass shipping activities as well and to include language clarifying that it prohibits icebreaking and other shipping activities within a one-mile radius of any polar bear den, including those on land and on sea ice.

Seasonal Restriction. ROP 46 includes a seasonal restriction designed to minimize impacts on marine mammals from vessel traffic. Vessel traffic associated with Coastal Plain oil and gas operations is generally prohibited before July 1.[1955] We support the idea of a seasonal restriction not only because it helps minimize conflicts with marine mammals, but also because it reduces the risks of oil and hazardous substance spills occurring due to poor weather, visibility, and ice conditions and because such spills would be extraordinarily difficult to clean up in such conditions.[1956] Moreover, avoiding seasonal periods when ice is present reduces or eliminates the need to utilize noisy and disruptive icebreaking measures that are harmful to wildlife. We urge BLM to strengthen this measure by adding an October 1 fall termination date for vessel traffic.[1957] The same rationale supporting the early-season restriction would counsel in favor of this change. Precluding late-season shipping would likewise help minimize wildlife conflicts and ensure that shipping is not taking place during poor weather, visibility, and ice conditions that increase the need for icebreaking, increase the likelihood of oil and hazardous substance spills, and increase the difficulty of cleaning up any such spill. We also urge BLM to strengthen ROP 46 by requiring consultation with the U.S. Coast Guard before any waiver of the July 1 or October 1 seasonal restrictions is granted, in addition to consultation with NMFS and/or USFWS. While the resource agencies have expertise concerning marine mammals, the Coast Guard is the expert agency with respect to navigation safety and the avoidance of collisions, groundings, and oil and hazardous substance spills, all of which can harm marine mammals and other wildlife.

Speed Limits. The analysis in the DEIS concludes that shipping impacts on marine mammals will be minimal because barges will generally be traveling slowly, such as at speeds of 10 knots or less.[1958] The 10-knot speed restriction in ROP 46, however, only applies in North Pacific right whale critical habitat.[1959] Additionally, recommended 5- and 9-knot speed limits

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[1955] *See id.* at 2-37.

[1956] *See, e.g.*, E&E News, *The U.S. Is Not Ready to Clean Up an Arctic Oil Spill* (July 19, 2017), *available at* https://www.scientificamerican.com/article/the-u-s-is-not-ready-to-clean-up-an-arctic-oil-spill/; J. Wilkinson, et al, *Oil spill response capabilities for ice-covered Arctic marine waters: A review of recent developments and established practices*, 46 Ambio 423 (Oct. 28, 2017), *available at* https://link.springer.com/content/pdf/10.1007%2Fs13280-017-0958-y.pdf.

[1957] *See* Rolph, R., *et al*, *Impacts of a lengthening open water season on Alaskan coastal communities: deriving locally relevant indices from large-scale datasets and community observations*, 12 Cryosphere 1779, 1780 (May 2018) (describing fall freeze-up in the Arctic as typically occurring in October or early November each year), *available at* https://www.the-cryosphere.net/12/1779/2018/tc-12-1779-2018.pdf.

[1958] *See* DEIS, vol. 1 at 3-142.

[1959] *See id.* at 2-37.

are among the "reasonable precautions" that could be taken "as appropriate" when whales are observed nearby.[1960] These geographically limited and non-binding speed limits are inadequate. As BLM has observed, the "speed of ships is related directly to the severity of collisions between vessels and whales."[1961] Moreover, ship speed is a key factor affecting the risk of collisions, groundings, and oil and hazardous substance spills.[1962]

In many Arctic areas, it may be difficult to establish complete avoidance areas to protect marine mammals due to geographical limitations and navigational hazards, but speed restrictions on vessels are feasible, and they have been widely acknowledged as effective in reducing the risks posed by vessels to whales and other marine mammals.[1963] Restricting vessel speed can mitigate ship strikes, reduce noise impacts, prevent oil and hazardous substance spills, reduce air emissions, and minimize other types of harm.[1964] Studies have shown, for instance, that ships traveling at lower speeds have higher rates of detecting whales and more opportunities to undertake avoidance maneuvers, especially when ability of ship personnel to detect a whale is compromised by poor visibility or other adverse conditions.[1965] Slower-moving ships also give

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[1960] *Id.*

[1961] *Id*. at 3-142.

[1962] *See generally* McWhinnie, *Vessel traffic in the Canadian Arctic;* Huntington, *Vessels, risks, and rules*. *See, e.g.*, 33 C.F.R. § 162.240(b) (imposing a 7-knot speed limit for vessels over 23 feet in length as a safety measure in Tongass Narrows).

[1963] *See* McWhinnie, *Vessel traffic in the Canadian Arctic*; Huntington, *Vessels, risks, and rules;* Wiley, D., *et al, Modeling speed restrictions to mitigate lethal collisions between ships and whales in the Stellwagen Bank National Marine Sanctuary, USA*, 144 Biol. Cons'n 2377 (Sept. 2011), *available at* http://www.pelagicos.net/MARS6910_spring2012/readings/Wiley_et_al_2011.pdf; Conn, P.B. and Silber, G.K., *Vessel speed restrictions reduce risk of collision-related mortality for North Atlantic right whales*, 4 Ecosphere 1 (April 2013), *available at* https://esajournals.onlinelibrary.wiley.com/doi/full/10.1890/ES13-00004.1; Laist, D., *et al, Effectiveness of mandatory vessel speed limits for protecting North Atlantic right whales*, 23 End. Species Res. 133 (Feb. 28, 2014), *available at* https://www.int-res.com/abstracts/esr/v23/n2/p133-147/; van der Hoop, J. *et al, Vessel Strikes to Large Whales Before and After the 2008 Ship Strike Rule*, 8 Cons'n Letters 24 (Jan.-Feb. 2015), *available at* https://onlinelibrary.wiley.com/doi/epdf/10.1111/conl.12105.

[1964] *See* McWhinnie, *Vessel traffic in the Canadian Arctic;* Huntington, *Vessels, risks, and rules*; Faber, J. et al, Regulated slow steaming in maritime transport - an assessment of options, costs and benefits, CE-Delft, Netherland (2012), attached as Exhibit __ and *available at* https://www.cedelft.eu/publicatie/regulated_slow_steaming_in_maritime_transport/1224 (describing speed restrictions as the "most cost-effective way to reduce ship emissions").

[1965] *See* Williams, *Factors affecting whale detection from large ships in Alaska*; Gende, S., *et al, A Bayesian approach for understanding the role of ship speed in whale-ship encounters*. 21 Ecol. Applic. 1887 (Sept. 2011), *available at* https://esajournals.onlinelibrary.wiley.com/doi/10.1890/10-1965.1; Currie, J. et al, *Modelling whale-vessel encounters: the role of speed in mitigating collisions with humpback whales (Megaptera novaangliae)*, 17 J. Cetacean Res. Mgmt. 57 (2017), *available at* https://fh-

whales a greater opportunity to avoid ships, in addition to helping ships avoid whales.[1966] Additionally, reduced vessel speeds reduce the mortality to whales when collisions do occur.[1967]

We urge BLM to expand the applicability of the 10-knot speed limit in ROP 46 to all barges, tankers, and other operational and support vessels associated with Coastal Plain oil and gas operations transiting the 5 nm buffer zone offshore of the program area and its vicinity.[1968] Doing so would be consistent with the U.S. Bureau of Ocean Energy Management's (BOEM's) recent decision concerning the Liberty offshore drilling and production facility, which provided that "[v]essels traveling between West Dock/Endicott and Foggy Island Bay will not exceed speeds of 10 knots in order to reduce the potential for whale strikes."[1969] In adopting this mitigation measure, BOEM explained that "vessel speed restrictions reduce the potential for whale collisions" and that "[s]tudies referenced in the Liberty FEIS show that almost 90% of collisions where whales were killed or severely injured occurred with vessel speeds in excess of 14 knots, and no collisions occurred at speeds at or below 10 knots."[1970] In the DEIS, BLM similarly states that "[c]ollisions with whales are rare for slow-moving vessels traveling at less than 10 knots."[1971]

We note that, while a 10-knot speed limit substantially reduces the number of whale strikes and their severity, it does not entirely eliminate the risk of collision. Slower speeds are appropriate under certain circumstances, including when ships approach within 300 yards of observed whales and when visibility is limited. ROP 46 reflects this by recommending 5- and 9-knot speed limits, respectively, in such situations. We urge BLM to make these 5- and 9-knot speed limits mandatory rather than merely listing them among the "reasonable precautions" that an operator "would take" to avoid whale interactions.

Also, in a revised DEIS, BLM should carefully analyze whether a 10-knot speed limit would reduce harmful impacts to marine mammals at the individual and population level in other sensitive areas along the marine barge route, such as the Chukchi Corridor, Hanna Shoal, Herald Shoal, Barrow Canyon East, Smith Bay, Harrison Bay-Colville Delta, Beaufort Shelf Break, Oliktok Point to Demarcation Bay, Bering Strait, and waters surrounding King Island, St. Lawrence Island, and Nunivak Island. If so, these areas should be delineated and the 10-knot speed limit should be applied to them as part of ROP 46 as well.

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sites.imgix.net/sites/759/2018/02/13174624/Currie-et-al-2017-Modelling-whale-vessel-encounters-the-role-of-speed-in-mitigating-collisions-with-humpback-whales-Megaptera-novaeangliae.pdf.

[1966] *See* Williams, *Factors affecting whale detection from large ships in Alaska*.

[1967] *See* Wiley, *Modeling speed restrictions to mitigate lethal collisions*; Conn, *Vessel speed restrictions reduce risk of collision-related mortality*.

[1968] *See* DEIS, vol. 2, appx. A, map 3-25.

[1969] BOEM, Alaska OCS Region, Beaufort Sea Outer Continental Shelf Liberty Development and Production Plan, Record of Decision, at 11 (Oct. 2018), *at* https://www.boem.gov/Liberty-Record-of-Decision/.

[1970] *Id*. at 12.

[1971] DEIS, vol. 1 at 3-142.

Consistent with existing NMFS speed restrictions protecting whales, vessels may be allowed to deviate from the 10-knot speed limit when necessary for navigational safety, as long as (1) the deviation is justified because oceanographic, hydrographic and/or meteorological conditions severely restrict the maneuverability of the vessel and the need to operate at such speed is confirmed by the pilot on board or, when a vessel is not carrying a pilot, the master of the vessel, (2) the reasons for the deviation along with the vessel speed, area, time, and duration of the deviation are entered into the vessel logbook, and (3) the master of the vessel attests to the accuracy of the logbook entry by signing and dating it.[1972]

Additionally, ROP 46 calls upon vessel operators to undertake a variety of measures when approaching within 1 mile of observed whales, including reducing the vessel speed to less than 5 knots when the vessel is within 300 yards of a whale. We urge BLM to strengthen this provision by requiring vessel speed to be reduced to 10 knots as soon as the vessel approaches within 1 mile of observed whales, and then vessels would further reduce speed to 5 knots when coming within 300 yards of a whale pursuant to the existing provision. With respect to this provision and all other provisions in ROP 46, the language must be revised to clarify that the procedures impose mandatory obligations. For instance, "would" and "should" must be replaced with "must" or "shall."

Geographic Scope. At present, lease stipulations 4 and 9 are limited to nearshore and coastal activities, and ROP 10 is only applicable to onshore oil and gas operations. The geographic scope of ROPs 36 and 46 is less clear but, given the DEIS's general emphasis on program area impacts, they could be construed as limited to oil and gas operations within or in the immediate vicinity of the program area. Shipping-related adverse impacts, however, have the potential to occur anywhere along the marine barge route as well. Accordingly, we urge BLM to revise lease stipulations 4 and 9 and ROPs 10, 36, and 46 to make it clear that these provisions are applicable to all shipping activities associated with Coastal Plain oil and gas operations wherever they may occur.

4. BLM failed to involve relevant cooperating agencies.

In preparing an EIS, the lead agency is expected to "emphasize agency cooperation early in the NEPA process" and to include as a cooperating agency any other federal agency which has "jurisdiction by law" and/or "special expertise with respect to any environmental issue."[1973] Moreover, under U.S. Department of the Interior regulations, BLM must "whenever possible consult, coordinate, and cooperate with ... other bureaus and Federal agencies concerning the environmental effects of any Federal action within the jurisdictions or related to the interests of these entities."[1974]

The U.S. Coast Guard has both jurisdiction and special expertise regarding the risks and

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[1972] *See* 40 C.F.R. § 224.105(c).
[1973] 40 C.F.R. § 1501.6; *see id.* § 1508.5.
[1974] 43 C.F.R. § 46.155.

impacts of the shipping activities associated with the proposed action.[1975] For example, the Coast Guard has broad legal authorities relating to discharges of oil and hazardous substances.[1976] It is, in fact, the lead agency for such issues in the "coastal zone" (as opposed to the "inland zone" where EPA authority takes precedence).[1977] The Coast Guard also inspects, certifies, and regulates vessels with respect to a wide range of pollution and environmental standards,[1978] and it has extensive authority over and expertise relating to navigation safety, ship routing, and vessel traffic management.[1979] Further, the Coast Guard plays an important role in protecting fisheries and marine life through its enforcement authorities under several wildlife and marine conservation laws,[1980] as well as its capabilities and resources for responding to wildlife strandings, entanglements, and other similar situations.[1981] For all these reasons, we urge BLM to add the U.S. Coast Guard as a cooperating agency in the preparation of the Coastal Plain Oil and Gas Leasing Program EIS and to give it sufficient time and opportunity to participate meaningfully in the development of a revised EIS.

Additionally, NMFS has both jurisdiction and special expertise concerning the risks and impacts of shipping activities on marine mammals.[1982] As such, NMFS should be added as a cooperating agency for this NEPA process just as it served as a cooperating agency in connection with the Liberty oil and gas project discussed above.[1983] BLM appears to be consulting with NMFS with respect to ESA issues,[1984] but that is not a substitute for full cooperating agency status to ensure that NMFS's expertise is utilized and incorporated into the EIS with respect to the wide range of risks and impacts arising from shipping activities near the program area and

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[1975] It is not clear whether or not BLM reached out to the Coast Guard to request its participation as a cooperating agency or, if so, whether BLM adequately described the potential for shipping-related impacts in nearshore waters along the Coastal Plain and along the 1,600-mile marine barge route. *See* BLM, Coastal Plain Oil and Gas Leasing Program EIS Final Scoping Report (July 2018) (indicating that "BLM asked agencies if they would like to be involved" without specifying which agencies).

[1976] *See* 33 U.S.C. § 1321; 33 C.F.R. pts. 133-138.

[1977] *See* 40 C.F.R. §§ 300.100, 300.175(b)(1); 33 C.F.R. §§ 1.01-80, 153.105; Exec. Order 12580 (Jan. 23, 1987), as amended; Exec. Order 12777 (Oct. 18, 1991), as amended.

[1978] *See* 46 U.S.C. chs. 31-47; 33 C.F.R. pts. 151-159.

[1979] *See* 33 U.S.C. ch. 25; 33 C.F.R. pts. 160-169.

[1980] *See, e.g.,* 16 U.S.C. §§ 1431-1445 (National Marine Sanctuaries Act), 1531-1544 (Endangered Species Act), 1801 (Magnuson-Stevens Fisheries Conservation and Management Act), and 3371-3378 (Lacey Act).

[1981] *See* U.S. Coast Guard Webpage, *Authorities*, *available at* https://www.uscg.mil/readings/Article/1548177/authorities/ (accessed Jan. 2019).

[1982] *See generally* NMFS Webpage, *Marine Mammal Protection*, *available at* https://www.fisheries.noaa.gov/topic/marine-mammal-protection; NMFS Webpage, *Protecting Marine Life in Alaska*, https://www.fisheries.noaa.gov/alaska/marine-mammal-protection/protecting-marine-life-alaska (accessed Feb. 26, 2019).

[1983] *See* BOEM, Final EIS for Liberty Development and Production Plan (Aug. 2018), *available at* https://www.boem.gov/Vol-1-Liberty-FEIS/.

[1984] *See* DEIS, vol. 1 at 1-4 to 1-5.

along the 1,600 mile marine barge route.[1985]

X. BLM'S ANALYSIS OF THE ECONOMIC IMPACTS OF AN OIL AND GAS PROGRAM IS INADEQUATE.

BLM's economic impacts analysis is deficient in numerous respects and fails to identify and analyze the reasonably foreseeable economic costs and benefits of an oil and gas program on the Coastal Plain. Appendix C to these comments provides a detailed technical review of the economics analysis contained in the draft EIS, prepared by Dr. Carolyn Alkire and Anna Perry of Key-Log Economics. We fully incorporate that document by reference into our comments and provide a brief summary below.

The promise of cheaper, more abundant energy — and associated federal revenues — was a primary driver behind opening the Coastal Plain to oil and gas development, including its inclusion in the 2017 Tax Act. Prior to passage of the Tax Act, the Congressional Budget Office estimated that federal revenue from Coastal Plain development during 2018–2027 would be $1.1 billion,[1986] with the same amount going to the State of Alaska. The draft EIS does not even include estimates of anticipated revenue from lease sales,[1987] and several recent Arctic lease sales have not brought in revenues to match the projections in the Tax Act.[1988]

Where BLM does attempt to forecast economic benefits, it does so based on questionable or sometimes plainly faulty assumptions. For instance, despite tremendous uncertainty, BLM considers only one development scenario that relies on unjustified production assumptions, including aggressive leasing and exploration, oil and gas prices high enough to support development,[1989] and the likelihood that oil will be discovered in and recoverable from a small

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[1985] It is not clear whether BLM specifically asked NMFS to participate as a cooperating agency or, if so, whether BLM adequately described the potential for shipping-related impacts on marine mammals near the program area and along the 1,600-mile marine barge route. *See* BLM, Coastal Plain Oil and Gas Leasing Program EIS Final Scoping Report (July 2018) (indicating that "BLM asked agencies if they would like to be involved" without specifying which agencies).

[1986] Congressional Budget Office Cost Estimate (Nov. 2017), available at https://www.energy.senate.gov/public/index.cfm/files/serve?File_id=3454269F-6DC5-4E6C-9F23-99D1E3E64698.

[1987] *See* Draft EIS vol. 1 at 3-231 (BLM not estimating or quantifying bonus bids or rental payments from leasing).

[1988] *See* BLM lease sale data for the National Petroleum Reserve-Alaska, 1999–2018, available at: https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/leasing/regional-lease-sales/alaska; Key-Log Economics, *Arctic National Wildlife Refuge: Economics of Potential Oil Development* (Nov. 2017).

[1989] U.S. Energy Information Administration, *Annual Energy Outlook 2019*, p. 56, available at https://www.eia.gov/outlooks/aeo/pdf/aeo2019.pdf ("Exploration and development of fields in ANWR is not economical in the Low Oil Price case.").

number of large fields.[1990] BLM's hypothetical timeline for development — a critical assumption underlying a complete and accurate economic impacts analysis — is also problematic, unrealistically short, does not consider potential delays (e.g., due to weather or litigation), inconsistently reported throughout the draft EIS,[1991] and inconsistent with the timeline developed by the Energy Information Administration,[1992] whose modelling of likely production undergirds the development scenario. Moreover, BLM's estimates of technically and economically recoverable oil are suspect in many respects,[1993] and underestimate of the development costs necessary to support production given the region's remoteness and the climate. Because they are based on faulty and unsupported assumptions, the federal revenue projections included in the draft EIS are likewise inaccurate.

Nor are the federal royalty and tax projections included in the draft EIS complete.[1994] For instance, they do not include any estimate for revenue generation in the next 10 years — providing no basis for comparison with the wildly optimistic estimates from the Congressional Budget Office ($1.1 billion) and the White House Office of Management and Budget ($1.8 billion) of federal revenue that would be generated between 2018 and 2027.[1995]

The draft EIS also includes incomplete and inaccurate information on the impact of Coastal Plain production on the oil market.[1996] Contrary to BLM's assertions that Coastal Plain development will increase U.S. demand due to minimally lower prices, the best available information from EIA consistently forecasts declining demand and increasing U.S. exports of liquid fuels, with the U.S. becoming a net petroleum liquids exporter by 2020.[1997] Furthermore, economic principles state that oil demand is a function of oil price, not supply; development cannot, in and of itself, increase demand.

Additionally, the EIS should discuss how recent major oil discoveries in the Arctic's Nanushuk formation which underlies the NPR-A and state lands will result in increased flow in the Trans-Alaska Pipeline System (TAPS) regardless of production from the Coastal Plain.

[1990] The DEIS assumes "*economically feasible* oil accumulations would be discovered in *all* potential areas and that *multiple* anchor fields (each containing at least 400 million barrels of proven producible reserves) would be discovered (p. B-13; emphasis added; "proven producible reserves" is not defined in the DEIS) (Appendix C: Key-Log, 2019, p. 4).

[1991] Appendix C: Key-Log, 2019, p. 5.

[1992] U.S. Energy Information Administration, *Analysis of Projected Crude Oil Production in the Arctic National Wildlife Refuge* (2018), available at https://www.eia.gov/outlooks/aeo/anwr.php.

[1993] *See also supra* Part IV.A.

[1994] Appendix C: Key-Log, 2019, pp. 6–7.

[1995] *See* CBO Cost Estimate (Nov. 2017), available at https://www.energy.senate.gov/public/index.cfm/files/serve?File_id=3454269F-6DC5-4E6C-9F23-99D1E3E64698; OMB Fiscal Year 2018 Budget, available at https://www.whitehouse.gov/wp-content/uploads/2017/11/budget.pdf.

[1996] Appendix C: Key-Log, 2019, pp. 7-=–8.

[1997] U.S. Energy Information Administration 2019.

These discoveries include ConocoPhillips' Willow project[1998] and Oil Search's Nanushuk project.[1999] For the next several decades, TAPS will not face risks from low flow.

The draft EIS estimates jobs and wage income, but fails to include sufficient information about inputs it relies upon (timeline, production, and related annual costs) to support the analysis or the estimates.[2000] The estimates also include unsupported assumptions related to the creation of new jobs and associated wage income contributing to economic growth. New jobs would only be created if the workers who obtain them would otherwise be unemployed. These realities are not addressed in the draft EIS, rendering its job and wage income estimates uninformative.

The draft EIS recognizes that the significant ecosystem service values and other socio-economic benefits (including wilderness, recreation, and subsistence) of the Coastal Plain would be harmed by oil and gas development, but makes no attempt to quantify or specifically identify those impacts.[2001] Under NEPA, BLM is not permitted to quantify purported economic benefits associated with an oil and gas development program without also quantifying the economic costs of that development to nonmarket values.[2002] The draft EIS fails to explain why it did not quantify the numerous and significant nonmarket values of the Coastal Plain, and the market effects that ecological damages would have on the local economy, especially recreation and tourism. Performing such a quantitative analysis is entirely feasible and necessary to inform the analysis in the EIS. Indeed, a team from Hendrix College has a study in peer review that quantifies ecosystem services values associated with the Coastal Plain.[2003]

Finally — and compounding the failure to identify, quantify, or analyze the economic costs of an oil and gas development program on the wilderness, wildlife, subsistence, recreation, water, and other values of the Coastal Plain — the draft EIS's description of the regional economy is incomplete and misleading.[2004] Although the draft EIS acknowledges that less than 0.5% of oil and gas jobs are held by residents of the North Slope Borough,[2005] it focuses only on the oil and gas industry rather than describing the regional economy. Absent complete and quantitative information on all elements of regional asserts — including subsistence uses, tourism dollars from Coastal Plain recreation, the value of ecosystem services, etc. — BLM's baseline for analysis remains fundamentally flawed and inaccurate.

[1998] https://www.blm.gov/programs/planning-and-nepa/plans-development/alaska/willow-eis

[1999] http://www.nanushukeis.com/

[2000] Appendix C: Key-Log, 2019, p. 6.

[2001] Appendix C: Key-Log, 2019, pp. 10–11.

[2002] *See, e.g.*, *Cal. v. Block*, 690 F.2d 753, 764 (9th Cir. 1982) (EIS may not identify economic benefits of development without weighing them against environmental costs).

[2003] *See* January 30, 2019 Comments on Leasing DEIS submitted by Moran, McClung, and Young.

[2004] Key-Log, 2019, p. 10.

[2005] DEIS vol. 1 at 3-197.

Y. BLM'S ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON PUBLIC HEALTH IS INADEQUATE.

BLM's public health analysis lacks significant rigor and should be dramatically improved to provide the public with a more thorough understanding of the health dangers of oil development in mixed subsistence-cash economies. We encourage BLM to pay particular attention to the determinants and associated feedbacks that contribute to public health and wellness in rural Alaska.[2006]

1. *Scoping Comments Requested an HIA Be Completed at the Lease Sale Stage.*

The BLM reasoned that it need not conduct an HIA in part because no one wanted it at the lease sale stage. Specifically, BLM stated that "scoping comments corroborated the wider scope of analysis approach."[2007] However, the final scoping report notes the "many" comments submitted during the period called for a project-specific, systemic HIA to be conducted at the leasing stage, for baseline conditions to be measured at the leasing stage, and for the BLM to work with public health experts on the health assessment at the leasing stage.[2008] The BLM arbitrarily ignored these comments in developing the DEIS.

2. *Affected Environment*

a. BLM's Lease DEIS Public Health Analysis is Lacking.

Early within the Public Health section, BLM states that under NEPA regulations, projects that require an EIS must include an analysis of health impacts associated with federal actions.[2009] BLM's public health analysis is based upon a "broad description"[2010] of the general health conditions of the Affected Environment. The Affected Environment analyzed by BLM consists solely of Kaktovik due to its proximity to the proposed program area. For baseline data, BLM relies on information incorporated by reference to the "North Slope Borough (NSB) Baseline Community Health Analysis Report," which was prepared as part of a separate NEPA process for the BLM NPR-A IAP/EIS in 2012.[2011] The NPR-A is a different geographic region,

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[2006] Loring, P.A. and Gerlach, S.C. (2009). Food, culture, and human health in Alaska: an integrative health approach to food security. Environmental Science and Policy, 12: 466-478.

[2007] DEIS vol. 1 at 3-239.

[2008] Coastal Plain Oil and Gas Leasing Program EIS/Final Scoping Report at 3-30 (July 2018), https://eplanning.blm.gov/epl-front-office/projects/nepa/102555/152084/186300/Coastal_Plain_Leasing_EIS_Final_Scoping_Report_508.pdf (accessed Jan. 21, 2019).

[2009] DEIS vol. 1 at 3-239.

[2010] DEIS vol. 1 at 3-239.

[2011] Baseline community health analysis report. North Slope Borough. Department of Health and Social Services. July, 2012, at 2: http://www.north-slope.org/assets/images/uploads/BaselineCommunityHealthAnalysisReport.pdf (accessed Jan. 23, 2019).

with different community concerns. BLM should not rely on data which does not accurately represent the baseline for communities reliant upon the Coastal Plain's resources. Further, much of the data relied upon by BLM is more than 10 years old, which likely does not accurately represent current public health conditions.

BLM determined that a Health Impact Assessment (HIA) was not required for the Coastal Plain at the lease sale stage.[2012] BLM explicitly concluded that lease sales do not affect public health and therefore an HIA at the lease sale stage was not required.[2013] It provided several reasons why a "broad description" of public health status for the Affected Environment was sufficient, stating that: the Lease DEIS "did not analyze specific developments in the program area;"[2014] its decision was "consistent with recent NEPA analyses on the North Slope;"[2015] its decision was based on "changing expectations for what constitutes a sufficient examination of human health in the regulatory process;"[2016] and that scoping comments corroborated the wider scope of analysis approach.[2017] This is incorrect and BLM should conduct an HIA for the leasing program now.

b. Health Impact Assessments

HIA's offer a systemic methodological framework for factoring public health concerns into decision making.[2018] Widely used internationally, the use of HIA's is growing in the U.S. and in Alaska, increasingly as part of the NEPA process.[2019] The NSB has been a leader in integrating HIA into the Environmental Impact Assessment (EIA) process for natural resource development in Alaska.[2020]

The National Academy of Sciences (NAS) defines an HIA as a:

[2012] DEIS vol. 1 at 3-239.

[2013] "This EIS does not analyze specific developments in the program area; therefore, a health impact assessment was not completed for this analysis. Health impact assessments are expected to be developed for future development projects that would require additional NEPA analysis." DEIS vol. 1 at 3-239.

[2014] DEIS vol. 1 at 3-239.

[2015] DEIS vol. 1 at 3-239.

[2016] DEIS vol. 1 at 3-239.

[2017] DEIS vol. 1 at 3-239.

[2018] National Research Council 2011. Improving Health in the United States: The Role of Health Impact Assessment. Washington, DC: The National Academies Press. Appendix A at 150–161. https://doi.org/10.17226/13229.

[2019] *See* Wernham, A. EcoHealth (2007) 4: 500, at https://doi.org/10.1007/s10393-007-0132-2.

[2020] Baseline community health analysis report. North Slope Borough. Department of Health and Social Services. July, 2012, at 65: http://www.north-slope.org/assets/images/uploads/BaselineCommunityHealthAnalysisReport.pdf (accessed Jan. 23, 2019).

> systematic process that uses an array of data sources and analytic methods and considers input from stakeholders to determine the potential effects of a proposed policy, plan, program, or project on the health of a population and the distribution of those effects within the population. HIA provides recommendations on monitoring and managing those effects.[2021]

The NAS Committee on Health Impact Assessment has analyzed the integration of HIA's into the NEPA process. The Committee recommends that the use of HIA's "should be focused on applications in which there is the greatest opportunity to protect or promote health and to raise awareness of the health consequences of proposed decisions."[2022] The NAS concluded that "improving the integration of health into EIA practice under NEPA and related state laws is needed and would advance the goal of improving public health."[2023] To be consistent with the "changing expectations for what constitutes a sufficient examination of human health in the regulatory process" and with precedent established in Alaska, the BLM should conduct an HIA for the Coastal Plain at the Lease DEIS stage. The lease stage presents the greatest opportunity to promote health.

c. NEPA Requires an HIA at the Lease Sale Stage

BLM must conduct an HIA at the lease sale stage in order to meet NEPA requirements. As described in 40 C.F.R. § 1502.15, data and analyses in an EIS shall be commensurate with the importance of the impact. The public health impacts of the proposed Coastal Plain leasing program are one of the most important impacts that the government must analyze. NEPA analysis, after all, is largely premised on taking a hard look at the "*human* environment" (emphasis added).[2024]

Under 40 C.F.R. § 1502.24, agencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements. As described in our scoping comments, completing an HIA is a necessary step to insure the professional and scientific integrity of this process.[2025]

[2021] National Research Council 2011. Improving Health in the United States: The Role of Health Impact Assessment. Washington, DC: The National Academies Press. At 5. https://doi.org/10.17226/13229.

[2022] National Research Council 2011. Improving Health in the United States: The Role of Health Impact Assessment. Washington, DC: The National Academies Press. At 12. https://doi.org/10.17226/13229.

[2023] National Research Council 2011. Improving Health in the United States: The Role of Health Impact Assessment. Washington, DC: The National Academies Press. At 12. https://doi.org/10.17226/13229.

[2024] Congressional Record, Senate, P. 40416, December 20, 1969.

[2025] Alaska Wilderness League *et al.*, Scoping Comments re: Notice of Intent to Prepare an Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program, at 128.

NEPA standards require an *ex ante* analysis of "reasonably foreseeable, significant impacts on the human environment."[2026] Implementing regulations are explicit that public health is among these impacts.[2027] NEPA thus requires that federal agencies analyze the environmental effects, including health effects, in an EIS as soon as it is "reasonably possible" to do so.[2028]

The Technical Guidelines published by the State of Alaska's HIA Program specifies that the HIA should be completed as early as possible in the process to enable baseline data to be gathered, and to enable sufficient agency and expert coordination as required by NEPA. Specifically, the guidelines endorse early coordination on HIA's because it "promotes cooperative planning of field studies and data gathering with other environmental baseline studies, which reduces survey fatigue in communities and the overall cost of field work, decreases the risk of delays, and provides an opportunity for health input into the creation of project 'alternatives.'"[2029]

Deferring the HIA to future specific projects developed under additional and separate NEPA analyses, as the BLM has stated it will do, is an inadequate substitute for estimating the total health impacts from the lease sales and oil and gas program as a whole. For "[i]t is only at the lease sale stage that the agency can take into account the effects of oil production in deciding which parcels to offer for lease."[2030]

While BLM states that "health impact assessments are expected to be developed for future development projects," there is no meaningful mechanism to ensure that this analysis is completed at a project-level EIS. Moreover, as is occurring in the NPR-A, once a lease is issued, the BLM cannot select the no action alternative when a project is being considered unless it specifically retains this right and authority. Such circumstances all but insure that a meaningful analysis of a leasing program's risk to human health and wellness will not be completed prior to BLM making an irretrievable commitment of resources. As such, a meaningful HIA should be completed at the leasing stage so that the public fully understands the risks of a Coastal Plain leasing program.

d. The Tax Act Requires an HIA at the Lease Sale Stage

Section 20001 of the Tax Act that opened the Coastal Plain to lease sales states that the Secretary of Interior "*shall* manage the oil and gas program on the Coastal Plain *in a manner similar to* the administration of lease sales under the Naval Petroleum Reserves Production Act

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[2026] 42 U.S.C. §§ 4321, 4331(b).

[2027] 40 CFR § 1500–1508.

[2028] 42 U.S.C. § 4332(2)(C); 40 C.F.R. § 1502.22.

[2029] Technical Guidance for Health Impact Assessment in Alaska, State of Alaska Department of Health and Human Services, http://dhss.alaska.gov/dph/Epi/hia/Documents/AlaskaHIAToolkit.pdf, at 4 (accessed Jan. 21, 2019).

[2030] *Native Village of Point Hope v. Jewell*, 740 F.3d 489, 504 (9th Cir. 2014).

of 1976 (42 U.S.C. 6501 et seq.) (including regulations)[emphases added]."[2031] The implementing regulations of the NPRP-A include establishing the National Petroleum Reserve-Alaska (NPR-A), for which an HIA was conducted in 2012.[2032] In directly analogous circumstances, BLM and its sister agency BOEM have used the HIA to integrate public health concerns into the EIS decision-making framework at the planning or lease stages.[2033]

In at least six instances in Alaska, HIA's were conducted during the leasing stage of proposed oil and gas development projects.[2034] BLM, for example, integrated an HIA as part of the Northeast National Petroleum Reserve Supplemental Environmental Impact Statement to address public health impacts of proposed oil leasing in the Northeast NPR-A.[2035] The Northeast

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[2031] PL 115-97, Section 20001, Jan 3, 2017.

[2032] *See* Bureau of Land Management, NPR-A, Final IAP/EIS vol. 6 at 37 (Nov. 2012), https://eplanning.blm.gov/epl-front-office/projects/lup/67091/82377/97728/Volume_5.pdf (accessed Jan. 28, 2019) (the NSB Mayor, in a letter to the BLM notes, "We note, in particular, the agency's development of more flexible blended performance-based and prescriptive measures, and your willingness to undertake meaningful comprehensive human health impact assessments (HIAs) as components of recent planning efforts. Critically, the BLM showed its commitment to addressing the health issues through inclusion of HIAs as more than academic exercises, but as the bases upon which to design appropriate measures to manage potential impacts identified by the assessments.").

[2033] Bureau of Land Management (BLM). 2008. Northeast National Petroleum Reserve-Alaska supplemental integrated activity plan record of decision (July 2008). Prepared by U.S. Department of the Interior, Bureau of Land Management., Anchorage, Alaska, https://eplanning.blm.gov/epl-front-office/projects/nepa/117408/164323/200443/Northeast_NPR-A_Supplemental_2008_Record_of_Decision.pdf (accessed Jan. 28, 2019); BOEM 2012. Outer Continental Shelf Oil and Gas Leasing Program: 2012-2017. Final Programmatic Environmental Impact Statement, Vol. 1. OCS EIS/EA BOEM 2012-030. U.S. Department of the Interior, Minerals Management Service, Herndon, VA. (July 2012); MMS 2007. Chukchi Sea Planning Area Oil and Gas Sale 193 and Seismic Surveying Activities in the Chukchi Sea. Final Environmental Impact Statement. OCS EIS/EA MMS2007-026. U.S. Department of the Interior, Minerals Management Service, Alaska OCS Region.

[2034] *See* Esi W. Nkyekyer & Andrew L. Dannenberg (2018): Use and effectiveness of health impact assessment in the energy and natural resources sector in the United States, 2007 – 2016, Impact Assessment and Project Appraisal. https://doi.org/10.1080/14615517.2018.1519221. See Table 1 at 4; *see also* Dannenberg et al, Use of Health Impact Assessment in the U.S. 27 Case Studies, 1999–2007, Am J Prev Med 2008; 34(3)*see also* Map of "Health Impact Assessments in the United States" by State, Pew Charitable Trusts, https://www.pewtrusts.org/en/research-and-analysis/data-visualizations/2015/hia-map.

[2035] Bureau of Land Management (BLM). 2008. Northeast National Petroleum Reserve-Alaska supplemental integrated activity plan record of decision (July 2008). Prepared by U.S. Department of the Interior, Bureau of Land Management., Anchorage, Alaska, https://eplanning.blm.gov/epl-front-

area of the Reserve was significantly important to the traditions and food supply of neighboring Alaska Native communities, where the degree of public health impact was proportional to the impacts to subsistence.[2036] The HIA made a number of recommendations which BLM adopted, including: additional protections for key hunting and fishing areas; measures to minimize disruption of local game; cultural orientation for workers; and a requirement for a more in-depth and site-specific consideration of health impacts for any major oil development on leased lands in the future.

In order to manage the Coastal Plain lease sales similar to the NPR-A, the BLM should similarly integrate an HIA into the Coastal Plain Lease DEIS. An HIA analysis conducted for the Coastal Plain Lease DEIS should focus on how oil leasing, and post-lease exploration, construction, operation, seismic activities, and the cumulative effects of development will expose residents to potential health risks, as well as how direct and indirect determinants that positively contribute to health may be compromised by development-related activities.[2037] A Coastal Plain HIA should also similarly explore mitigation strategies.[2038]

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office/projects/nepa/117408/164323/200443/Northeast_NPR-A_Supplemental_2008_Record_of_Decision.pdf (accessed Jan. 28, 2019). *See also* Wernham, A., "Inupiat Health and Proposed Alaskan Oil Development: Results of the First Integrated Health Impact Assessment/ Environmental Impact Statement for Proposed Oil Development on Alaska's North Slope," EcoHealth (2007) 4: 500, at https://doi.org/10.1007/s10393-007-0132-2.

[2036] Wernham, A. EcoHealth (2007) 4: at 507. https://doi.org/10.1007/s10393-007-0132-2,

[2037] *See* DEIS vol. 1 at ES-1 ("The Leasing EIS will serve to inform BLM's implementation of PL 115-97, Section 20001(c)(1), which is the requirement to hold multiple lease sales. It may also inform *post-lease* activities, including seismic and drilling exploration, development, and transportation of oil and gas in and from the Coastal Plain (emphasis added). Specifically, the Leasing EIS considers and analyzes the environmental impact of various leasing alternatives, including the areas to offer for sale, and the indirect impacts that could result in consideration of the hypothetical development scenario. The alternatives analyze various terms and conditions (i.e., lease stipulations and required operating procedures [ROPs]) to be applied to leases and associated oil and gas activities, to properly balance oil and gas development with protection of surface resources. Future on-the-ground actions requiring BLM approval, including potential exploration and development proposals, would require further NEPA analysis based on the site-specific proposal. Potential applicants would be subject to the terms of the lease.").

[2038] Technical Guidance for Health Impact Assessment in Alaska, State of Alaska Department of Health and Human Services, http://dhss.alaska.gov/dph/Epi/hia/Documents/AlaskaHIAToolkit.pdf, at 3 (accessed Jan. 21, 2019). Some past examples of HIA recommended mitigation measures include the establishment of a health advisory board, public health monitoring, contaminant monitoring and mitigation measures for reducing exposure, subsistence intake studies, public safety plan, employee education, and an independent oil spill review board. *See* Wernham, A. EcoHealth (2007) 4: 510. https://doi.org/10.1007/s10393-007-0132-2.

e. HIAs Are a Best Practices Approach to Meeting Robust and Rigorous Environmental Review Standards Required by Congress.

Congress amended language in the original Tax Act to clarify that the Act did not in any way limit, waive, or conflict with NEPA, and that any proposed oil and gas operations in the Coastal Plain would be subject to the full scope of NEPA review.[2039] Senator Murkowski assured members of the Energy and Natural Resources Committee that if the tax legislation became law, it would not waive NEPA and that any proposed development, including lease sales, would be subject to the full scope of environmental review required by NEPA:

> When we say that there are no environmental laws being waived, whether it's NEPA, ESA, Clean Water, Clean Air, everything applies, there is a multi-step process that goes on here. We have an integrated activity plan that is developed that is a very open process. You adopt the IAP through a record of decision, then you move to lease sale then you move to exploration then you move to discovery then pre-development, then that development is approved, and there is a process throughout each one, where again you have a level of regulatory and environmental review, of consultation, and of public engagement.[2040]

According to the Lease DEIS Purpose and Needs Statement, the EIS "will inform BLM's implementation of the Tax Act" and "may also inform post-lease activities, including seismic and drilling exploration, development, and transportation."[2041] To achieve Senator Murkowski's commitments and comply with NEPA, BLM should conduct an HIA for the oil and gas leasing program now.

HIA's are considered by the State Department of Health and Human Services as a "best practices approach for responsible development".[2042] In 2010, the State of Alaska institutionalized an HIA Program at the State Department of Health and Human Services. The Alaska HIA Program "evaluates potential health effects of new policies, programs, or projects using existing public health surveillance data, medical literature reviews, and field studies."[2043] The Program published a toolkit "to guide HIA practitioners in implementing an Alaska-specific best practices approach to performing field studies and stakeholder engagement activities, rating

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[2039] *See* Senate Congressional Record, Sen. Carper (DE) Statements re: HR-1, Dec. 1, 2017, at S7697.

[2040] Business Meeting to Consider Reconciliation Legislation, Nov. 15, 2017, at 1:04:42, https://www.energy.senate.gov/public/index.cfm/hearings-and-business-meetings?ID=5AB53058-9594-4A00-8F0F-AF559530A32E.

[2041] DEIS vol. 1 at ES-1.

[2042] Anderson, Paul, "Alaska's Health Impact Assessment Program," State of Alaska Epidemiology Bulletin 19 (July 15, 2011), http://dhss.alaska.gov/dph/Epi/hia/Documents/bulletins/docs/b2011_19.pdf (accessed Jan. 28, 2018).

[2043] *See* http://dhss.alaska.gov/dph/Epi/hia/Pages/pubs.aspx.

potential impacts, and making final recommendations".[2044] One best practice approach the HIA identified is early consultation with public health expert agencies in the coordination of health assessments to avoid duplicative efforts.[2045] This best practice approach is also consistent with NEPA requirements of cross-disciplinary collaboration between natural, physical, and social sciences to further its objectives.[2046]

Notably, BLM did not consult the HIA Program or any other entity with public health expertise when conducting the public health analysis for the Coastal Plain Lease DEIS. It also did not engage in gathering pre-development baseline data to determine conditions prior to potential disruption. BLM's proposed approach of deferring any potential HIA's to future stages of development fails Alaska's "best practices approach" of HIA completion at the earliest possible opportunity.[2047] BLM's public health DEIS analysis thus fails to meet Alaska's best practices approach or comply with legal directives.

3. Criteria for BLM to Prepare an Adequate HIA

In order to complete an adequate HIA, BLM would need to include a "description of the baseline health status of the population; an analysis of the direct, indirect, and cumulative health consequences of the proposed action and alternatives; and a consideration of potential mitigation measures to address the health concerns identified by the analysis."[2048] An adequate completion of these steps "might be considered equivalent to" conducting an HIA.[2049]

[2044] Technical Guidance for Health Impact Assessment in Alaska, State of Alaska Department of Health and Human Services, http://dhss.alaska.gov/dph/Epi/hia/Documents/AlaskaHIAToolkit.pdf, at 5 (accessed Jan. 21, 2019).

[2045] Technical Guidance for Health Impact Assessment in Alaska, State of Alaska Department of Health and Human Services, http://dhss.alaska.gov/dph/Epi/hia/Documents/AlaskaHIAToolkit.pdf, at 6 (accessed Jan. 21, 2019).

[2046] 42 USC § 4332.

[2047] Technical Guidance for Health Impact Assessment in Alaska, State of Alaska Department of Health and Human Services, http://dhss.alaska.gov/dph/Epi/hia/Documents/AlaskaHIAToolkit.pdf, at 4 (accessed Jan. 21, 2019).

[2048] National Research Council 2011. Improving Health in the United States: The Role of Health Impact Assessment. Washington, DC: The National Academies Press. Appendix A at 110. https://doi.org/10.17226/13229 (accessed Jan. 23, 2019).

[2049] National Research Council 2011. Improving Health in the United States: The Role of Health Impact Assessment. Washington, DC: The National Academies Press. Appendix A at 110. https://doi.org/10.17226/13229 (accessed Jan. 23, 2019). The Baseline community health analysis report completed for the North Slope Borough for the NPR-A IAP/EIS in July, 2012, may be one example, wherein the baseline report essentially constituted an HIA. http://www.north-

Baseline studies to determine pre-development conditions should include air and water quality, rates and factors of, among other conditions, asthma, obesity (and overweightness), diabetes, cancer, chronic obstructive pulmonary disease, cardiovascular diseases, cerebrovascular diseases, unintentional injury, substance abuse, depression, and suicide. Comprehensive baseline information pertaining to subsistence resources and practices must also be captured. The direct, indirect, and cumulative impacts of proposed development on subsistence and human health, mental health, risk of harm and injury, and climate change should also be addressed. The HIA can integrate all of the data, public comments, impacts and recommendations to systematically address health outcomes and determinants prior to inclusion in final NEPA documents.

Adequate completion of these steps would also require BLM to consider an array of health-focused mitigation measures. An example can be found within the HIA for Red Dog mine, which includes mitigation and monitoring requirements.[2050] One such measure should engage independent scientists, academics, and local experts to perform an environmental and health assessment of oil and gas leasing. This assessment would also include a mechanism through which public input could be integrated into leasing decisions, or, at the very least, in the design and review of monitoring programs, the issuing of leases, and the evaluation of any future proposed exploration or development.

While a specific Arctic National Wildlife Refuge Coastal Plain HIA should be completed as part of the EIS process at the leasing stage, the Point Thomson HIA[2051] serves as a constructive starting place of how this type of analysis can be helpful to the public and complementary to larger environmental impact statements. It states:

> The Alaska Collaborative HIA Working Group, composed of federal, state, and tribal medical and public health professionals and organized by the Department of Health and Social Services HIA Program, developed an Alaska-specific list of Health Effect Categories (HECs) which allows HIA practitioners to combine their human health knowledge in a specific area (e.g. injury prevention) with their knowledge of project design features (e.g. road traffic patterns, road design) in order to identify likely health impacts. HECs analyzed for the Point Thomson Project include:
>
> • Social Determinants of Health (SDH) including psychosocial, domestic violence and gender issues
> • Accidents and Injuries
> • Exposure to potentially hazardous materials

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slope.org/assets/images/uploads/BaselineCommunityHealthAnalysisReport.pdf (accessed Jan. 23, 2019).

[2050] U.S. EPA, Red Dog Mine Expansion Final Supplement Environmental Impact Statement (Oct. 2009), Vol. 1 at 2-43, 3-239 – 3-2263, Vol. 2 at Appendix E.

[2051] Point Thomson Human Health Impact Assessment, http://dhss.alaska.gov/dph/Epi/hia/Documents/PointThomsonCompletedHIA.pdf (accessed Jan. 23, 2019).

• Food, Nutrition, and Subsistence Activity
• Infectious Disease
• Water and Sanitation
• Non-communicable and Chronic Diseases
• Health Services Infrastructure and Capacity

> To gather a variety of perspectives, the HIA Team hosted a panel on October 29, 2010, to consider the Point Thomson Project, its implications for human health, and to rank and rate those human health impacts. This panel was conducted in a focus group format in order to discuss a collection of impacts already identified by the HIA team. The focus group consisted of members of the HIA team, state public health professionals, state officials with excellent knowledge of the project, and international HIA experts.[2052]

Although a helpful guide, the Point Thomson Oil and Gas leasing EIS/HIA is not a sufficient substitute for a project-specific HIA. An HIA must be conducted specifically for the Arctic National Wildlife Refuge Coastal Plain which should cover a broader geographic area than just Nuiqsut, Kaktovik, and the North Slope Borough generally, as was done for Point Thomson.

In conclusion, BLM's decision not to complete an HIA fails to meet NEPA standards and Tax Act requirements for rigorous environmental review at every stage. Its decision was not "consistent with recent NEPA analyses on the North Slope," given the established practice of HIA's conducted at the lease sale stage for proposed oil and gas development on the North Slope. This decision is not consistent with the use of HIA's at the lease sale stage by Department of Interior agencies as part of the NEPA process. BLM's approach ignores scoping comments that clearly raised this issue for analysis now. BLM must conduct a systematic and project-specific HIA for the proposed lease sales on the Coastal Plain as part of a revised draft EIS.

4. Environmental Consequences

Over and above the absence of an HIA, BLM's analysis of public health in the DEIS has significant shortcomings and must be substantially revised. As an initial matter, BLM fails to address all of the factors which may impact public health.

HIA's expressly recognize eight different Health Effects Categories (HECs) that agencies must consider in assessing impacts to public health. HECs supply the fundamental framework for these analyses and allow the HIA practitioner to systematically review each human health area in the light of a project design, to look at all possible health effects. The HECs required for evaluated are: Social Determinants of Health (SDH); Accidents and Injuries; Exposure to potentially hazardous materials; Food, Nutrition, and Subsistence Activity; Infectious Disease;

[2052] Point Thomson Human Health Impact Assessment, http://dhss.alaska.gov/dph/Epi/hia/Documents/PointThomsonCompletedHIA.pdf, at ES-2 (accessed Jan. 23, 2019).

Water and Sanitation; Non-communicable and Chronic Diseases; Health Services Infrastructure and Capacity.[2053] The DEIS does not recognize the HECs.

Alternatively, the NSB has identified health impact determinants in their 2014 Health Indicators Report. This Report provides a comprehensive list of Indicators of Health Outcomes and Health Determinants that an agency needs to evaluate for purposes of health impacts from oil and gas on the North Slope. These 15 indicators are: Overall Health; chronic conditions; communicable diseases, mental health, maternal and child health; injuries; personal income and employment; living conditions; food environment; community well-being; cultural well-being and traditional economy; municipal infrastructure; health care services; data sources and representative indicators; and exposure to environmental contaminants.[2054]

At a minimum, the DEIS needed to acknowledge and fully address one or the other of these important sources of health indicators. The DEIS fails to do so, and as discussed below, where it addresses some of these indicators, its analysis is insufficient. A revised draft EIS is necessary to address the shortcomings of BLM's analysis.

a. Outdated and Incomplete Data

The demographic and health information cited within the DEIS is outdated and incomplete. The BLM references a 2012 document and states that the analysis is based on information "through 2010."[2055] This data is too old and more recent health data should be utilized for the purposes of this EIS.

Moreover, the BLM's reliance on data from the North Slope Borough (NSB) has limitations. It fails to capture the entire impacted population and account for communities on the southside of the Brooks Range, in both the United States and Canada. The community of Utqiagvik, with its considerable size and heath care infrastructure, also has the potential to skew borough-wide data and is not representative of the smaller communities, like Kaktovik, that are more likely to be impacted by the leasing program. At a minimum, BLM must acknowledge that such community-specific data is incomplete or unavailable pursuant to 40 C.F.R. § 1502.22. Similarly, the NSB has different healthcare delivery systems than communities outside of the borough. Additional data, from communities on the southside of the Brooks Range should be compiled, analyzed, and incorporated into this document. Sources of this data could be the Tanana Chiefs Council (TCC), the Council of Athabascan Tribal Governments (CATG), and or the Alaska Native Tribal Health Consortium (ANTHC). Finally, we note that where BLM cites findings and data for Nuiqsut, the agency is citing findings from previous EIS's. BLM makes comparisons between communities but does not cite any data or peer-reviewed studies for Nuiqsut to support its claims. This is not a scientifically sound approach to BLM's public health analysis.

[2053] State of Alaska Health Impact Assessment Program, Department of Health and Social Services, Technical Guidance for Health Impact Assessment in Alaska (2015) at 20-22.

[2054] *See* North Slope Borough, Health Indicators in the North Slope Borough (June 2014) [hereinafter NSB Health Report].

[2055] DEIS vol. 1 at 3-239.

As we discussed in our scoping comments, baseline data is essential to allowing public health experts to understand pre-development conditions and potential future trends associated with how actions on the landscape and/or within communities may change health outcomes for certain populations. BLM's failure to comprehensively establish a baseline could irreversibly compromise how oil developments health impacts are studied and understood.

b. Scope of Analysis

BLM's analysis of public health impacts is too limited in geographic scope and inconsistent with other, related elements of the DEIS. In our scoping comments we discussed how impacts to health should include all communities that are connected to the Coastal Plain through ecological and social systems. We specifically named Arctic Village, Fort Yukon, Venetie, Chalkyitsik, Beaver, and the Canadian communities of Old Crow and Fort McPherson. Without a regional approach, BLM's analysis is flawed and incomplete.

BLM's sole focus on one North Slope community and the use of NSB data is incorrect and should be expanded to include all communities that have a (social and ecological) connection to the Coastal Plain. BLM acknowledges the connections between human health and subsistence, and BLM acknowledges how 22 Alaskan communities and seven Canadian user groups are relevant if post-lease oil and gas activities change caribou resource availability or abundance for those users.[2056] BLM goes on to write that "an overall reduction in the PCH could also affect harvest success among Inupiaq, the Gwich'in people, and Inuvialuit caribou hunters."[2057] BLM's focus on only one North Slope community fundamentally fails to meaningfully analyze how other communities could have their health impacted by the leasing program. Because of the leasing program's connections to resources and these resources connections to health, BLM must comprehensively analyze how potential changes to subsistence resource availability and harvest will impact regional residents' health in both Alaska and Canada.

BLM's geographic scope also fails to consider impacts from transportation. For instance, BLM does discuss impacts spanning to Dutch Harbor, despite the EIS asserting impacts would be considered for such shipping routes. BLM entirely fails to discuss impacts to subsistence whaling which may affect communities along the coast as a result of increased shipping. Additional health impacts should be considered for increased air pollution along shipping routes which could negatively affect coastal communities. BLM should also fully consider health impacts to the community of Dutch Harbor as a result of increased shipping activity taking place there. BLM also fails to consider the health impacts of increased traffic on the Dalton Highway, including impacts to the community of Bettles, which would likely result from oil and gas leasing and development on the Coastal Plain. Increased air pollution, as well as increased likelihood of accidents and injuries along the highway are important health considerations which are completely unaddressed in the DEIS.

[2056] DEIS vol. 1 at 3-160.
[2057] DEIS vol. 1 at 3-173.

BLM also arbitrarily and improperly limits the scope of its NEPA analysis by failing to consider impacts from all phases of oil and gas activities. BLM only looks at post-lease activities that include seismic and drilling exploration, development, and transportation.[2058] BLM should not limit its analysis of the impacts to only post-leasing activities and needs to include the full range of direct, indirect, and cumulative impacts to public health that could occur from the program. This includes from any proposals to conduct pre-leasing seismic exploration on the Coastal Plain. As discussed elsewhere, BLM is currently in the process of reviewing an extensive seismic proposal from SAExploration that could cause lasting damage to tundra, vegetation, water quality, fish, wildlife, and other resources. That damage can in turn significantly harm human health. BLM also failed to account for other activities like gravel mining, which have severe sound and other environmental impacts that could deter caribou and other species from important habitat areas. BLM's deficient analysis of the full range of resource impacts from the broad scope of activities likely to occur on the Coastal Plain and to nearby areas means BLM has dramatically underestimated the potential impacts from the oil and gas program and related activities. BLM needs to revise and reissue its EIS to ensure it actually takes into consideration the full range of potential impacts to public health.

c. "Mixed Impacts"

Ambiguity of how positive and negative impacts are quantified presents challenges in understanding BLM's analysis of public health. The DEIS makes the assumption that oil development will lead to a better delivery of health services but there is nothing to support this premise described within the document. Relatedly, health services do not necessarily mean a healthier population and better health outcomes. Increased funding for health and social programs could potentially be enabled by oil revenue, but BLM fails to consider how these increases in funding would compare to potential increases in negative health outcomes and health care costs caused by an oil and gas leasing program.[2059]

Moreover, BLM also fails to consider that not all communities that could be impacted by the Coastal Plain oil and gas leasing program will benefit from revenue derived from development activities. Communities south of the Brooks Range, who are outside of the NSB, will receive no revenue from royalties or the taxation of infrastructure. These communities' ecological, social, economic, and cultural systems may be impacted while receiving none of the monetary benefits of development. These inequities and disparities must be considered by BLM in their analysis.

d. Exposure to Hazardous Materials

BLM's discussion on air quality issues in rural Alaska villages mentions "indoor air quality" alongside sources of pollution like diesel emissions. What BLM specifically means by

[2058] DEIS vol. 2 Appendix E at E-2.

[2059] In the DEIS, BLM says that all action alternatives should not affect demand for health care services. DEIS vol. 1 at 3-246. This statement is unsubstantiated.

"indoor air quality" should be articulated in greater detail as this phrase does not articulate a clear harm.

BLM's scope of analysis for exposure to hazardous materials is too narrow and solely considers residents of the NSB. Risks from exposure to hazardous materials in other communities should also be considered within this analysis.

e. Mental Health

Mental health impacts are not discussed at all in the DEIS, despite the fact they are already occurring due to stress related to this leasing process (fear of environmental contamination, food security, cultural change, acculturative stress). BLM's analysis entirely fails to capture how this leasing program will impact regional resident's mental health. Within the subsistence uses and resources section, BLM cites the FWS and writes that the program area is considered sacred ground to the Gwich'in.[2060] BLM goes on to say within this section that "caribou are a resource of primary subsistence, economic, cultural, and spiritual importance for the community of Arctic Village."[2061] The stress and mental anguish associated with the potential loss of irreplaceable and culturally important lands must be analyzed when considering the mental health impacts of a Coastal Plain leasing program for Gwich'in communities and all regional residents who have a spiritual connection these lands.

BLM briefly acknowledges that "food security can be a source of stress in NSB households, particularly Inupiat households."[2062] The connection between the leasing program and mental health challenges associated with food insecurity should be considered. This analysis should extend beyond the NSB and include all communities connected to the Coastal Plain's subsistence resources. As the Executive Director of the Gwich'in Steering Committee has repeatedly explained, protecting the Porcupine Caribou Herd is an issue of food security for the Gwich'in.[2063] Relatedly, BLM should analyze how concerns (perceived and/or real) around the safety of subsistence resources could impact mental health.

Finally, BLM fails to mention how this planning process and all subsequent planning and permitting processes on the Coastal Plain will impact the mental health of Inupiaq, Gwich'in, and Inuvialuit peoples. The direct mental health impacts of this DEIS should be considered and described in detail.

[2060] DEIS vol. 1 at 3-164.

[2061] DEIS vol. 1 at 3-165.

[2062] DEIS vol. 1 at 3-240.

[2063] *See* Bernadette Demientieff, "Tax move to open ANWR blatent disregard for human rights," Daily News Miner, Dec. 7, 2017, http://www.newsminer.com/opinion/tax-move-to-open-anwr-blatant-disregard-for-human-rights/article_0daecb24-db35-11e7-ad38-0368a6b96476.html (accessed Feb. 20, 2019). *See also* Bernadette Demientieff, "The Gwich'in people will not back down when our sacred Arctic National Wildlife Refuge lands are at risk," Anchorage Daily News Opinion, Feb. 12, 2019, https://www.adn.com/opinions/2019/02/13/the-gwichin-people-will-not-back-down-when-our-sacred-arctic-national-wildlife-refuge-lands-are-at-risk/ (accessed Feb. 20, 2019).

f. Water Quality

BLM's analysis of water quality fails to consider how oil and gas development could affect the safety of subsistence resources. The contamination of subsistence resources because of poor water quality and the risk it poses to the consumers of subsistence resources should be analyzed within the document.

g. Social Networks

While BLM acknowledges how subsistence resources and practices create social cohesion and networks of sharing and cooperation across the region, BLM fails to consider how these elements of connection contribute positively to the health and wellness of regional residents. A significant body of science exists around the public health benefits of social networks, and these benefits should be described within the document.[2064] Specifically, the health benefits of social networks created and enabled by subsistence resources and practices should be quantified and included within BLM's analysis.

The health impacts of compromised social networks because of changed or reduced subsistence resources or practices should also be considered. BLM states that "reductions in the success of subsistence harvests for Kaktovik residents would accelerate the transition from subsistence resources to store-bought foods, worsening nutritional outcomes and food security."[2065] Disruptions from oil development to ecological and social systems, relating specifically to cooperation and sharing, may similarly cause a transition from subsistence resources to store-bought foods for people throughout the region. This type of secondary outcome should be considered by BLM.

h. Food Security

As we discussed in our scoping comments, BLM must analyze how a Coastal Plain leasing program will impact all three pillars of food security: food availability, food access, and food use.[2066] Potential impacts on food security should be quantified and described in greater detail. Within the subsistence uses and resources section, BLM states that a total loss of caribou harvest for Venetie would represent a 31 percent decline in subsistence foods for the community.[2067] Potential impacts with food security include fear of contamination of subsistence food, decreased ability to access adequate subsistence resources, and a lack of recognition of the limitations of a subsistence-cash economies in many of these communities. BLM should analyze

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[2064] See, among others: Smith, K.P. and Christakis, N.A. (2003). Social Networks and Health. *The Annual Review of Sociology*, 34: 405-429.

[2065] DEIS vol. 3 at 243.

[2066] See: World Health Organization. (2014). Trade, Foreign Policy, Diplomacy, and Health: Food Security. Available at: http://www.who.int/trade/glossary/story028/en/.

[2067] DEIS vol. 3 at

how impacts to subsistence resources will comprehensively impact communities' health and wellness.[2068]

i. Safety

BLM fails to consider how oil development in the program area will affect subsistence resource movements, alter hunting patterns, and present safety risks for all regional residents, north and south of the Brooks Range.[2069] Again, and as mentioned before, the scope of this analysis is too narrow. A Coastal Plain leasing program has the potential to alter how and when communities from across the region access the PCH and other subsistence resources, and this will likely create new dangers on the landscape and increase the risk of injury. This is particularly true for the community of Kaktovik, which is most likely to be located in an area of close proximity to gravel roads, pipelines, and other infrastructure.

Relatedly, BLM writes that there could be "slight increase in accidents due to changes in subsistence hunting patterns."[2070] BLM should cite the source that formally estimates that changed subsistence hunting patterns will lead to increases in public health services and describe how it was calculated.

j. Contamination of Food Sources

BLM assumes that a Coastal Plain leasing program will result in a low likelihood of subsistence food contamination because there have been low measurable contamination impacts to food sources to date, despite high levels of oil and gas activities on the North Slope.[2071] This statement does not account for where oil development has historically occurred or the fact that only one community, Nuiqsut, has been directly impacted by oil and gas activities in their core subsistence use areas and that the true impacts of existing and future oil development have not yet been fully felt or understood. The absence of a particular outcome in the past, particularly when not analogous in context, is not a sound rationale to justify the potential for no future impacts.

BLM writes that "except for a major spill, there are likely to be only negligible health effects from contamination of food sources as a result of the action alternatives."[2072] BLM should articulate what these presumed "negligible health effects" may be and describe their sources and any potential mitigation measures.

[2068] See: Smith, J., Saylor, B., Easton, P., & Wiedman, D. (2009). Measurable benefits of traditional food customs in the lives of rural and urban Alaska Inupiaq elders. Alaska J Anthropol, 7(1), 89-99.

[2069] DEIS vol. 3 at 243.

[2070] DEIS vol. 3 at 245.

[2071] DEIS vol. 3 at 244.

[2072] DEIS vol. 3 at 244.

k. Climate Change and Health

BLM fails to meaningfully describe the anticipated public health impacts of climate change. The Fourth National Climate Assessment contains an entire chapter on Alaska and a major section on human health. The document reads: "The impacts of climate change are likely to affect all aspects of Alaska Native societies, from nutrition, infrastructure, economics, and health consequences to language, education, and the communities themselves."[2073] Relatedly, the State of Alaska recently published a public health bulletin on climate change in Alaska.[2074] The BLM should incorporate the comprehensive findings of these reports into its public health analysis for the region. Finally, BLM fails to describe how climate change impacts will potentially be compounded by the impacts of an oil and gas leasing program. These cumulative impacts must be quantified to fully consider potential health conditions within the region.

l. Communicable Disease

BLM does not consider health impacts from infectious or communicable disease or as a result of an influx of non-local workers associated with oil and gas activities. This important health determinant is unacknowledged in the DEIS despite extensive research and studies on the topic,[2075] and its recognition as an important issue by the North Slope Borough. In its Health Indicators Report, the NSB described chlamydia and gonorrhea as the two most common sexually transmitted diseases in relation to North American resource development, and also discussed the importance of considering the spread of communicable diseases like infectious diarrheal illnesses and tuberculosis.[2076] BLM failed to discuss these important health indictors and potential impacts from oil and gas activities.

5. Mitigation Measures

BLM failed to conduct a meaningful analysis of mitigation measures to avoid and minimize impacts to public health. Had BLM developed an HIA for the Lease DEIS, such mitigation would have been considered in a meaningful and transparent process. The standard in Alaska is for HIA's to include potential prevention and mitigation measures that address public health impacts for ultimate agency consideration.[2077] The HIA for the 2007–2012 Outer

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[2073] See: Fourth National Climate Assessment, Chapter 4, at: https://nca2018.globalchange.gov/chapter/26/

[2074] See: Assessment of the Potential Health Impacts of Climate Change in Alaska at: http://www.epi.alaska.gov/bulletins/docs/rr2018_01.pdf

[2075] *See, e.g.*, Deziel, et al, Shale gas activity and increased rates of sexually transmitted infections in Ohio, 2000– 2016 (2018) (analyzing how sexually transmitted infections can increase through sexual mixing patterns associated with labor migration).

[2076] NSB Health Report at 12-14.

[2077] Technical Guidance for Health Impact Assessment in Alaska, State of Alaska Department of Health and Human Services,

Continental Shelf Oil and Gas Leasing Program, for example, presented nine alternative plans to the proposed action that were included in the EIS report, and as a result the U.S. Minerals Management Service committed to develop new health-related mitigation measures at the lease sale stage.[2078] Past examples of HIA recommended mitigation measures include the establishment of a health advisory board, public health monitoring, contaminant monitoring and mitigation measures for reducing exposure, subsistence intake studies, public safety plan, employee education, and an independent oil spill review board. BLM must conduct an HIA for leasing on the Coastal Plain to inform the health-related mitigation measures it eventually considers. An HIA is a necessary prerequisite.

BLM should also consider a health-focused mitigation measure. BLM should adopt a measure that provides for health-focused coordination with communities, similar to what was done in ROP 36 for subsistence.[2079] Because Kaktovik data are limited and not publicly available, it is critical that such a mitigation measure requires the establishment of appropriate baseline data.

Z. BLM FAILS TO ADEQUATELY ANALYZE NATIONAL SECURITY ISSUES.

The draft EIS asserts, mistakenly and without support, that "Development in the Coastal Plain is anticipated to contribute to the nation's economy through . . . increase in energy security (or reduced reliance on imported petroleum products)."[2080] First, there is no reason to expect that all or even most of the oil produced from the Coastal Plain — if any eventually is produced — will stay in the United States. In late 2015, after intensive lobbying from oil companies, restrictions on export of crude oil was made illegal in the Consolidated Appropriations Act of 2016.[2081] Since then, export of domestically produced crude oil has exploded, reaching more than a million barrels a day in 2017[2082] and three million barrels a day late last year.[2083] Assuming this trend continues, by the time any oil could reasonably be produced from the Coastal Plain, it would be in excess of U.S. demand and likely simply exported into the global market for foreign consumption. The revised draft EIS must recognize and analyze this.

Equally damning is the inherent vulnerability of Refuge oil to sabotage or other disruption. As former Central Intelligence Director James Woolsey testified to Congress, in 2001

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http://dhss.alaska.gov/dph/Epi/hia/Documents/AlaskaHIAToolkit.pdf, at 3 (accessed Jan. 21, 2019).

[2078] Dannenberg et al, Use of Health Impact Assessment in the U.S. 27 Case Studies, 1999–2007, Am J Prev Med 2008; 34(3) at 251.

[2079] DEIS vol. 1 at 2-32.

[2080] DEIS vol. 1 at 3-230.

[2081] *See, e.g.*, Rapier, R., 2017, *Why the U.S. Exports Oil*, Forbes (Sept. 30, 2107).

[2082] Energy Information Agency, 2018, *U.S. crude oil exports increased and reached more destinations in 2017* (March 15, 2017).

[2083] Gaffen, D., 2018, *In major shift, U.S. now exports more oil than it ships in*, Reuters Business News (Dec. 6, 2018).

when the United States was genuinely dependent on imported oil, "I have always been . . . tolerant of having oil wells around. [T]he problem with ANWR . . . is the Trans-Alaska Pipeline, which is . . . easily interfered with and easily disrupted."[2084] A year later, he wrote that the pipeline "is frightening insecure" and that drilling in the Refuge would make it "the fattest energy-terrorist target in the country."[2085] A more recent analysis of pipeline security points out that even under normal operating conditions "pipelines more than forty years old are much more likely to rupture or leak" (the Trans-Alaska Pipeline is 42) and "[w]hile there have been no major incidents involving a domestic cyberattack on the pipeline infrastructure, the risks are increasing exponentially."[2086] The revised EIS must candidly acknowledge this intrinsic insecurity of oil produced from the Refuge and contrast it with the energy security achievable through safer and cleaner energy, non-fossil fuel alternatives.[2087]

VI. BLM'S ANILCA SECTION 810 ANALYSIS IS FLAWED.

BLM's Alaska National Interest Lands Conservation Act (ANILCA) Section 810 analysis fails to sufficiently evaluate the impacts on subsistence resources. BLM's analysis is deeply flawed and fails to account for the full scope of potential impacts to subsistence users from all phases of oil and gas activities and fails to consider restrictions to protect all potentially affected communities.

Title VIII of ANILCA recognizes that subsistence uses are a public interest and provides a framework to consider and protect subsistence uses in agency decision-making processes.[2088] Section 810 sets forth a procedure through which effects to subsistence resources must be considered and provides that "actions which would significantly restrict subsistence uses can only be undertaken if they are necessary and if the adverse effects are minimized."[2089]

ANILCA section 810 consists of a two-tiered process evaluating impacts. The federal agency first makes an initial finding, referred to as the "tier-1" determination, in determining whether to withdraw, reserve, lease, or otherwise allow the use, occupancy, or disposition of land.[2090] The agency is required to "evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for the purposes sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy, or disposition of

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[2084] Woolsey, R.J., 2001, *Testimony before the Subcommittee on Energy of the Committee on Science of the U.S. House of Representative, Hearing on U.S. Energy Security: Options to Decrease Petroleum Use in the Transportation Sector*, Nov. 1, 2001.

[2085] Woolsey, R.J., A.D. Lovins, and L.H. Lovins, 2002, *Energy security: It takes more than drilling*, Christian Science Monitor (March 29, 2002.

[2086] Dancy, J.R and V.A. Dancy, 2017, *Terrorism and Oil and Gas Pipeline Infrastructure: Vulnerability and Potential Liability for Cybersecurity Attacks*, One J: Oil and Gas, Natural Resources, and Energy Journal 6(2):579-619.

[2087] *See, e.g.*, Wong, J. and L. Johnson, 2010, *A Clean Energy Bargain: More Jobs, Less Global Warming Pollution, and Greater Security*, Natural Resources Defense Council.

[2088] 16 U.S.C. §§ 3111–3126.

[2089] *Amoco Production Co. v. Village of Gambell, Alaska*, 480 U.S. 531, 544 (1987).

[2090] ANILCA § 810(a), 16 U.S.C. § 3120(a).

public lands needed for subsistence purposes."[2091] As part of this determination, BLM must consider the cumulative impacts[2092] and analyze:

> 1) Reductions in the abundance of subsistence resources caused by a decline in the population or amount of harvestable resources;
> 2) Reductions in the availability of resources used for subsistence purposes caused by alteration of their normal locations, migration, or distribution patterns; and;
> 3) Limitations on access to subsistence resources, including from increased competition for the resources.[2093]

If the agency, after conducting the tier-1 analysis, determines that the activity will not "significantly restrict subsistence uses,"[2094] then the agency issues a Finding of No Significant Restriction and the requirements of ANILCA Section 810 are satisfied. However, if the agency makes the initial determination that the action would "significantly restrict subsistence uses," the agency must then conduct a "tier-2" analysis.[2095]

Under tier-2, if a proposed action would significantly restrict subsistence uses, BLM can only adopt that action if it finds that the restriction on subsistence is necessary and consistent with sound public lands management principals; involves the minimal amount of public lands necessary to accomplish the purpose of the use, occupancy or disposition of public lands; and takes reasonable steps to minimize the adverse impacts to subsistence uses and resources from any use.[2096] Thus, ANILCA Section 810 imposes procedural requirements as well as substantive restrictions on the agency's decisions.[2097] The agency must provide notice to local and regional councils and hold hearings in potentially affected communities.[2098] Under BLM's guidance, if the action "may" restrict subsistence uses, BLM is required to take a precautionary approach and comply with the notice and hearing procedures in Section 810.[2099]

As discussed in the following sections, BLM's Section 810 findings are arbitrary and contrary to science, traditional knowledge, and BLM's own discussion about impacts to subsistence elsewhere in the draft EIS. It is particularly egregious that BLM has failed to

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[2091] ANILCA § 810(a), 16 U.S.C. § 3120(a); *Hanlon v. Barton*, 470 F. Supp. 1446, 1448 (D. Alaska 1988).

[2092] *Sierra Club v. Penfold*, 664 F. Supp 1299, 1310 (D. Alaska 1897), *aff'd*, *Sierra Club v. Penfold*, 857 F.2d 1307 (9th Cir. 1988).

[2093] State Director, Bureau of Land Mgmt., Instruction Memorandum No. AK-2011-008: Instructions and Policy for Compliance with Section 810 the Alaska National Interest Lands Conservation Act (ANILCA) (Jan. 14, 2010) [hereinafter Instruction Memorandum].

[2094] 16 U.S.C. § 3120(a).

[2095] *Kunaknana v. Clark*, 742 F.2d 1145, 1151 (9th Cit. 1984); *Hanlon*, 470 F. Supp. at 1448.

[2096] 16 U.S.C. § 3120(a)(1)–(3).

[2097] *Sierra Club v. Marsh*, 872 F.2d 497, 502–03 (9th Cir. 1989).

[2098] 16 U.S.C. § 3120(a).

[2099] BLM Instructional Memorandum at 6-2.

recognize the significant impacts likely to occur to the Gwich'in people, who are culturally and spiritually connected to the Porcupine Caribou Herd and depend on the herd for their survival. BLM needs to substantially revise its Section 810 analysis to consider the full range of impacts to subsistence, to apply the correct legal standards when conducting its 810 analysis, and to hold 810 hearings in all communities that may experience impacts to subsistence.

A. BLM FAILS TO ADEQUATELY ANALYZE THE OVERALL IMPACTS TO SUBSISTENCE USERS AND IMPROPERLY LIMITED THE SCOPE OF ITS ANALYSIS.

Overall, BLM's 810 findings are arbitrary and contrary to the information before the agency. BLM's ANILCA 810 evaluation finds that the cumulative case may significantly restrict subsistence uses and needs *solely* for the community of Kaktovik. BLM does not find significant restrictions for any Gwich'in communities, nor even consider Canadian villages. This is egregious, particularly in light of the fact that Canadian users account for the vast majority — in the past up to 85 percent — of the harvest of the Porcupine Caribou Herd.[2100] Moreover, it is inappropriate for BLM to limit its findings of restrictions on Kaktovik to only the cumulative case. As outlined below, it is clear that the direct and indirect impacts from leasing will significantly restrict subsistence resources in even that community. Based on these arbitrary findings, the agency only intends to hold a public subsistence hearing in Kaktovik during the draft EIS comment period. BLM will not hold ANILCA 810 hearings in any other affected communities.

The Gwich'in people live in fourteen small villages across a vast area extending from northeast Alaska to the northern Yukon and Northwest Territories in Canada. Though the Inupiat community of Kaktovik is the only community located on the Coastal Plain, other villages such as Arctic Village, Fort Yukon, Venetie, Chalkyitsik, Beaver, and Canadian villages such as Old Crow and Fort McPherson, are located within the range for the Porcupine Caribou Herd and will be impacted by any oil and gas activities on the Coastal Plain.[2101] The draft EIS recognizes that many other communities, such Wiseman, Birch Creek, and Stevens Village, have reported geographic, historic/prehistoric, or cultural ties to the Arctic Refuge as a whole.[2102] BLM further acknowledges that subsistence harvesting and sharing patterns for "22 Alaskan communities and seven Canadian user groups are relevant if post-lease oil and gas activities changes caribou

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[2100] DEIS vol. 1 at 3-168; DEIS vol. 2 at M-27 to M-32; Agreement Between the Government of Canada and the Government of the United States of America on the Conservation of the Porcupine Caribou Herd, E100687 - CTS 1987 No. 31 (July 17, 1987), available at http://www.treaty-accord.gc.ca/text-texte.aspx?id=100687. Additionally, this analysis does not comply with international treaty obligations, which requires consultation and input from the Porcupine Caribou Board to consider the interests of both Alaskan and Canadian Porcupine Caribou subsistence users. *See supra* Part III.E (re: international treaty obligations).

[2101] Gwich'in Steering Committee, Primary Habitat of the Porcupine Caribou Herd Map, *available at* http://ourarcticrefuge.org/wp-content/uploads/2012/10/mappch.pdf.

[2102] DEIS vol. 1 at 3-160.

resource availability or abundance for those users."[2103] Despite this, BLM arbitrarily limits its ANILCA 810 analysis of subsistence impacts to four communities: Kaktovik, Nuiqsut, Arctic Village, and Venetie.[2104] BLM did not adequately assess whether oil and gas leasing on the Coastal Plain would significantly restrict subsistence uses in the remaining potentially affected communities, as required by ANILCA 810.

BLM also arbitrarily and improperly limits the scope of its ANILCA 810 analysis in the same way it improperly limited the scope of its NEPA analysis: BLM only looks at post-lease activities that include seismic and drilling exploration, development, and transportation.[2105] BLM should not limit its analysis of the impacts to only post-leasing activities and needs to include the full range of direct, indirect, and cumulative impacts to subsistence use that could occur from the program. This includes from any proposals to conduct pre-leasing seismic exploration on the Coastal Plain. As discussed elsewhere, BLM is currently in the process of reviewing an extensive seismic proposal from SAExploration that could cause lasting damage to tundra, vegetation, soils, permafrost, and other resources. That damage can in turn significantly harm wildlife through the degradation of their habitat. BLM also improperly excluded other forms of infrastructure and activities from what it considered as part of its 2,000 acres of impacts. This includes pipelines, which could cross large areas of the Coastal Plain and have the potential to divert caribou away from key areas. BLM also failed to account for other activities like gravel mining, which have severe sound and other environmental impacts that could deter caribou and other species from important habitat areas. BLM's deficient analysis of the full range of resource impacts from the broad scope of activities likely to occur on the Coastal Plain and to nearby areas means BLM has dramatically underestimated the potential impacts from the oil and gas program and related activities. BLM needs to revise and reissue its EIS to ensure it actually takes into consideration the full range of potential impacts to subsistence for purposes of its 810 analysis.

BLM also claims that, at each decision stage, BLM retains the authority to approve, deny, or reasonably condition any proposed on-the-ground activities based on compliance with applicable laws and policies. This is not consistent with the interpretation BLM has taken with regard to its leases elsewhere (i.e., the NPR-A), which in turn has led to serious and unmitigated impacts to the community of Nuiqsut. For example, in the context of the GMT-2 decision near the community of Nuiqsut in the NPRA, BLM refused to adopt the no action alternative, instead claiming that the lease waived the agency's right to later say no to development projects — regardless of how serious the impacts were to subsistence and other resources. If BLM's assertion in the draft EIS is that it retains the authority to later say no to projects, BLM needs to clarify in the draft EIS and any proposed lease terms so it is absolutely clear that a lease does not grant the right to conduct any future activities and that BLM retains the authority to fully prohibit any later proposals. Without clearly retaining this authority, BLM cannot ensure compliance with Section 810.

[2103] DEIS vol. 1 at 3-167.
[2104] DEIS vol. 2 Appendix E at E-3.
[2105] DEIS vol. 2 Appendix E at E-2.

BLM also appears to bypass conducting a meaningful analysis of impacts on the basis that, until BLM receives and evaluates a request for an "exploration permit, permit to drill, or other authorization that includes site-specific information about a particular project, impacts of actual exploration and development that might follow lease issuance are speculative, as so much is unknown as to location, scope, scale, and timing of that exploration and development."[2106] BLM also states in analyzing the cumulative case that potential impacts to caribou abundance would be "minor due to the speculative locations of future proposed infrastructure."[2107] Speculative does not equal minor; the uncertainty about the exact location of infrastructure does not mean that the impacts to subsistence would be minor, particularly if that infrastructure is ultimately located in sensitive areas or disrupts migration patterns or obstructs migration corridors. BLM cannot circumvent doing a robust analysis of the potential impacts merely because the impacts are potentially speculative at this stage. BLM needs to analyze the full range of potential impacts to determine if it might cause impacts to subsistence, and needs to follow a precautionary approach in making those determinations.

BLM's analysis of impacts to subsistence access is wholly inadequate. The agency talks about impacts to subsistence use areas in such a cursory and vague way that there is no indication the agency actually took a meaningful look at the ways in which access could be impacted. The 810 analysis concludes "[l]egal and physical access to subsistence resources may be altered, depending on the locations of CPFs and industry-established safety areas; however it is likely that large-scale access to subsistence resources would be maintained."[2108] BLM appears to dismiss what it acknowledges will be impacts to subsistence by writing them off as unclear at this point since it does not know the exact infrastructure location. That is contrary to Section 810 and its purpose. BLM cannot write off impacts by concluding it does not know the exact location well enough to analyze them; it needs to actually take the time to analyze all potential impacts to subsistence, including cumulative impacts. BLM's conclusion that it is "likely" on a large scale that access will be maintained is also not sufficient. When the agency is evaluating the potential impacts to subsistence, if the action "may" restrict subsistence uses, BLM is required to take a precautionary approach and comply with the notice and hearing procedures in Section 810.[2109] BLM's conclusion that it is "likely" on a wholly undefined "large-scale" that there will not be impacts is unsupported and meaningless. BLM cannot ignore the significance of these impacts by viewing them on such a large scale that effectively hides those impacts; it needs to look at what those impacts could look like at both local and broader scales. BLM failed to follow that precautionary approach with these findings, contrary to Section 810 and BLM's guidance.

BLM's overall analysis of specific subsistence resources is also insufficient. As discussed in more detail in the next section, oil and gas leasing on the Coastal Plain is likely to have significant impacts on the Porcupine Caribou Herd, which will in turn restrict the abundance and availability of the herd for subsistence use. In the draft EIS, BLM states that "[d]evelopment would not significantly affect the availability of caribou for subsistence use."[2110] This

[2106] DEIS vol. 2 Appendix E at E-2.
[2107] DEIS vol. 2 Appendix E at E-18.
[2108] DEIS vol. 2 Appendix E at E-9.
[2109] BLM Instructional Memorandum at 6-2.
[2110] DEIS vol. 2 Appendix E at 7.

assumption erroneously assumes that caribou and other subsistence resources will still be present in the area despite the high likelihood of disturbance from noise and human activity. There are also potentially significant impacts to access to subsistence resources if subsistence users are physically blocked from accessing key subsistence resources, as has been the case in Nuiqsut. BLM fails to explain how the fully waivable lease stipulations, ROPs, and mitigation measures will ensure that caribou will not be deterred from this area and that hunters will still be able to access these resources.

BLM further assumes that hunters will be able to adapt to the changes occurring around them.[2111] BLM cannot rely on the potential for adaptation to bypass a positive subsistence finding under Section 810. How BLM foresees hunters adapting should be described. It is also necessary to consider that all hunters may not be able to adapt because of factors like increased cost of travel to more distant subsistence use areas and the need for better machinery to do so, which is not necessarily available to everyone that may be impacted. BLM should analyze and describe the limitations of adaptation to changed subsistence practices, resources, and conditions on the landscape.

BLM relies heavily on the experiences of Nuiqsut to describe likely circumstances for communities reliant upon the Arctic Refuge. In doing so, however, BLM fails to articulate the major differences temporally and physically between these two contexts. First, Nuiqsut is being significantly affected as a result of being surrounded by oil development. BLM cannot rely on other EISs, which incorrectly minimize subsistence impacts to Nuiqsut, as a way of shirking its ANILCA 810 obligations to fully and accurately consider the potential impacts to subsistence uses on the Coastal Plain. Second, development around Nuiqsut is ongoing and the full scope of impacts have yet to be realized. Even so, the impacts from the handful of projects that are starting to surround the community are already having significant impacts to subsistence users' ability to continue their way of life. BLM should not assume hunters have or will successfully adapt to resource development, especially since there are a number of large projects around Nuiqsut that are anticipated but have not yet been constructed. These include, among others, Greater Mooses Tooth Two, Willow, and Nanushuk. Drawing conclusions from such a dynamic set of circumstances presents limitations to knowing what will happen in the context of oil and gas leasing on the Coastal Plain. BLM does not acknowledge or otherwise account for these limitations in its efforts to correlate Nuiqsut's experiences to that which may occur to other communities. Finally, the geography and resources relevant to the NPR-A and Coastal Plain are very different, and affected communities are located in different landscapes with very different resource patterns. Under section 810, an analysis specific to communities relying upon the resources of the Arctic National Wildlife Refuge is necessary. BLM must evaluate the potential long-term or permanent impacts to the Porcupine Caribou Herd and other subsistence uses on the Coastal Plain by relying on the best science available, not by relying on unfounded analogies and unsupported conclusions.

There are also numerous impacts to fish that are not adequately considered in the draft EIS. The draft EIS acknowledges that non-salmon fish, including Dolly Varden and Bering

[2111] *See, e.g.*, DEIS vol. 1 at 3-177.

cisco, are important subsistence resources and that there could be impacts to both abundance and availability under Alternatives B and C.[2112] This alone is sufficient to trigger a positive finding under ANILCA 810 as subsistence use "may be affected."

BLM failed to adequately consider how oil and gas leasing could significant restrict the availability and abundance of fish as an important subsistence resource. The DEIS brushes aside these potential effects by stating that impacts will be mitigated by Lease Stipulations and ROPs.[2113] BLM provides no analysis to support why the Lease Stipulations and ROPs will effectively protect fish habitat. Further, many of the provisions contain discretionary carve outs. For example, Lease Stipulation 1 provides that "[o]n a case-by case basis, essential pipeline and road crossings would be permitted through setback areas,"[2114] Lease Stipulation 4 states, "[t]he BLM Authorized Officer may approve infrastructure necessary for oil and gas activities in these critical and sensitive coastal habitats, such as barge landing, docks, spill response staging and storage areas, and pipelines . . . on a case-by-case basis."[2115] Lease Stipulation 9 only requires "the lessee/operator/contractor [to] develop and implement an impact and conflict avoidance and monitoring plan to assess, minimize, and mitigate the effects of the infrastructure and its use on these coastal habitats and their use by wildlife and people" — all without any standards for approval.[2116] The discretionary nature of these protections will create inconsistent environmental protections and decisions across the Coastal Plain, and the exceptions could ultimately swallow the rule. More robust provisions, tied to meaningful standards must be implemented in order to adequately protect fisheries and other important subsistence resources.

The DEIS further disregards the potential impacts of noise on fish, based on a faulty premise that because seismic activity and pile driving will likely occur in winter that there will be no impact. Many fish that are important to subsistence, including Dolly Varden and grayling, overwinter in large congregations. If these overwintering locations are not known, these subsistence resources could be significantly impacted by winter exploration and development activities. Overwintering locations for fish of subsistence importance should be identified within BLM's analysis. If this information is not known, it should be researched prior to the competition of this document. Moreover, how pile driving, seismic activities, and other winter activities may impact the success of winter fishing should be described in detail.[2117]

Additionally, BLM's discussion of potential restrictions to use of marine mammals is deficient. The DEIS's environmental justice section acknowledges that there are impacts to subsistence use of bowhead whales and other marine mammals from oil and gas activities.[2118] Hunters are required to travel further as a result of noise and traffic.[2119] Reduced harvest of

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[2112] DEIS, vol. 2 Appendix E at E-5.
[2113] DEIS, vol. 2 Appendix E at E-5.
[2114] DEIS, vol. 1 at 2-4.
[2115] DEIS, vol. 1 at 2-7.
[2116] DEIS, vol. 1 at 2-15.
[2117] *See supra* (discussion re: fish and aquatic species and acoustic impacts).
[2118] DEIS, vol. 1 at 3-202.
[2119] DEIS, vol. 1 at 3-130.

whales would interrupt and alter sharing and trading networks with different communities and regions in Alaska and Canada.[2120] The DEIS fails to account for any of these impacts and merely concludes that large vessel traffic could temporarily disturb or displace whales or bearded/ringed seals. These animals demonstrate habituation to noise and activity associated with vessel traffic and onshore infrastructure when disturbance does not result in physical injury, discomfort, or social stress."[2121] This fails to adequately consider how harvest interruptions would restrict the availability of marine mammals for subsistence use.

BLM's analysis of impacts to marine mammals also completely fails to address impacts to polar bears and subsistence take of polar bears. The 810 analysis' marine mammals section does not even mention polar bears.[2122] BLM appears to have dismissed the analysis of any impacts to subsistence take of polar bears on the grounds that they do not comprise the majority of the wild foods subsistence users in the region consume.[2123] BLM's failure to account for impacts to polar bears is a serious omission from the 810 analysis. Impacts from seismic exploration alone, which BLM has not adequately analyzed elsewhere in the EIS, are significant and could lead to injury and lethal take of polar bears, particularly given the significant limitations and flaws with technologies used to detect denning polar bears. Any additional take of polar bears could have potentially serious impacts to this already imperiled species and its population, which could in turn impact subsistence take of polar bears. BLM needs to fully analyze this in its 810 analysis and elsewhere in the EIS.

BLM's failure to make a positive finding for Gwich'in communities should not absolve the agency of its obligation under tier-2 of ANILCA 810. Under tier-2, if a proposed action would significantly restrict subsistence uses, BLM can only adopt that action if it finds that the restriction on subsistence is necessary and consistent with sound public lands management principals; involves the minimal amount of public lands necessary to accomplish the purpose of the use, occupancy or disposition of public lands; and takes reasonable steps to minimize the adverse impacts to subsistence uses and resources from any use.[2124] BLM's evaluation of the availability of other lands for the purposes sought to be achieved and analysis of other alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence are also wholly inadequate. BLM's analysis of the availability of other lands provides only a cursory summary of the Tax Act and concludes that the alternatives would fulfill the purpose of the statute.[2125] BLM's evaluation of alternatives that would reduce or eliminate the use of lands needed for subsistence similarly states that the action alternatives would meet the purpose of the Tax Act and notes that some of the alternatives would result in less land being available for leasing.[2126] This is not a meaningful evaluation of the ways in which BLM can reduce impacts to subsistence. The 810 analysis fails to recognize that BLM is

[2120] DEIS, vol. 1 at 3-171.
[2121] DEIS, vol. 2 Appendix E at E-6.
[2122] DEIS, vol. 2 Appendix E at E-5 to E-6.
[2123] DEIS, vol. 2 Appendix E at E-3.
[2124] 16 U.S.C. § 3120(a)(1)–(3).
[2125] See, e.g., DEIS, vol. 2 Appendix E at E-10.
[2126] See, e.g., DEIS, vol. 2 Appendix E at E-10.

in no way obligated to open the entire Coastal Plain to leasing. BLM has not only the ability to further limit the areas it offers for lease, but an obligation under Section 810 to only allow an action if it is involves the minimal amount of public lands necessary to accomplish the purpose.[2127] BLM's cursory evaluation and apparent assumption that there is no difference between the different alternatives and how they relate to subsistence impacts goes against the requirements of Section 810 and fails to provide a meaningful evaluation of how BLM can minimize the impacts to subsistence users. Additionally, while BLM says that it will conduct the required analysis under subsections (a)(3)(A), (B), and (C) of Section 810 in the final analysis is insufficient because it does not provide affected communities the opportunity to review and comment on BLM's analysis and proposed measures before they are adopted. It is critically important that BLM release preliminary findings and recommendations in a revised 810 analysis so that the agency can receive input on them before the agency finalizes them.

Overall, BLM's analysis of the potential impacts to subsistence use is arbitrary, fails to consider the full range of potential impacts, and fails to comply with the requirements of Section 810 and BLM's guidance. The direct and indirect impacts to any of these subsistence resources necessitates a positive finding for purposes of Section 810. BLM's preliminary evaluation is so faulty that it inhibits participation by the communities that could be affected. BLM should issue a revised preliminary evaluation correcting these deficiencies and re-release it when the agency issues the revised draft EIS that is also necessary.

B. BLM FAILS TO ADEQUATELY ANALYZE IMPACTS TO THE PORCUPINE CARIBOU HERD AND GWICH'IN SUBSISTENCE USERS.

BLM's failure to make a positive ANILCA 810 determination for Arctic Village, Venetie, and all other communities who rely on the Porcupine Caribou Herd is in error.[2128] The Porcupine Caribou Herd (PCH) uses the Arctic Refuge throughout the year, with the Coastal Plain providing essential calving, post-calving, insect relief, and other summer habitat.[2129] The Gwich'in of Alaska and Canada are culturally and spiritually connected to the Porcupine Caribou Herd, which in turn relies on the Coastal Plain for calving, post-calving and other summer habitat. Despite acknowledging that oil and gas can have impacts on the Porcupine Caribou Herd, BLM concludes that there will not be an impact on the subsistence resources for the Gwich'in. This ignores best available science, traditional knowledge, and the human rights of the Gwich'in — a problem which is exacerbated by the fact that BLM will not hold ANILCA 810 hearings in any Gwich'in communities. BLM should hold 810 hearings in all communities where there may be impacts to subsistence.

For all development alternatives, BLM acknowledges some portion of the herd's high-use calving area will be subject to leasing and surface occupancy, and the likely result is displacement and a decline in calf survival.[2130] Although the restrictions on surface occupancy

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[2127] 16 U.S.C. § 3120(a)(1)–(3).
[2128] 16 U.S.C. § 3120(a).
[2129] *See supra* Part V.I (impacts to caribou); Caikoski. 2015.
[2130] DEIS vol. 2 Appendix E at E-6–E-9.

and leasing are slightly more stringent for Alternative C and Alternatives D1 and D2, all of BLM's proposed action alternatives would result in some level of displacement impacts on calving caribou,[2131] especially as impacts will extend across no surface occupancy and no leasing boundaries.[2132] Alternative B is particularly concerning, as it contemplates two central processing facilities, one of which could be located in area BLM identifies as a high-use calving area for the Porcupine Caribou Herd.[2133] BLM concludes that there would be similar impacts under each of the alternatives because there would be only 2,000 acres of disturbance in the program area.[2134] This ignores the fact that there are likely to be very different impacts depending on where and when BLM allows infrastructure and industrial activity. BLM needs to analyze these differences and how they will impact subsistence, and cannot rely solely on the direct footprint of development. As explained above, the impacts of oil and gas development are felt far beyond the direct footprint of oil and gas projects.

BLM's assertions that these impact will be minimal is in error. Any impacts to the Porcupine Caribou Herd on the Coastal Plain will be felt throughout their range in Alaska, the Yukon, and Northwest Territories and will result in a significant restriction to subsistence resources. BLM acknowledges the importance of caribou to 22 communities,[2135] yet states that "Kaktovik, Arctic Village, and Venetie are the only communities that may be *appreciably affected* by changes in the abundance or availability of PCH caribou."[2136] This conclusion is unsupported. There is again no explanation for BLM's wholesale failure to consider subsistence impacts to other Gwich'in communities.

BLM's own guidance states that the agency should err on the side of protection.[2137] This is particularly important because "the intent of Title VIII of ANILCA is to protect subsistence use, and . . . the Section 810 process has the ultimate goal of identifying ways in which impacts to subsistence can be minimized through the Notice and Hearings process."[2138] Indeed, the threshold to hold hearings is that there "may" be impacts. BLM has not erred on the side of protection in its 810 analysis. Instead, BLM has chosen to ignore the significant direct and indirect impacts to the Gwich'in, including the ways in which impacts to some communities will ripple out to other communities in light of community sharing practices. As discussed next, contrary to BLM's Section 810 findings, there are likely to be significant impacts to both the abundance and availability of resources available for subsistence purposes.

[2131] DEIS, vol. 2 Appendix E at E-11–E-14.
[2132] DEIS, vol. 2 Appendix E at E-11–E-14.
[2133] DEIS, vol. 2 Appendix E at E-8.
[2134] *See, e.g.*, DEIS, vol. 2 Appendix E at E-13.
[2135] DEIS, vol. 2 Appendix E at E-3.
[2136] *Id*.
[2137] *Id.* at 6-3.
[2138] *Id.* at 6-3.

1. *The Oil and Gas Program Will Have Significant Impacts to the Abundance of Subsistence Resources for the Gwich'in.*

For the two Gwich'in communities considered under ANILCA 810, Arctic Village and Venetie, BLM incorrectly finds there will not be significant restrictions to the abundance of resources available for subsistence use. Factors that can contribute to a reduction in abundance include adverse impacts on habitat, direct impacts on the resource, increased harvest, and increased competition from non-subsistence harvesters.[2139] As discussed in detail in Part V.I of these comments, there are likely to be significant adverse impacts to the Porcupine Caribou Herd from the oil and gas program. Activities associated with the oil and gas program will potentially cause a reduction in the Porcupine Caribou Herd's population, leading to a decline in the amount of harvestable resources. The draft EIS acknowledges that there will be adverse impacts on the Porcupine Caribou Herd and its habitat in multiple places, and yet still somehow finds there will not be significant impacts to subsistence.[2140] It is unclear how BLM avoids finding a reduction in abundance of the Porcupine Caribou Herd, based on even the limited information in its own DEIS. This must be more clearly explained.

BLM also ignores substantial evidence from studies and traditional knowledge that disturbance to caribou in the calving and nursing grounds will have serious impacts to the herd, such as reductions in calf survival.[2141] Caribou rely on stored body fat and energy reserves to get them through the long, difficult winter.[2142] The post-calving period is crucial to providing nourishment for growing calves and replenishing depleted body reserves. The Coastal Plain is critical for caribou post-calving as it provides greater concentrations and prolonged availability of plant nitrogen compared to the nearby Brooks Range.[2143] This nitrogen is a limiting resource for caribou that allows them to gain weight during the brief summer months, increasing winter survival and subsequent-year reproduction.[2144] Furthermore, key limiting minerals needed by caribou also appear to be more available on the Coastal Plain than in other seasonally-used areas.[2145] BLM finds that "[c]aribou would be displaced from areas that no longer have suitable

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[2139] Instruction Memorandum, *supra*, at 4.

[2140] DEIS vol. 2 at E-8 (indicating that, by placing infrastructure in the high-use calving area, BLM finds that "calving would most likely shift to the east or southeast," to areas with suboptimal forage); *id.* ("More surface development within this area could result in greater displacement of maternal caribou during calving, and thus could contribute to lower pregnancy rates and lower calf survival rates."); DEIS vol. 1 at 3-117 (indicating in the DEIS that dust generation during creation of gravel roads and travel upon those roads "may add toxic metals to roadside vegetation that mammals forage"); *cf.* DEIS vol. 2 at E-7 (indicating in the draft EIS that caribou responses to aircraft can affect subsistence hunters, recognizing that "[r]esidents of Nuiqsut consistently highlight aircraft disturbance of caribou as a concern and state that aircraft activity makes animals more wary and harvest more difficult").

[2141] *See supra* Part V.I (caribou).

[2142] *See supra* Part V.I.

[2143] Barboza et al. 2018.

[2144] Barboza et al. 2018.

[2145] Oster et al. 2018.

forage, but displacement is not expected to be widespread."[2146] This statement ignores the important science behind why the Porcupine Herd calves on the Coastal Plain and how displacement could lead to great calf mortality. It also ignores past observations of sustained shifts in distribution of calving Central Arctic Herd caribou in response to westward expansion of development from Prudhoe Bay.[2147] Disturbance to caribou calving and post-calving areas and important food sources would likely cause a decline in their populations and amount of harvestable resources. The DEIS also fails to explain why displacement will not alter migration paths.

Furthermore, all alternatives recognize there could be vehicle collision mortality, altered movement patterns from linear infrastructure, and air traffic impacts to the Porcupine Caribou Herd.[2148] These impacts are not adequately considered in BLM's ANILCA 810 analysis. For example, BLM appears to focus on only what it considers to be part of the 2,000 acre limitation. BLM does not address or account for impacts from infrastructure, such as pipelines, or other activities, such as gravel mining and seismic exploration. Seismic exploration on the Coastal Plain will have significant additional effects on subsistence. SAExploration's proposal seeks to pursue exploration across the entire Coastal Plain, all of which is used as calving grounds by the Porcupine Caribou Herd and Central Arctic Herd. SAE's proposal and other seismic exploration on the coastal plain have the potential to destroy or alter large swaths of vegetation and habitat that are vital to the Porcupine Caribou Herd and other species. This disturbance will amplify subsistence impacts from leasing, exacerbating the potential decline in the population resulting from impacts to calving habitat.

BLM's reliance on the DEIS's mitigation measures is misplaced. For instance, Stipulation 6 seeks to protect habitat of both the Porcupine and Central Arctic Herds by minimizing disturbance and hindrance of movements.[2149] However, for its requirements and standards, it simply points to ROP 23 for Alternatives B and C, with only the addition of suspension of major construction activities using heavy equipment for a short period under Alternative D. This means that this stipulation does not provide any independent protection for caribou movements across the Coastal Plain. (It is unclear what is meant by "major construction activity" and also noteworthy that even that protection is subject to waiver.) Stipulation 7 seeks to protect the "PCH primary calving habitat area." However, BLM has not supported the delineation of that area in the DEIS with any level of robust scientific justification.[2150] Additionally, areas outside of the most commonly used concentrated calving areas are still very important for caribou for post-calving needs as well as calving during particular years. BLM needs to protect both key calving and post-calving habitat, as well as protect migration corridors and movements. Protecting only the "primary calving area" as defined here will provide little protection in some years, potentially increasing calf mortality and threatening the caribou

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[2146] DEIS vol. 2 Appendix E at E-8.
[2147] *See supra* Part V.I (caribou section).
[2148] DEIS vol. 2 Appendix E at E-8.
[2149] DEIS vol. 1 at 2-11.
[2150] *See supra* Part V.I.

population. This is especially a concern if warming conditions under climate change leads to "a western shift in concentrated calving areas," as the DEIS indicates.[2151]

Because of the importance of the Porcupine Caribou Herd to all Gwich'in communities, in both Canada and the U.S., any impacts with the potential to decrease the population and harvestable resources will have a significant effect to all Gwich'in communities. BLM failed to account for the potential impacts to abundance, as well as how that will have an even broader impact to these communities in light of sharing practices. BLM's finding of no significant restriction to the abundance of subsistence resources for all Gwich'in communities that rely on the Porcupine Caribou Herd is arbitrary and contrary to science and the record before the agency.

2. *The Oil and Gas Program Will Have Significant Impacts to the Availability of Subsistence Resources for the Gwich'in.*

Oil and gas leasing on the Coastal Plain would cause reductions in the availability of resources used for subsistence purposes. Under BLM's 810 guidance, reductions in availability are caused by factors such as alterations to resources' locations, migration, or distribution patterns.[2152] Any disturbance to the Porcupine Caribou herd in its calving and post-calving grounds and insect relief areas would very likely result in alteration of their movements. Any such change in the migration patterns of the Porcupine Caribou Herd is particularly problematic for subsistence activities for the Gwich'in people. The Gwich'in of Alaska and Canada are heavily dependent on the Porcupine Caribou Herd, so much so that their communities trace the historic migratory route of the herd through the Gwich'in traditional homelands.

Movement is central to life for barren-ground caribou, such as those that live on the North Slope of Alaska. Barren-ground caribou are renowned for their long-distance migrations, covering thousands of kilometers each year in some of the longest overland movements in the world.[2153] These migrations allow caribou to take advantage of resources that change over space and time, such as moving to areas with greater winter food availability and shelter and then returning to calving grounds with lower densities of predators.[2154] Changes to migratory patterns for the Porcupine herd could have serious impacts on the herd's availability to Gwich'in subsistence hunters.

The hypothetical development scenario description states, without scientific analysis, "[i]n caribou areas, potential roads would be built on north-south and east-west orientations to the extent possible to limit interference with caribou migration. Figure B-2, Conceptual Layout of a Caribou Area Stand-alone Oil Development Facility, shows how the hypothetical layout could be adjusted for caribou mitigation if deemed appropriate by permitting agencies."[2155] Figure B-2 depicts a slightly different layout of the roads radiating out from the Central

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[2151] DEIS vol. 1 at 3-110.
[2152] Instruction Memorandum, *supra*, at 5.
[2153] Fancy et al. 1989; Bergman et al. 2000.; Schaefer and Mahoney. 2013.
[2154] Dau. 2011.; Joly. 2012.; Person et al. 2007
[2155] DEIS vol. 2 Appendix B at B-13.

Processing Facility to additional "satellite" drill sites, but no explanation is provided for assumptions about why it would be expected have a differing impact on caribou compared with Figure B-1. Furthermore, no analysis was provided for how a major road and transportation system and infield roads would affect caribou movements. BLM instead relies on the erroneous conclusion that caribou would simply "forage within the total footprint of a [central processing facility and its associated well pads" to dismiss the idea that infrastructure would impact the availability of the Porcupine Caribou Herd.[2156] There has been extensive research on negative impacts of roads associated with the Trans-Alaska Pipeline and the Prudhoe Bay oilfield complex to the Central Arctic Herd.[2157] BLM needs to address these issues using strongly supported scientific information, and fully consider impacts to caribou movement, which would directly impact availability for subsistence use.

Furthermore, all alternatives recognize vehicle collision mortality, altered movement patterns from linear infrastructure, and air traffic impacts to the Porcupine Caribou Herd.[2158] Although BLM claims some of these impacts can be mitigated with timing and surface limitations, BLM acknowledges that mitigation measures merely minimize, and do not eliminate impacts to subsistence.[2159] BLM does not attempt to explain what the shortcomings of these mitigations measures may be in terms of restrictions on subsistence availability. BLM also does not adequately account for the fact that the mitigation measures are potentially subject to waivers, exceptions, and modifications. The effectiveness of any mitigation measures is in part directly tied to whether or not it is enforceable or could be waived. BLM needs to account for the potential waiver of these provisions as part of its analysis, as that could negate any of the purported protections and benefits of such provisions.

Changes to the Porcupine Caribou Herd's migration route will have significant repercussions for Gwich'in communities, who are already having to travel farther to hunt caribou as their migration shifts because of climate change. BLM's 810 analysis lacks robust science and falls far short of its duties to discern, address, and mitigate against any impacts to the availability of subsistence resources.

C. BLM FAILS TO ADEQUATELY ACCOUNT FOR CUMULATIVE IMPACTS IN THE ANILCA SECTION 810 ANALYSIS.

BLM's cumulative analysis falls far short of adequately considering the impacts of other past, present, and reasonably foreseeable future actions in conjunction with oil and gas leasing on the Coastal Plain. Under ANILCA 810, "the purpose of the cumulative effects analysis is to determine the effects of the proposed action and alternatives together with other past, present,

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[2156] DEIS vol. 2 Appendix E at E-6.

[2157] E.g., Cameron et al. 1979.; Cameron and Whitten. 1980.; Dau and Cameron. 1986.; Cameron et al. 1992.; Nelleman and Cameron. 1996.; Nelleman and Cameron. 1998.; Cameron et al. 2005.

[2158] DEIS, vol. 2 Appendix E at E-8.

[2159] DEIS, vol. 2 Appendix E at E6–E8.

and reasonably foreseeable future actions."[2160] A positive finding in the cumulative case triggers the notice, hearing, and determination requirements of ANILCA Section 810(a)."[2161]

As pointed above, BLM arbitrarily limits the scope of its 810 analysis to four communities, thus ignoring the impacts of its proposed action along with cumulative impacts that will occur for many other Gwich'in communities in Alaska and Canada.

As an initial matter, BLM seems to characterize future development on the Coastal Plain as a cumulative impact rather than and direct and indirect impact of its proposed lease sales. Besides being illogical, this assumption leads to BLM focusing primarily on direct and indirect impacts to subsistence uses, rather than taking a hard look at the cumulative impacts of other reasonably foreseeable future actions.

Past and present actions included in the cumulative case that have affected subsistence uses and resources are as recognized by BLM as the following:

- Oil and gas exploration, development, and production on the North Slope
- Transportation
- Subsistence activities
- Recreation and tourism
- Scientific research
- Community development
- Climate change[2162]

BLM lists the following as reasonably foreseeable future actions:

- Road and pipeline between Kaktovik and the Dalton Highway/Trans-Alaska Pipeline
- Oil and gas development in the Colville-Canning Area
- Oil and gas activity in the vicinity of Alpine[2163]

Noting these items in passing does not constitute a meaningful cumulative impacts analysis. As discussed throughout these comments, BLM has repeatedly failed to fully discuss the potential impacts from both the leasing program and other activities in the region to a broad range of potential resources and uses, including to subsistence and key resources such as caribou that are vital to subsistence. BLM needs to substantially revise its overall analysis of the potential cumulative impacts in the preliminary evaluation and reissue it to ensure that it fully accounts for these impacts for purposes of both NEPA and its Section 810 analysis.

In describing impacts of oil and gas development, BLM focuses on impacts resulting from oil and gas development activities on the Coastal Plain. There is absolutely no discussion of

[2160] Instruction Memorandum at 7.
[2161] Instruction Memorandum at 7.
[2162] DEIS vol. 2 Appendix E at E-16.
[2163] DEIS vol. 2 Appendix E at E-16.

the 3 reasonably foreseeable future actions discussed in the bullets above. BLM completed failed to analyze or even discuss impacts from development activities in the Colville-Canning Area, Alpine, a road and pipeline between Kaktovik and the Dalton Highway/Trans-Alaska Pipeline. BLM limits its discussion on development in Alpine to *existing* oil and gas development activities. This does not adequately account for the potential cumulative impacts to subsistence users or reasonably foreseeable projects, such as ConocoPhillips' Willow project near Nuiqsut.

BLM states that "[f]uture development associated with the Leasing EIS would not surround Kaktovik, but residents may still feel surrounded if there is development to the west, south, and east of their traditional hunting areas."[2164] It is unclear how BLM reached this unsupported conclusion, given the potential under various alternatives for areas across the Coastal Plain to be open to leasing and future development. BLM then goes on to purportedly analyze the cumulative impacts of development by stating that "cumulative impacts associated with Point Thomson, Liberty, and other projects could result in more than no effect or slight inconvenience on the ability of harvesters to reach and use active subsistence harvest sites."[2165] The analysis contains no description of these projects, how they may or may not impact subsistence access, or how BLM reached this conclusion. This conclusory statement gives no indication that BLM actually analyzed the potential impacts to subsistence.

Besides oil and gas development across the North Slope, BLM must also consider all reasonably foreseeable future actions that may impact the Porcupine Caribou Herd throughout its migratory range. BLM should not arbitrarily limit the scope of its analysis to the geographic area on or immediately adjacent to the Coastal Plain. BLM must consider any impacts to the herd from activities south of Brooks Range and within Canada.

BLM's ANILCA 810 analysis also fails to meaningfully account for climate change, which will exacerbate the cumulative impacts for all subsistence activities. Climate change is reshaping the Arctic landscape, and needs to be considered in light of changing migration patterns and intensify of current effects to subsistence. Currently, the only consideration in the 810 analysis provides:

> Climate change is an ongoing factor considered in cumulative effects analyses on the North Slope. Climate change could affect the habitat, behavior, distribution, and populations of fish and wildlife within the program area. It could also impact access to these resources. The trends in climate change that were described in BLM 2018a are expected to continue.[2166]

BLM's climate change analysis lacks rigor and is incomplete. It completely ignores the very real impacts which are already happening across the North Slope of Alaska. As discussed elsewhere in these comments, the best available science demonstrates that climate change is already impacting important subsistence resources like caribou, fish, and marine mammals.

[2164] DEIS vol. 2 Appendix E at E-17.
[2165] DEIS vol. 2 Appendix E at E-17.
[2166] DEIS vol. 2 Appendix E at E-19.

Instead of conducting an analysis specific to how subsistence use in this area could be impacted by climate change, BLM instead relies on the decision document for the Greater Mooses Tooth Two development to bypass providing any meaningful analysis of the impacts of climate change.[2167] The GMT-2 analysis relates to a landscape hundreds of miles away with different resources and use patterns and does not contain an analysis of the potential impacts of climate change specific to the Coastal Plain and its resources. BLM's ANILCA Section 810 analysis must be focused on the landscape and resources under consideration.

Overall, BLM's conclusion that Kaktovik is the only community that will experience impacts to subsistence, and even then only in the cumulative case, is arbitrary and contrary to the evidence. BLM needs to substantially revise its 810 analysis to fully account for the broad range of direct, indirect, and cumulative impacts, which warrant a positive finding for impacts to subsistence for all of these communities.

[2167] DEIS vol. 2 Appendix E at E-19.

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Gwich'in Steering Committee
122 First Avenue◆Fairbanks, AK 99701◆907.458.8264◆fax 907.457.8265

"In no case may a people be deprived of their own means of subsistence." International Covenants on Human Rights

March 13, 2019

Submitted via email

Nicole Hayes
Project Manager
Attn: Coastal Plain Oil and Gas
Leasing Program EIS
222 West 7th Avenue, Stop #13
Anchorage, Alaska 99513
mnhayes@blm.gov
blm_ak_coastalplain_EIS@blm.gov

Re: Comments on the Arctic National Wildlife Refuge Coastal Plain Oil and Gas Program Draft Environmental Impact Statement, 83 Fed. Reg. 67,337 (Dec. 28, 2018).

Dear Ms. Hayes,

We write to provide comments on the Bureau of Land Management's (BLM) Draft Environmental Impact Statement (DEIS or draft EIS) for the Coastal Plain Oil and Gas Leasing Program, Alaska.

The Gwich'in Steering Committee, founded in 1988, is the unified voice of the Gwich'in Nation speaking out to protect the Coastal Plain of the Arctic National Wildlife Refuge. We represent the communities of Arctic Village, Venetie, Fort Yukon, Beaver, Chalkyitsik, Birch Creek, Canyon Village, Circle, and Eagle Village in Alaska, and Old Crow, Fort McPherson, Tsiigehtchic, Aklavik, and Inuvik in Canada. Our work is to protect the Coastal Plain from oil and gas activities, including objecting to any process that may allow or facilitate such activities. Protecting the Porcupine Caribou Herd is vital to our human rights and our food security. We have worked for decades to protect the Coastal Plain and plan to engage all Gwich'in people in this process to speak out to protect our way of life.

Protection of the birthing and nursing grounds on the Coastal Plain is a human rights issue to the Gwich'in Nation and is upheld by the U.N. Declaration on the Rights of Indigenous Peoples and its International Covenant on Civil and Political Rights, which states, "by no means shall a people be deprived of their own means of subsistence." This principle must be respected. Oil and gas activities on the Coastal Plain are an affront to our human rights and our way of life.

We will continue to work to protect the Coastal Plain from oil and gas activities, including objecting to any process that may allow or facilitate such activities.

We call the Coastal Plain "Iizhik Gwats'an Gwandaii Goodlit" — "the Sacred Place Where Life Begins." This name demonstrates the great significance of this area to the Gwich'in people. We are caribou people. We believe that we each have a piece of caribou in our heart and the caribou have a piece of us in their heart, so we take care of the caribou and the caribou take care of us. The caribou are the foundation of our culture and our spirituality — they provide food, clothing, and tools, and are the basis of our songs, stories, and dances. They are our history; they are our future.

The ancestral homeland of the Gwich'in people follows the migratory route of the Porcupine Caribou Herd, which sustains our way of life. Our elders recognized that oil development in the Porcupine Caribou Herd's calving grounds — the Coastal Plain of the Arctic Refuge — was a threat to the Gwich'in people. The Gwich'in nation speaks with one voice to protect the Coastal Plain, expressed in a formal resolution, Gwich'in Niintsyaa.[1] This resolution calls on the United States to recognize the rights of the Gwich'in to continue our way of life and to permanently protect the Coastal Plain. We come together every two years to reaffirm our commitment to protecting the Coastal Plain, and convened last summer in Tsiigehtchic do to so.

With direction from our elders, the Gwich'in Steering Committee has worked for three decades to protect this sacred place. It is our basic human right to continue to feed our families on our ancestral lands and practice our traditional way of life. Protecting the Coastal Plain is protecting our identity and our human rights. For us, this is a matter of physical, spiritual, and cultural survival. The Gwich'in stand united to defend the Coastal Plain.

Oil and gas leasing, exploration, and development will impact the quality, health, and availability of our traditional subsistence resources, such as caribou, fish, and birds. We know that oil and gas activities will also impact air, water, and lands, and in turn, our health and social well-being. We have watched as other areas on the North Slope dramatically changed because of industrial development. These changes continue to become more widespread and intense with every passing year, as development expands, altering places that used to support indigenous communities and ways of life.

The U.S. Department of the Interior (Interior) officials have rushed and continue to expedite this process with the stated goal of holding a lease sale at the end of this year. To meet this arbitrary deadline, BLM plans to release the Final EIS sometime between July–September, a critical time for our communities to engage in subsistence harvest. A rushed process is insufficient to understand the impacts to our human rights and culture or to hear from all of the people that will be impacted by this decision. We denounce any process that will cut out Gwich'in participation or marginalize our concerns. BLM must not rush this process.

[1] Attachment 1.

We oppose this rushed timeline and any oil and gas activities on the Coastal Plain. We provide these comments expressing our issues and concerns as BLM failed to conduct an adequate National Environmental Policy Act (NEPA) review process. Our comments must be addressed before BLM can move forward.

BLM Failed to Ensure Meaningful Tribal and Public Participation.

The Gwich'in Steering Committee and the Gwich'in Nation are attempting to play an active role in the process for any oil and gas leasing or other activities on the Coastal Plain, but BLM's rushed timeline and lack of a transparent process have made our engagement all but impossible.

After BLM announced the comment period on this Draft EIS would only last the minimum of 45 days, closing on February 11, 2019 and taking place over the winter holiday season, we formally requested a 77-day extension to submit comments — until Monday, April 29, 2019. The extension was necessary to ensure meaningful participation and to accommodate our communities' subsistence hunting and fishing harvests. The ability to conduct outreach to our tribal members takes considerable time given the realities of village travel and communications across two nations.

We also pointed out that additional time was necessary to ensure that we can educate our tribal members about the proposal and provide them the opportunity to participate. This is the first time that the Coastal Plain could be offered for lease. Making sure that our members understand the content of BLM's DEIS that was published as well as BLM's process for holding a lease sale on the Coastal Plain is vital information to bring to our communities so that our people can meaningfully engage.

We also requested an extension to allow for additional time for BLM to translate the DEIS into Gwich'in, so that our elders and tribal members who speak our native language can better participate in the process. Many of our leaders and elders speak Gwich'in as their first language. Despite our early and repeated requests for translation of these materials, BLM provided some resources for the Arctic Village Council to undertake translation which was completed on March 10, 2019 — a mere three days before the close of the public comment period. Moreover, only a portion of the EIS was translated into Gwich'in, such as the sections on cultural resources, subsistence uses and resources, and ANILCA 810. Critically, we do not have a translated version of the analysis of impacts to caribou, public health, birds, sociocultural systems, or climate change, which are vitally important to our communities. While we appreciate that BLM provided such resources, translated materials were necessary during the entirety of comment period to allow for meaningful review and comment. We also requested that that translators be available to assist with questions and comments at all public events and meetings. It is gravely concerning that BLM apparently failed to translate many important scoping comments from Gwich'in into English so that they could be incorporated into the agency's

analysis.[2] BLM thus ignored important input from affected communities during scoping, and has made continued participation by these communities and our members exceedingly difficult.

BLM established a seven-week comment period over the winter holiday season, when workplaces, including federal offices, are closed and many people travel to visit family. Having the comment period include the holiday season effectively shortened the comment period by a number of days. Our ability to engage was also seriously affected by the government shutdown. BLM staff were not available to answer questions or respond to information requests. The shutdown also led to confusion over when public meetings would be held on the Draft EIS, due to BLM's efforts to schedule these meetings with our communities when agency staff should not have been working. The manner in which these hearings were scheduled and held was disrespectful to our communities, as described in more detail below. BLM extended the public comment period by a mere 30 days, despite our need for the additional two months we requested to engage our communities, and despite the fact that the government shutdown lasted 35 days. This entire process was confusing and goes against the purpose of the hearings which is to engage and inform tribal members about the content of the DEIS, answer questions, and collect our public comments.

Further, DOI's rejection of our extension request is counter to the crucial role of public participation to the EIS process, and the agency's actions fast-tracking this entire process speak louder than its words. BLM denied our request for additional time to comment during scoping, as well. BLM's repeated refusals to respect our reasonable requests are disrespectful to the Gwich'in who are deeply concerned about the potential for oil and gas activities on the Coastal Plain and who have a right to weigh in on this process. BLM has failed to ensure adequate time and opportunity to allow for robust participation by those that will be most impacted by the decision — Alaska Natives and Canadian First Nations members.[3] The speed with which BLM is moving forward has and will continue to impair the Gwich'in tribes' ability to meaningfully participate.

Our requests for meetings to be held in every Gwich'in community, as every community may be impacted by oil and gas leasing on the Coastal Plain, were also summarily rejected. BLM only held hearings on the Draft EIS in three Gwich'in communities: Arctic Village, Venetie, and Fort Yukon. As described in more detail below, none of these public meetings were ANILCA 810 hearings, which is yet another slight to the Gwich'in people. All of these public meetings were scheduled with very little notice, forcing communities to scramble to prepare. We had very little time to prepare our tribal members by educating them on the content of the Draft EIS and BLM's process. We also were unable to make arrangements for Gwich'in people from communities with no meetings — such as Beaver, Circle, Birch Creek, Stevens Village, Chalkyitsik, Old Crow, Tsiigehtchic, and Fort McPherson — to travel in order for their voices to be heard. Finally, these hastily planned meetings did not provide adequate time for tribal and community members to provide testimony. Indeed, the meeting in Fort Yukon was only two hours long, in the middle of the work day, when many members could not attend. Such meetings

[2] *See e.g.*, Transcript from Venetie scoping meeting, at 19-20 (Jun. 12, 2018).
[3] 40 C.F.R. §§ 1500.2(d), 1506.6.

only pay lip service to BLM and DOI's obligation to provide meaningfully opportunities for the most affected public to participate in its process.

In addition, the Gwich'in Steering Committee submitted a FOIA request on January 23, 2019, requesting communications and records concerning the Agreement between the Government of Canada and the Government of the United States of America on the Conservation of the Porcupine Caribou Herd and the U.S.-Canada International Porcupine Caribou Board.[4] These records are now overdue in violation of FOIA. Our intent was to use the disclosed records to further inform our people and develop these comments on draft EIS. By withholding the requested records, BLM further inhibits our ability to engage in this process.

Moreover, as we reminded BLM and DOI in our scoping comments, they must engage in constructive and meaningful government-to-government consultation with all Gwich'in tribes. DOI is obligated to reach out to every tribal council that is part of the Gwich'in Nation for purposes of government-to-government consultation and consult with all potentially affected tribal governments who wish to do so. BLM has failed to fulfill its government-to-government obligations.

As Gwich'in people we live in many small villages across a vast area extending from northeast Alaska to the northern Yukon and Northwest Territories in Canada. Though the Inupiat community of Kaktovik is the only community located on the Coastal Plain, our Gwich'in communities are located within the traditional range for the Porcupine Caribou Herd and will be impacted by any oil and gas activities on the Coastal Plain.[5] Additionally, there is a large network of food sharing that exists between all Gwich'in villages, and caribou is an important part of that practice. All Gwich'in communities will, therefore, be impacted in many way by any oil and gas activities on the Coastal Plain. However, BLM has not meaningfully engaged with all of our potentially affected communities.

Tribal governments for every affected community within Alaska and Canada should have been contacted for government-to-government consultation. BLM does not provide a list of the tribal governments that the agency reached out to for purposes of government-to-government consultation. The DEIS merely lists the seven government-to-government consultation meetings which took place, one of which was in Anchorage.[6] It is concerning that only seven government-to-government meetings took place for an oil and gas leasing program that will significantly and permanently impact the way of life for communities across a broad geographic area. Moreover, there is no indication that BLM contacted any communities in Canada for purposes of consultation or public meetings. This is egregious, particularly in light of the fact that Canadian users account for the vast majority — in the past up to 85 percent — of the harvest of the

[4] OS-2019-00378.
[5] Gwich'in Steering Committee, Primary Habitat of the Porcupine Caribou Herd Map, attachment 2.
[6] DEIS vol. 2 at C-3.

Porcupine Caribou Herd.[7] BLM has repeatedly failed to listen carefully to the Gwich'in Nation and take the time to conduct the necessary analysis to comply with its federal and international legal obligations. BLM failed to engage the Alaska Natives and Canadian First Nations peoples who will be most impacted by this decision.

In addition, in its scoping letter, the Gwich'in Steering Committee reminded BLM of its requirement to prepare a robust analysis under Title VIII of the Alaska National Interest Lands Conservation Act (ANILCA), and hold hearings in the likely event that oil and gas leasing on the Coastal Plain will significantly restricts subsistence use of the Gwich'in. Instead, the DEIS section 810 evaluation finds that Gwich'in communities will not experience significant restrictions on subsistence uses, even after the Gwich'in expressed significant concerns related to food security and cultural identity. BLM does not find significant restrictions for any Gwich'in communities, and fails to even consider Canadian villages. Due to these incorrectly limited findings, the agency did not hold ANILCA 810 hearings in any Gwich'in communities. The failure to hold ANILCA 810 hearings further exacerbates DOI and BLM's process that ignore the traditional knowledge and human rights of the Gwich'in.

BLM must revise its DEIS and issue new ANILCA 810 findings. Once the agency does so, we anticipate any scientifically sound analysis will find significant restrictions on subsistence for Gwich'in communities. At that time, BLM must schedule and hold 810 hearings in all affected Gwich'in communities.

BLM's DEIS Does not Contain Important and Updated Scientific Information and Must be Revised and Reissued.

Besides failing to collect or consider traditional knowledge of the Gwich'in people, as described throughout this letter, the agency did not take the time it needed to collect or study the best available scientific information. In its rush to lease the Coastal Plain, BLM relies on outdated or geographically irrelevant information for its DEIS. Making matters worse, BLM does not explain why it failed to gather this information or how the agency can reasonably move forward to leasing the Coastal Plain without needed research and studies.

For BLM to evaluate impacts to the Coastal Plain, NEPA requires that if there is incomplete information relevant to reasonably foreseeable significant adverse impacts and the information is "essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant," the information must be gathered and included in the EIS.[8] This requirement helps "insure the professional integrity, including scientific integrity, of the discussions and analyses" in an EIS.[9] BLM should be insuring that available data is gathered and analyzed before it considers authorizing leasing on the Coastal Plain, and doing new studies and

[7] DEIS vol. 1 at 3-168. We note that BLM does not have updated subsistence use information for all Gwich'in communities, which may impact this figure.
[8] 40 C.F.R. § 1502.22(a); *see also* 43 C.F.R. § 46.125.
[9] 40 C.F.R. § 1502.24.

research if necessary. The agency failed to do so, calling into question the findings and analysis throughout the DEIS.

We pointed out in scoping and in our testimony both in scoping and at the DEIS stage that there is a substantial amount of baseline data missing or out of date that BLM had to address before the public can fully understand the potential impacts from oil and gas activities on the Coastal Plain. BLM's failed to address or obtain this lacking information making its draft EIS deficient, therefore the BLM should issue a revised document.

Additional information is required in many critical areas to fully evaluate the impacts of oil and gas activities on the Coastal Plain to the Gwich'in people. BLM also needs this information to develop necessary stipulations or Best Management Practices (BMPs) for leasing or subsequent oil and gas activities. These areas include, but are not limited to: air quality; birds; fish; water resources; snow cover; caribou use, including calving and post-calving habitat, seasonal ranges, and migration routes, and impacts of oil and gas activities on herd behavior and population dynamics; cultural resources and a completed inventory; vegetation and wetlands mapping; human health and food security; subsistence use patterns and mapping; and climate change impacts to the Coastal Plain. Several of these resource issues are discussed in more detail below.

BLM failed to obtain missing and/or updated information about these issues and other issues before proceeding with the DEIS. This renders BLM's baseline information regarding the affected environment incomplete and calls into question the analysis of impacts and development of mitigation measures. While BLM purports to comply with NEPA's mandate, the agency does not in fact do so. BLM states that "where information is missing, this EIS complies with 40 CFR 1502.22."[10] In order for BLM to be able to move forward in the face of missing or incomplete information, the agency is required to take specific steps.[11] But nowhere in the draft EIS does BLM actually identify information or data gaps or make the required findings to allow it to move forward in the face of that missing or incomplete information. Much of the information necessary to assess the potentially significant impacts of the leasing program is missing, and BLM must comply with the applicable regulation when assessing the leasing program in the face of this missing information.

We also note that much of the existing information for the Arctic Refuge is likely out of date to due climate change; the environment and resources of the Arctic Refuge are not the same as they were 30, 20, or even 10 years ago because of climate change, and will not be the same in 5 or 10 years, or the timespan of a lease and oil and gas project. BLM does not appear to have factored this into its impacts analysis or consideration of missing or incomplete information.

BLM's draft EIS for the Coastal Plain oil and gas leasing program contains numerous gaps in information and analysis that seriously frustrate public review and understanding. Certain

[10] DEIS vol. 1 at 3-2.
[11] 40 C.F.R. § 1502.22(b); *Native Village of Point Hope v. Salazar*, 730, F. Supp. 2d 1002, 1017–18 (D. Alaska 2010).

highly significant issues that affect the Gwich'in people, such as pre-leasing seismic operations, impacts to public health, and a quantitative analysis of air quality impacts are largely missing from the draft EIS. Many other issues, such as impacts to caribou and other wildlife, impacts to water resources, and vegetation and permafrost, are only partially addressed, with key elements of the draft EIS analysis missing, incomplete, inaccurate, inconsistent with the best available science, or otherwise inadequate. The significant and numerous information and analytical gaps render BLM's draft EIS "so inadequate as to preclude meaningful analysis" and review by the public, and therefore necessitate a revised draft EIS.[12] To remedy the extensive gaps in information and analysis, a revised draft EIS is necessary.

BLM Failed to Address our Concerns Regarding Impacts to Caribou.

As Gwich'in People, we rely heavily on the Porcupine Caribou Herd for our survival. The Coastal Plain of the Arctic Refuge is vitally important to us because it is *Iizhik Gwats'an Gwandaii Goodlit* — "the Sacred Place Where Life Begins." Every year, the Porcupine Caribou Herd migrates hundreds of miles across Alaska and Canada, returning in the spring to the Coastal Plain to give birth, forage on nutrient rich plants to replenish themselves, and seek insect relief. Our ancestral homelands follow the migratory route of the Porcupine Caribou Herd, and Porcupine Caribou have provided sustenance for our people for thousands of years. Just as the Gwich'in rely upon the caribou, every Porcupine caribou member relies on this ecologically unique land that is the Coastal Plain of the Arctic Refuge to get its start in life.

Another way that the DEIS marginalizes the Gwich'in voice is by not fully addressing the Gwich'in Steering Committee's previous scoping comments.[13] We raised the many unknowns about Porcupine Caribou Herd and the things that influence their population and behavior. BLM should use great care and a cautionary approach when considering authorizing oil and gas activity that will impact our caribou. BLM cannot properly determine impacts without more studies on the risk of development to caribou on the Coastal Plain. BLM has not done any new studies for its EIS process. Instead, the agency relies on outdated information or makes assumptions based upon the behavior of other caribou herds in Alaska. We also requested that researchers performing the draft EIS studies should work with their communities to collect information in an unobtrusive manner and incorporate traditional knowledge. This has not been done. BLM's analysis entirely ignores Gwich'in knowledge and input, despite the fact that we have been the land managers of this area for millennia. The Gwich'in are the first scientists of this land.

BLM's findings for the Porcupine Caribou Herd are particularly concerning due to the fact that the DEIS's caribou studies do not use traditional knowledge, the best available science and improperly minimize impacts to caribou. For example, the DEIS does not place the Porcupine Caribou Herd in the context of the global condition of caribou populations, ignoring

[12] *See* 40 C.F.R. § 1502.9(a).
[13] Gwich'in Steering Committee, Scoping Comments re: Notice of Intent to Prepare an Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program (June 19, 2018).

the risks posed by global declines of caribou. In addition, the DEIS omits important baseline studies, does not explain its assumptions when analyzing road, pipeline, air traffic, noise and human activity impacts on caribou, and the sources of data used to understand distribution of the herd are not transparent. Further, impacts are insufficiently considered, including development like seismic exploration and road effects, which would greatly alter the current condition of the Porcupine Caribou Herd's habitat. Understanding how the Porcupine Caribou Herd will be affected is essential to analyzing subsistence impacts for availability and distribution, which are essential to understanding harvest opportunities. The caribou studies need to incorporate the best-available science in order to accurately discern impacts to subsistence.

Further, the BLM must account for the fact that the Porcupine Caribou Herd's range is currently without any major transportation networks and the herd have not had any previous exposure to oil and gas infrastructure in the calving and nursery grounds. The fact that impacts "are expected to be more intense" [14] for this herd is acknowledged, but not considered and actually analyzed throughout the impacts analysis, including complete omission in the subsistence discussion. There is little evidence that caribou actually habituate to infrastructure, as BLM assumes in the DEIS. Rather, infrastructure could displace caribou availability farther from the project area, and generally alter migratory paths. The Coastal Plain is critical for caribou post-calving because it provides greater concentrations and prolonged availability of plants that allow caribou to gain weight during the brief summer months, increasing winter survival and subsequent-year reproduction.[15] Impacts that cause the caribou to move into the Brooks Range, where plant nitrogen is lower and available for a shorter amount of time, could hurt their calving success and population growth. There are also more predators in the Brooks Range, and any shift of the caribou into this area during calving could result in decreased calf survival, impacting the overall health of the herd. BLM's lackluster caribou analysis does not sufficiently examine the impacts from and oil and gas program to caribou and, therefore, to subsistence, in a meaningful way.

The Draft EIS suggests that 49 percent of the total area that could be offered for leasing is also sensitive calving grounds for Porcupine Caribou. This number, however, vastly underestimates the value of the Coastal Plain to the caribou, who use virtually all of the area during calving, post-calving and summer seasons. The Porcupine Caribou Herd uses the Arctic Refuge throughout the year, including using the Coastal Plain for calving, insect relief, and other summer habitat.[16] Even in years in which calving was concentrated in Canada, the herd has used the Arctic Refuge Coastal Plain for food and insect relief while raising their young after

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[14] DEIS vol. 1 at 3-169.

[15] Barboza, P.S., Van Someren, L.L., Gustine, D.D., Bret-Harte, M.S. 2018. The nitrogen window for arctic herbivores: plant phenology and protein gain of migratory caribou (*Rangifer tarandus*). Ecosphere 9, e02073.

[16] Caikoski, J.R. 2015. Units 25A, 25B, 25D, and 26C caribou. Chapter 15, pages 15-1 through 15-24 [*In*] P. Harper and L. A. McCarthy, editors. Caribou management report of survey and inventory activities 1 July 2012–30 June 2014. Alaska Department of Fish and Game, Species Management Report ADF&G/DWC/SMR-2015-4, Juneau

calving.[17] We know this as Gwich'in people, and BLM recognizes this fact in its own maps of the Herd's historic movements. It is inappropriate for the Draft EIS to artificially downplay how broad of a scope of the area which will be impacted and minimize the importance of the *entire* Coastal Plain to the Porcupine caribou.

The DEIS also recognizes that oil and gas activities moving the herd away from the Coastal Plain would be detrimental and cited a study predicting an eight percent decline in calf survival from displacement.[18] The DEIS also recognizes that impacts to calf survival and herd growth will reduce numbers of the Porcupine Caribou Herd, leading to reduced harvest success among the Iñupiaq, Gwich'in, and Inuvialuit caribou hunters.[19] While the agency makes these findings, BLM fails to quantify, or further analyze these effects. Further, the DEIS acknowledges that the potential for disturbance and displacement of caribou could cover up to 633,000 acres (40 percent of the Coastal Plain). Despite this, BLM offers a wholly insufficient solution to mitigate the impact: suspension of "major construction activities" — but not drilling — for a single month of the year from May 20–June 20th. BLM fails to actually analyze the effectiveness of this proposed measure. This is very worrisome, especially considering that Arctic caribou populations have decreased significantly in the last twenty years. Moreover, our climate is changing and we do not yet know how shifts in the seasons may eventually alter caribou calving. BLM cannot claim that it meaningfully considered mitigation measures to protect the caribou.

BLM also failed to consider the cumulative impacts from development and other activities in other areas in the Arctic and what that might mean for the Porcupine Caribou Herd, as development to the west has already caused changes to the migratory patterns and health of the caribou herds there. BLM should include an analysis of how subsistence resource abundance and habitat quality have been impacted by a changing Arctic and expanding oil and gas activities. Additionally, BLM must discuss how a changed climate is expected to impact caribou in the future. These analyses should be coupled with the cumulative industrial impacts of oil development on the North Slope. Currently, BLM's cumulative analysis consists of the broad statement that climate change "could influence the rate or degree of potential impacts."[20] In addition, the baseline analysis only finds that "climate change could contribute to resource availability caused by development in and around the program area, further reducing their availability to subsistence users."[21] These statements are too broad and general to capture the real

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[17] Griffith, B., Douglas, D.C., Walsh, N.E., Young, D.D., McCabe, T.R., Russell, D.E., White, R.G., Cameron, R.D., Whitten, K.R. 2002. The Porcupine caribou herd. Pages 8-37 [*In*] Douglas, D.C., Reynolds, P.E., Rhode, E.B., editors. Arctic Refuge coastal plain terrestrial wildlife research summaries. U.S. Geological Survey, Biological Resources Division, Biological Science Report USGS/BRD/BSR-2002-0001.

[18] "Anything that moves the herd away from the Coastal Plain has been shown to be detrimental to calf survival and thus, population growth of the herd; in fact, it would likely halt population growth. Additionally, other potential calving areas to the east have a higher density of predators and less suitable vegetation." DEIS vol. 1 at 3-114–15.

[19] DEIS vol. 1 at 1-173.

[20] DEIS vol. 1 at 3-178.

[21] DEIS vol. 1 at 3-168.

impacts that are already happening across the North Slope of Alaska. The best available science and traditional knowledge demonstrates that climate change is already impacting caribou and other important subsistence resources like fish and marine mammals. Instead of conducting an analysis specific to how the Porcupine Caribou Herd could be impacted by climate change, BLM instead relies on ambiguous statements to merely acknowledge potential impacts. BLM's analysis must be revised. BLM's analysis should incorporate the best available climate science, including site specific analysis for all communities. BLM must analyze impacts to communities along the migratory path of the Porcupine Caribou Herd who will experience reduced subsistence harvest opportunities if the migratory path of the herd is altered or shifts. BLM's cumulative impacts analysis lacks rigor and fails to meaningfully account for climate change and increased industrial activity on the North Slope.

In sum, BLM did not fully analyze all reasonably foreseeable direct, indirect, and cumulative impacts of all phases of oil and gas development on the Coastal Plain and throughout the herd's migratory route the Porcupine Caribou Herd. BLM failed to use the best available scientific information or traditional knowledge to assess those potential impacts. BLM errs by not incorporating and utilizing traditional knowledge when developing the DEIS. The Gwich'in people's understanding of the Coastal Plain and its relationship with the health of the land goes far beyond the passing mention in the DEIS, which only superficially recognizes that "any development in the program area would have devastating effects on the population of the PCH and other resources, such as migratory birds, that have key habitat in the coastal plain."[22] The Gwich'in of Alaska and Canada are culturally and spiritually connected to the Porcupine Caribou Herd, and their knowledge of the Coastal Plain as calving and post-calving habitat should be incorporated in caribou studies. Merely recognizing, but not addressing and incorporating available scientific insights from the people who have lived in and relied on the area for a millennia is unacceptable. The Draft EIS therefore ignores significant and permanent impacts to the Porcupine Caribou Herd.

BLM Fails to Meaningfully Analyze Impacts to Birds.

More than 150 species of birds have been documented on the Coastal Plain, many of which find vital habitat for foraging, nesting, migratory staging, and overwintering.[23] Migratory ducks and geese are important to Gwich'in people and to the many indigenous peoples and hunters along the Pacific Flyway. Compromising this vital ecosystem and food source is unacceptable.

The DEIS fails to identify and address the important data gaps related to the Coastal Plain's bird populations and the potential impacts of oil and gas development on them, including failing to incorporate traditional knowledge. The data on bird species densities on the Coastal Plain are broadly incomplete and existing, completed surveys are limited.[24] New, additional

[22] DEIS vol. 1 at 3-173.
[23] CCP EIS at Appendix F.
[24] *See* John M. Pearce, et al., U.S. Department of the Interior, U.S. Geological Survey, Summary of Wildlife-Related Research on the Coastal Plain of the Arctic National Wildlife Refuge,

surveys should be designed specifically for the project being considered and should be a required before any leasing may take place. For breeding waterbirds specifically, there is a need to better understand those species' distributions and abundances within the Coastal Plain in relation to varying habitat types.[25] Relatedly, while populations of Snow Goose and Black Brant appear to be increasing on the North Slope,[26] studies on any new resulting patterns in the distribution of these species during nesting and migratory staging are not completed. Shorebirds also require more study of their populations, particularly studies on the cumulative effects of oil and gas development,[27] and the potential for shifting habitats due to coastal erosion, shifting river deltas, and the loss of lagoons and barrier islands.[28] We know that our coast lines are eroding across northern Alaska, but the effects on marine, lagoon, and coastal ecology and this have not been thoroughly studied in the context wildlife habitat in the Coastal Plain or across the North Slope, making those effects on birds unknown. Finally, changes to migratory patterns of birds is an area of needed study, particularly on the Coastal Plain. While some migratory birds may adjust to changing seasonal patterns, we don't know how any shifts in resource availability or migratory timing will reverberate through a bird species' life history and the potential resulting impact that could have on the Gwich'in. The agency must complete studies and gather traditional knowledge to address these areas of missing information before it can adequately analyze impacts to birds from oil and gas leasing.

In addition to failing to address these data gaps, BLM's draft EIS downplays the importance of the Coastal Plain to birds, is missing important information, and conducts a poor analysis of the impacts that oil and gas development will have on birds. Moreover, this DEIS section is poorly organized, and presents information specific to certain birds directly alongside information on birds in general, making it incredibly difficult for people in our communities to piece together BLM's description of bird populations and impacts.

Further, BLM's analysis of the impacts of an oil and gas program on the birds that use the Coastal Plain is inadequate and must be revised. The DEIS contains almost no discussion about

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Alaska, 2002-17, Open-File Report 2018-1003 [2018 USGS Report] (2018), at 14 ("only about one-third of the 1002 Area is currently surveyed, and what is surveyed falls within the low-density strata. Surveys within the low-density strata have far fewer transects that are farther apart and thus have little power to detect and determine trends of breeding and non-breeding migratory birds.").

[25] *See* John Pearce, USGS 2018-2019 Activities in the North Slope Borough: Presentation to the North Slope Borough Planning Commission November 29th, 2018, Utqiagvik (powerpoint presentation), at slide 22.

[26] *But see* James S. Sedinger, Thomas V. Riecke, Alan G. Leach, and David H. Ward, The Black Brant Population is Declining Based on Mark Recapture, The Journal of Wildlife Management, DOI: 10.1002/jwmg.21620 (2018).

[27] *See* "primary conservation objectives" *in* Alaska Shorebird Group. 2019. Alaska Shorebird Conservation Plan. Version III. Alaska Shorebird Group, Anchorage, AK

[28] Gibbs, A. E. and B. M. Richmond. 2017. National Assessment of Shoreline Change - Summary Statistics for Updated Vector Shorelines and Associated Shorelines Change Data for the North Coast of Alaska, U.S.-Canadian Border to Icy Cape. Reston, VA.

which species will be most impacted. Where the DEIS does provide some analysis on the impacts to birds, the review is brief, lacks scientific justification, and is overall inadequate.

We know by looking at other areas of the North Slope that gravel roads can cause profound change to bird habitat due to dust, gravel spray, thermokarsting, and by creating impoundments. Yet the DEIS barely mentions how dust could harm habitat and thus negatively affect the productivity of nesting birds, and also fails to adequately analyze impacts to birds from other oil and gas infrastructure. The DEIS also downplays how oil spills and spills of other contaminants could harm birds and their habitat, impacts from winter activities like construction, habitat loss from hydrological changes, and impacts from aircraft traffic.

BLM's cumulative impacts analysis is likewise defective, because it ignores impacts from seismic activity, melting sea ice, marine traffic, and impacts to migratory birds along their routes. The DEIS also downplays impacts from climate change and accumulating infrastructure on the North Slope, including activity in land owned by private corporations or by the State of Alaska, and activity in the National Petroleum Reserve-Alaska. These cumulative impacts are critically important for BLM to consider, and its failure to do so renders its analysis inadequate.

In sum, BLM's description and analysis of an oil and gas program on birds is insufficient and inadequate. The Gwich'in rely on many species of birds that migrate through our communities. BLM must ensure that has the necessary information regarding the myriad species that use the Coastal Plain to actually evaluate the impacts to birds. Doing do requires substantial revision of the DEIS.

BLM Fails to Meaningfully Analyze Impacts to Subsistence.

Protecting the Porcupine Caribou Herd is vital to our human rights and our food security. Subsistence is a way of life for the Gwich'in people that includes hunting, fishing, and gathering activities. All of these activities are vital to the preservation of our communities and our culture. Subsistence resources have important nutritional, economic, cultural, and spiritual importance in the lives of the Gwich'in. The DEIS fails to consider the significant subsistence impacts in many affected communities, does not incorporate traditional knowledge or the best available science throughout the DEIS, arbitrarily limits the scope to post-leasing activities, does not adequately consider effects on numerous, important subsistence species, and fails to analyze impacts on subsistence hunters.

Four Gwich'in communities (Arctic Village, Chalkyitsik, Fort Yukon, and Venetie) are in or relatively close to Arctic Refuge and use the Refuge for their subsistence way of life. But all Gwich'in villages, including those in Canada, have geographic or cultural ties to the Coastal Plain and its subsistence resources. As described above, any oil and gas leasing and activities on the Coastal Plain will impact the Porcupine Caribou Herd and have broad geographic impacts to the Gwich'in people that BLM has failed to fully analyze. Despite this, BLM arbitrarily limits its analysis of subsistence impacts to four communities: Kaktovik, Nuiqsut, Arctic Village, and

Venetie.[29] It is disrespectful for the Draft EIS to entirely ignore Canadian Gwich'in who rely so heavily upon the Porcupine Caribou Herd as well as our other Gwich'in communities in Alaska.[30] Additionally, this analysis does not comply with international treaty obligations, which requires consultation and input from the Porcupine Caribou Board to consider the interests of both Alaskan and Canadian Porcupine Caribou subsistence users.[31] Even for villages considered in the Draft EIS, BLM did not adequately assess whether oil and gas leasing on the Coastal Plain would significantly restrict subsistence uses in potentially affected communities.

The Gwich'in have direct traditional knowledge that has not been solicited or considered, as described above. BLM must obtain traditional knowledge through government-to-government consultation, ANILCA section 810 hearings, and other outreach efforts, and incorporate findings throughout not only subsistence section of the DEIS, but all other relevant sections of the DEIS.

Additionally, BLM relies on outdated and geographically limited subsistence use data in its baseline analysis, calling its findings into question. BLM heavily relies on data from Steven R. Braund and Associates covering 1996–2006, but which only covers Barrow, Nuiqsut, and Kaktovik. This data is 13 years out of date as of the time of the DEIS comment period and does not include any Gwich'in communities. This is unacceptable. BLM ignored our clear requests during scoping to update its studies and information on subsistence use. BLM further failed to accurately consider impacts from the loss of subsistence use areas. While generalized maps of subsistence use areas were included with the DEIS, BLM did not consider the impacts to those areas. BLM should overlay each development scenario with these areas, to determine how subsistence use areas will be impacted through changes in land use designation, rights, and avoidance. Subsistence-use area loss should then be quantified. The BLM's existing maps are inadequate because they fail to depict specifically where subsistence resources and practices may be compromised and are based on the 13-year outdated information.

BLM also failed to consider the significant and permanent harm from seismic damage and other infrastructure to our lands and wildlife. We strongly oppose seismic exploration on the Coastal Plain, whether it takes place before or after leases are issued. BLM improperly limits the scope of its subsistence analysis in the same way it improperly limited the scope of its ANILCA 810 analysis: BLM only looks at post-lease activities that include seismic and drilling exploration, development, and transportation.[32] BLM should not limit its analysis of the impacts to only post-leasing activities and needs to include the full range of impacts to subsistence use that could occur from the program. This includes from any proposals to conduct pre-leasing seismic exploration on the Coastal Plain, such as SAExploration's proposal that is now being considered for the winters of 2020–2021 and 2021–2022.

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[29] DEIS vol. 2 Appendix E at E-3.
[30] DEIS vol. 1 at 3-168; DEIS vol. 2 at M-27 to M-32.
[31] Agreement Between the Government of Canada and the Government of the United States of America on the Conservation of the Porcupine Caribou Herd, E100687 - CTS 1987 No. 31 (July 17, 1987), *available at* http://www.treaty-accord.gc.ca/text-texte.aspx?id=100687.
[32] DEIS vol. 2 Appendix E at E-2.

Additionally, BLM misinterprets the Tax Act in a way that allows far more development and impacts on the Coastal Plain than what was authorized by Congress. For instance, BLM improperly excluded other forms of infrastructure and activities from what it considered as part of its 2,000 acres of impacts. BLM's interpretation of this provision includes pipeline supports, but not the actual pipelines themselves, which could cross large areas of the Coastal Plain and have the potential to divert caribou away from key areas and cause other changes to the lands and waters of the Coastal Plain. But BLM does not include other infrastructure and activities like gravel mining under this provision. Gravel mining has severe sound and other environmental impacts that could deter caribou and other species from important habitat areas. BLM's deficient analysis of the full range of resource impacts from the broad scope of activities likely to occur on the Coastal Plain and to nearby areas means BLM has dramatically underestimated the potential impacts from the oil and gas program and related activities to subsistence. BLM needs to revise and reissue its DEIS to ensure it actually takes into consideration the full range of potential impacts for purposes of its subsistence analysis.

In addition to caribou, fish and waterfowl are important to our subsistence harvest and impacts to all of these resources were not carefully evaluated. BLM's overall analysis of specific subsistence resources is also insufficient. The DEIS fails to consider the extensive resources used for subsistence by communities reliant upon Arctic Refuge resources. Appendix M provides known levels of subsistence harvest for Kaktovik, Nuiqsut, Venetie, and Arctic Village.[33] But analysis of impacts on these resources is substantially lacking, and BLM does not look beyond these four communities to consider all Gwich'in communities. The DEIS provides very little consideration of any resource besides caribou and marine mammals, even though Gwich'in rely on a range of resources as part of our subsistence way of life. As described above, BLM fails to accurately consider impacts to birds, and the DEIS barely mentions impacts to the subsistence harvest of birds in the DEIS. The few sentences where impacts to bird harvest are considered merely state that infrastructure could displace waterfowl from nesting and other habitat, and that noise and traffic impacts would be local. Such conclusory statements do not constitute meaningful analysis, and completely ignore potential impacts to bird populations and their corresponding impacts to the Gwich'in people.

Moreover, there are also numerous impacts to fish that are not adequately considered. For instance, in 2009, the *only* year for which study data were available, fish made up 37% of the total subsistence harvest for Venetie.[34] The draft EIS acknowledges that non-salmon fish, including Dolly Varden and Bering cisco, are important subsistence resources and that there

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[33] DEIS vol. 2 at Appendix M. *See also* DEIS Vol 1 at 3-165 "Overview of Subsistence Uses" stating that "based on *3 years of limited data*, Arctic Village residents harvested an average of 51 pounds of non-salmon fish per capita, and 6 pounds of migratory birds per capita." (emphasis added).

[34] "Venetie data are limited to one comprehensive study of all subsistence resources for the 2009 study year…Large land mammals constitute approximately half of the subsistence harvest in terms of edible pounds. Also important are harvests of salmon, fish other than salmon, and migratory birds." DEIS vol. 1 at 3-166.

could be subsistence impacts under Alternatives B and C.[35] But, the DEIS brushes aside these potential effects by stating that impacts will be mitigated by Lease Stipulations and ROPs.[36] BLM provides no analysis to support why the Lease Stipulations and ROPs will effectively protect fish habitat. In sum, BLM's analysis of impacts to our subsistence resources is wholly insufficient.

Subsistence use areas vary among communities that utilize the resources of the Arctic Refuge, and seasonally within communities. Though BLM identifies the annual cycle of subsistence resource harvesting in the Draft EIS for some Gwich'in communities,[37] BLM does not identify how these resources may be impacted by oil and gas activities associated with this leasing program during these particular times of year, and does not look at all Gwich'in communities. BLM failed to explain how the leasing program will impact resources and practices during each month. Subsistence users generally rely on healthy subsistence resources being present in traditional use areas at specific times, and some harvesters are often limited in their ability to access resources beyond traditional use areas at the expected times of year.[38] Even if the potential impact to wildlife resources may be slight, changes in resource access and availability, including perceived changes in fish and wildlife health due to development, may affect subsistence.[39] Further, harvest cycle analysis must include and account for climate change impacts to the subsistence harvest and resulting limits to subsistence resources availability.

Additionally, the DEIS does not fully account for the impacts of increased aircraft traffic to harvesting of caribou and other resources. Both airplane and helicopter traffic reduce subsistence harvest opportunities by diverting caribou and negatively impacting birds. Air traffic patterns are difficult to foresee and can cause "acute stress and disruption" to subsistence hunters.[40] Subsistence activities are critical to our food security and our culture. We know that in Nuiqsut, aircraft traffic is considered by many to be the most common impact to caribou, and may divert or delay their movements.[41] The DEIS underestimates the potential impacts to caribou from increased aircraft. Second, the DEIS does not even identify airport locations, so our tribal members cannot give meaningful consideration to the different alternatives. It is impossible to really consider the impacts from aircraft traffic patterns when it is unknown what the flight patterns will look like and where planes and helicopters might land. The DEIS underestimated impacts to our subsistence way of life from increased air traffic and resulting impacts to the Porcupine Caribou Herd's heath and migration path.

Further, BLM has failed to adequately analyze how our systems of sharing and trading of resources between communities will be impacted by oil and gas leasing. The complete loss or reduction of resources in one community may impact the exchange of resources with other

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[35] DEIS, vol. 2 Appendix E at E-5.
[36] DEIS, vol. 2 Appendix E at E-5. "
[37] DEIS vol. 2 at Appendix M.
[38] Point Thompson FEIS vol. 3 at 5-602.
[39] *Id*.
[40] GMT-1 FSEIS vol. 1 at 437.
[41] DEIS vol. 1 at 3-170.

Gwich'in communities. Existing sharing networks distribute food widely, and communities are able to receive resources from friends and relatives that they are otherwise unable to obtain. When availability of subsistence foods decreases, sharing might also decrease as households experience reduced harvests and availability. The DEIS merely mentions that reduced harvests could disrupt sharing networks, but there is no real consideration of effects or analysis of impacts. BLM merely states that changes would occur and "disruptions of social connections could thus increase vulnerability in communities."[42] The DEIS should look at specific communities sharing practices and the relative wealth of households to accurately determine impacts from reductions in trading and sharing of resources, and how that will impact Gwich'in culture and our way of life. The potential impacts to these social networks must be explained in much greater detail and actually analyzed; simply acknowledging it is insufficient.

Additionally, when subsistence users are unable to engage in subsistence activities or their opportunities are limited, the ability to pass on traditional knowledge about subsistence activities to our youth also becomes limited. As discussed above, opportunities and availability of subsistence areas may become limited because of harm to the Porcupine Caribou Herd through infrastructure, other disturbances during the calving, post-calving, or insect relief periods, alterations to the migration path, and reduced subsistence resources, all of which also may impact sharing networks. The initial reduction of traditional use areas will limit the ability to pass on traditional knowledge to our younger generations and traditional use and knowledge of the use areas will be lost. This impact to our way of life will be permanent, and the loss of knowledge alone is a significant subsistence and cultural impact that BLM failed to analyze.

Finally, protecting the Coastal Plain and our subsistence way of life is a human rights issue for the Gwich'in. The United Nations International Covenant on Economic, Social and Cultural Rights states that "In no case may a people be deprived of its own means of subsistence."[43] The United States became a signatory on October 5, 1977. The draft EIS fails consider the human rights of the Gwich'in and evaluate the fact that impacts to subsistence from an oil and gas program directly impacts our human rights, and the United States' ability to comply with international mandates to protect and respect our human rights.

By failing to use traditional knowledge, utilizing outdated data, and not considering our sharing networks, BLM fails to fully account for our reliance on the Porcupine Caribou Herd and our cultural and spiritual reliance on subsistence resources. Any impacts to the Porcupine Caribou Herd will significantly affect our subsistence way of life, BLM should recognize that this is a human rights issue for us as Gwich'in People, and revise the draft EIS with current and comprehensive subsistence data and a robust analysis in order to account for the impacts to our resources and human rights.

BLM Fails in its Obligations under ANILCA Section 810.

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[42] DEIS vol. 1 at 3-175.

[43] U.N. International Covenant on Economic, Social, and Cultural Rights, G.A. Res. 2200A, pt. I, art. 1.3 (Jan. 3, 1976), *available at* http://www.ohchr.org/EN/ProfessionalInterest/Pages/CESCR.aspx.

BLM's ANILCA section 810 finding with respect to the Gwich'in is flawed. BLM wholly failed to prepare a robust analysis under Title VIII of ANILCA. Oil and gas leasing on the Coastal Plain will significantly restrict subsistence use and resources for the Gwich'in. Section 810 of ANILCA sets out the procedure for considering actions that would significantly restrict subsistence use and requires that agencies can only authorize that action if it finds it is necessary and if the adverse effects are minimized. While we question if any mitigation can be sufficient to protect our subsistence resources, to comply with the law, BLM was legally required to analyze a range of potential mitigation measures in its DEIS and to set out what steps it will take to minimize the serious impacts to subsistence uses and resources.

Despite the fact that we have expressed significant concerns related to food security and our subsistence way of life, in the DEIS section 810 evaluation, BLM finds that Gwich'in communities will not experience significant restrictions on subsistence uses. BLM does not find significant restrictions for any Gwich'in communities, nor even consider Canadian villages in its analysis. This is patently incorrect and unacceptable.

Due to these incorrect and limited findings, the BLM and DOI only held a public subsistence hearing in Kaktovik during the Draft EIS comment period, and did not hold ANILCA 810 hearings in any Gwich'in communities. These findings are contrary to science and BLM's own discussion elsewhere in the Draft EIS that recognize potential impacts to caribou. The Gwich'in of Alaska and Canada are culturally and spiritually connected to the Porcupine Caribou Herd, which in turn relies on the Coastal Plain for calving and post-calving habitat. Because of this connection, protecting the Coastal Plain is vital to our human rights and food security. Despite acknowledging that oil and gas can have impacts on caribou, BLM concludes that there will not be an impact on the subsistence resources for the Gwich'in. This ignores the traditional knowledge and human rights of the Gwich'in. BLM must revise its ANILCA 810 analysis, reissue the Draft EIS, and schedule 810 hearings in all potentially affected communities including Arctic Village, Venetie, Fort Yukon, Beaver, Circle, Birch Creek, Canyon Village, Chalkyitsik, Circle, and Eagle Village in Alaska, and Old Crow, Fort McPherson, Tsiigehtchic, Aklavik, and Inuvik in Canada.

Legal Requirements

Title VIII of ANILCA recognizes that subsistence uses are a public interest and provides a framework to consider and protect subsistence uses in agency decision-making processes.[44] Section 810 sets forth a procedure through which effects to subsistence resources must be considered and provides that "actions which would significantly restrict subsistence uses can only be undertaken if they are necessary and if the adverse effects are minimized."[45]

ANILCA section 810 consists of a two-tiered process evaluating impacts. The federal agency first makes an initial finding, referred to as the "tier-1" determination, in determining

[44] 16 U.S.C. §§ 3111–3126.
[45] *Amoco Production Co. v. Village of Gambell, Alaska*, 480 U.S. 531, 544 (1987).

whether to withdraw, reserve, lease, or otherwise allow the use, occupancy, or disposition of land.[46] The agency is required to "evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for the purposes sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes."[47] As part of this determination, BLM must consider the cumulative impacts[48] and analyze:

1) Reductions in the abundance of subsistence resources caused by a decline in the population or amount of harvestable resources;
2) Reductions in the availability of resources used for subsistence purposes caused by alteration of their normal locations, migration, or distribution patterns; and;
3) Limitations on access to subsistence resources, including from increased competition for the resources.[49]

If the agency, after conducting the tier-1 analysis, determines that the activity will not "significantly restrict subsistence uses,"[50] then the agency issues a Finding of No Significant Restriction and the requirements of ANILCA Section 810 are satisfied. However, if the agency makes the initial determination that the action may "significantly restrict subsistence uses," the agency must then conduct a "tier-2" analysis.[51]

Under tier-2, if a proposed action would significantly restrict subsistence uses, BLM can only adopt that action if it finds that the restriction on subsistence is necessary and consistent with sound public lands management principals; involves the minimal amount of public lands necessary to accomplish the purpose of the use, occupancy or disposition of public lands; and takes reasonable steps to minimize the adverse impacts to subsistence uses and resources from any use.[52] Thus, ANILCA Section 810 imposes procedural requirements as well as substantive restrictions on the agency's decisions.[53] The agency must provide notice to local and regional councils and hold hearings in potentially affected communities.[54] Under BLM's guidance, if the action "may" restrict subsistence uses, BLM is required to take a precautionary approach and comply with the notice and hearing procedures in Section 810.[55]

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[46] ANILCA § 810(a), 16 U.S.C. § 3120(a).
[47] ANILCA § 810(a), 16 U.S.C. § 3120(a); *Hanlon v. Barton*, 470 F. Supp. 1446, 1448 (D. Alaska 1988).
[48] *Sierra Club v. Penfold*, 664 F. Supp 1299, 1310 (D. Alaska 1897), *aff'd*, *Sierra Club v. Penfold*, 857 F.2d 1307 (9th Cir. 1988).
[49] State Director, Bureau of Land Mgmt., Instruction Memorandum No. AK-2011-008: Instructions and Policy for Compliance with Section 810 the Alaska National Interest Lands Conservation Act (ANILCA) (Jan. 14, 2010) [hereinafter Instruction Memorandum].
[50] 16 U.S.C. § 3120(a).
[51] *Kunaknana v. Clark*, 742 F.2d 1145, 1151 (9th Cit. 1984); *Hanlon*, 470 F. Supp. at 1448.
[52] 16 U.S.C. § 3120(a)(1)–(3).
[53] *Sierra Club v. Marsh*, 872 F.2d 497, 502–03 (9th Cir. 1989).
[54] 16 U.S.C. § 3120(a).
[55] BLM Instructional Memorandum at 6-2.

BLM fails to adequately analyze the overall impacts to subsistence users and improperly limited the scope of its analysis

Overall, BLM's section 810 findings are arbitrary and contrary to the information before the agency. BLM does not find significant restrictions for any Gwich'in communities, nor even consider Canadian villages in its analysis.

BLM acknowledges that subsistence harvesting and sharing patterns for "22 Alaskan communities and seven Canadian user groups are relevant if post-lease oil and gas activities changes caribou resource availability or abundance for those users."[56] Despite this, BLM arbitrarily limits its ANILCA 810 analysis of subsistence impacts to four communities: Kaktovik, Nuiqsut, Arctic Village, and Venetie.[57] BLM did not adequately assess whether oil and gas leasing on the Coastal Plain would significantly restrict subsistence uses in the remaining Gwich'in villages, as required by ANILCA 810.

BLM also arbitrarily and improperly limits the scope of its ANILCA 810 analysis in the same way it improperly limited the scope of its NEPA analysis: BLM only looks at post-lease activities that include seismic and drilling exploration, development, and transportation.[58] BLM should not limit its analysis of the impacts to only post-leasing activities and needs to include the full range of direct, indirect, and cumulative impacts to subsistence use that could occur from the program. This includes from any proposals to conduct pre-leasing seismic exploration on the Coastal Plain, as discussed above. BLM needs to revise and reissue its Draft EIS to ensure it actually takes into consideration the full range of potential impacts to subsistence for purposes of its 810 analysis.

BLM also claims that, at each decision stage, BLM retains the authority to approve, deny, or reasonably condition any proposed on-the-ground activities based on compliance with applicable laws and policies. This is not consistent with the interpretation BLM has taken with regard to its leases elsewhere (i.e., the NPR-A), which in turn has led to serious and unmitigated impacts to the community of Nuiqsut. For example, in the context of the GMT-2 decision near the community of Nuiqsut in the NPRA, BLM refused to adopt the no action alternative, instead claiming that the lease waived the agency's right to later say no to development projects — regardless of how serious the impacts were to subsistence and other resources. If BLM's assertion in the draft EIS is that it retains the authority to later say no to projects, BLM needs to clarify in the draft EIS and any proposed lease terms so it is absolutely clear that a lease does not grant the right to conduct any future activities and that BLM retains the authority to fully prohibit any later proposals. Without clearly retaining this authority, BLM cannot ensure compliance with Section 810.

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[56] DEIS vol. 1 at 3-167.
[57] DEIS vol. 2 Appendix E at E-3.
[58] DEIS vol. 2 Appendix E at E-2.

BLM also appears to bypass conducting a meaningful analysis of impacts by stating that until BLM receives and evaluates a request for an "exploration permit, permit to drill, or other authorization that includes site-specific information about a particular project, impacts of actual exploration and development that might follow lease issuance are speculative, as so much is unknown as to location, scope, scale, and timing of that exploration and development."[59] In its analysis of the cumulative impacts to caribou abundance, BLM also states that impacts would be "minor due to the speculative locations of future proposed infrastructure." [60] Speculative does not equal minor; the uncertainty about the exact location of infrastructure does not mean that the impacts to subsistence would be minor, particularly if that infrastructure is ultimately located in sensitive areas or disrupts migration patterns or obstructs migration corridors. BLM cannot circumvent doing a robust analysis of the potential impacts merely because the impacts are potentially speculative at this stage. BLM needs to analyze the full range of potential impacts to determine if it might cause impacts to subsistence, and needs to follow a precautionary approach in making those determinations.

BLM's analysis of impacts to subsistence access is also wholly inadequate. The agency talks about impacts to subsistence use areas in such a cursory and vague way that there is no indication the agency actually took a meaningful look at the ways in which access could be impacted. The 810 analysis concludes "[l]egal and physical access to subsistence resources may be altered, depending on the locations of CPFs and industry-established safety areas; however it is likely that large-scale access to subsistence resources would be maintained."[61] BLM appears to dismiss what it acknowledges will be impacts to subsistence by writing them off as unclear at this point since it does not know the exact infrastructure location. That is contrary to Section 810 and its purpose. BLM cannot write off impacts by concluding it does not know the exact location well enough to analyze them; it needs to actually take the time to analyze all potential impacts to subsistence, including cumulative impacts. BLM's conclusion that it is "likely" that access will be maintained on a large scale is also not sufficient. BLM's conclusion that it is "likely" on a wholly undefined "large-scale" that there will not be impacts is unsupported and meaningless. BLM cannot ignore the significance of these impacts by viewing them on such a large scale that effectively hides the impacts; it needs to look at what those impacts could look like at both local and broader scales. When the agency is evaluating the potential impacts to subsistence, if the action "may" restrict subsistence uses, BLM is required to take a precautionary approach and comply with the notice and hearing procedures in Section 810.[62] BLM failed to follow that precautionary approach with these findings, contrary to Section 810 and BLM's guidance.

BLM's overall analysis of specific subsistence resources is also insufficient. As discussed in more detail in the next section, oil and gas leasing on the Coastal Plain is likely to have significant impacts on the Porcupine Caribou Herd, which will in turn restrict the abundance and availability of the herd for subsistence use. In the draft EIS, BLM states that "[d]evelopment

[59] DEIS vol. 2 Appendix E at E-2.
[60] DEIS vol. 2 Appendix E at E-18.
[61] DEIS vol. 2 Appendix E at E-9.
[62] BLM Instructional Memorandum at 6-2.

would not significantly affect the availability of caribou for subsistence use."[63] This assumption erroneously assumes that caribou will still be present in the area despite the high likelihood of disturbance from noise and human activity. It is also at odds with the information in the DEIS and scientific knowledge that indicates that caribou will likely be deflected and migration altered by industrial development. BLM also fails to explain how the fully waivable lease stipulations, ROPs, and mitigation measures will ensure that caribou will not be deterred from the Coastal Plain and still be available to Gwich'in hunters.

BLM further assumes that hunters will be able to adapt to the changes occurring around them.[64] BLM cannot rely on the potential for adaptation to bypass a positive subsistence finding under Section 810. How BLM foresees hunters adapting should be described. We know that BLM did not discuss this with our communities so it is unclear what BLM is basing this assumption on. It is also necessary to consider that all hunters may not be able to adapt because of factors like increased cost of travel to more distant subsistence use areas and the need for better machinery to do so, which is not necessarily available to everyone that may be impacted. BLM should analyze and describe the limitations of adaptation to changed subsistence practices, resources, and conditions on the landscape.

BLM's failure to make a positive finding for Gwich'in communities cannot absolve the agency of its obligation under tier-2 of ANILCA 810. Under tier-2, if a proposed action would significantly restrict subsistence uses, BLM can only adopt that action if it finds that the restriction on subsistence is necessary and consistent with sound public lands management principals; involves the minimal amount of public lands necessary to accomplish the purpose of the use, occupancy or disposition of public lands; and takes reasonable steps to minimize the adverse impacts to subsistence uses and resources from any use.[65] BLM's evaluation of the availability of other lands for the purposes sought to be achieved and analysis of other alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence are also wholly inadequate. BLM's analysis of the availability of other lands provides only a cursory summary of the Tax Act and concludes that the alternatives would fulfill the purpose of the statute.[66] BLM's evaluation of alternatives that would reduce or eliminate the use of lands needed for subsistence similarly states that the action alternatives would meet the purpose of the Tax Act and notes that some of the alternatives would result in less land being available for leasing.[67] This is not a meaningful evaluation of the ways in which BLM can reduce impacts to subsistence. The 810 analysis fails to recognize that BLM is in no way obligated to open the entire Coastal Plain to leasing. BLM has not only the ability to further limit the areas it offers for lease, but an obligation under Section 810 to only allow an action if it is involves the minimal amount of public lands necessary to accomplish the purpose.[68] BLM's cursory evaluation and apparent assumption that there is no difference between the different

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[63] DEIS vol. 2 Appendix E at 7.
[64] *See, e.g.*, DEIS vol. 1 at 3-177.
[65] 16 U.S.C. § 3120(a)(1)–(3).
[66] See, e.g., DEIS, vol. 2 Appendix E at E-10.
[67] See, e.g., DEIS, vol. 2 Appendix E at E-10.
[68] 16 U.S.C. § 3120(a)(1)–(3).

alternatives and how they relate to subsistence impacts goes against the requirements of Section 810 and fails to provide a meaningful evaluation of how BLM can minimize the impacts to subsistence users.

Additionally, while BLM says that it will conduct the required analysis under subsections (a)(3)(A), (B), and (C) of Section 810 in the final analysis is insufficient because it does not provide affected communities the opportunity to review and comment on BLM's analysis and proposed measures before they are adopted. It is critically important that BLM release preliminary findings and recommendations in a revised 810 analysis so that the agency can receive input on them before the agency finalizes them.

Overall, BLM's analysis of the potential impacts to subsistence use is arbitrary, fails to consider the full range of potential impacts, and fails to comply with the requirements of Section 810 and BLM's guidance. The direct and indirect impacts to any of these subsistence resources necessitates a positive finding for purposes of Section 810. BLM's preliminary evaluation is so faulty that it inhibits participation by the communities that could be affected. BLM should issue a revised preliminary evaluation correcting these deficiencies and re-release it when the agency issues the revised draft EIS that is also necessary.

BLM fails to adequately analyze impacts to the Porcupine Caribou Herd and Gwich'in subsistence users.

For all development alternatives, BLM acknowledges some portion of the herd's calving area will be subject to leasing and surface occupancy, and the likely result is displacement and a decline in calf survival.[69] Although the restrictions on surface occupancy and leasing are superficially more stringent for Alternative C and Alternatives D1 and D2, all of BLM's proposed action alternatives would result in some level of displacement impacts on calving caribou.[70] Alternative B is particularly concerning, as it contemplates two central processing facilities, one of which could be located in the calving area for the Porcupine Caribou Herd.[71] BLM concludes that there would be similar impacts under each of the alternatives because there would be only 2,000 acres of disturbance in the program area.[72] This ignores the fact that there are likely to be very different impacts depending on where and when BLM allows infrastructure and industrial activity. It is also based on BLM's faulty and restrictive interpretation of the 2,000-acre limitation. Regardless, BLM needs to analyze these differences and how they will impact subsistence, and cannot rely solely on the direct footprint of development. As explained above, the impacts of oil and gas development are felt far beyond the direct footprint of oil and gas projects.

BLM's assertions that these impact will be minimal is in error. Any impacts to the Porcupine Caribou Herd on the Coastal Plain will be felt throughout their range in Alaska, the

[69] DEIS vol. 2 Appendix E at E-6–E-9.
[70] DEIS, vol. 2 Appendix E at E-11–E-14.
[71] DEIS, vol. 2 Appendix E at E-8.
[72] *See, e.g.*, DEIS, vol. 2 Appendix E at E-13.

Yukon, and Northwest Territories and will result in a significant restriction to subsistence resources. BLM acknowledges the importance of caribou to 22 communities,[73] yet states that "Kaktovik, Arctic Village, and Venetie are the only communities that may be *appreciably affected* by changes in the abundance or availability of PCH caribou."[74] This conclusion is unsupported. There is again no explanation for BLM's wholesale failure to consider subsistence impacts to all other Gwich'in communities.

BLM's own guidance states that the agency should err on the side of protection.[75] This is particularly important because "the intent of Title VIII of ANILCA is to protect subsistence use, and . . . the Section 810 process has the ultimate goal of identifying ways in which impacts to subsistence can be minimized through the Notice and Hearings process."[76] Indeed, the threshold to hold hearings is that there "may" be impacts. BLM has not erred on the side of protection in its 810 analysis. Instead, BLM has chosen to ignore the significant direct and indirect impacts to the Gwich'in, including the ways in which impacts to some communities will ripple out to other communities in light of community sharing practices. As discussed next, contrary to BLM's Section 810 findings, there are likely to be significant impacts to both the abundance and availability of resources available for subsistence purposes.

The Oil and Gas Program Will Have Significant Impacts to the Porcupine Caribou Herd, and Thus Abundance of Subsistence Resources for the Gwich'in.

Notwithstanding BLM's failure to look at all Gwich'in communities, for the two Gwich'in communities considered under ANILCA 810, Arctic Village and Venetie, BLM incorrectly finds there will not be significant restrictions to the abundance of resources available for subsistence use. Factors that can contribute to a reduction in abundance include adverse impacts on habitat, direct impacts on the resource, increased harvest, and increased competition from non-subsistence harvesters.[77] As discussed above, there are likely to be significant adverse impacts to the Porcupine Caribou Herd from the oil and gas program. Activities associated with the oil and gas program will potentially cause a reduction in the Porcupine Caribou Herd's population, leading to a decline in the amount of harvestable resources. The draft EIS acknowledges that there will be adverse impacts on the Porcupine Caribou Herd and its habitat in multiple places, and yet still somehow finds there will not be significant impacts to subsistence in its ANILCA 810 analysis.[78] It is unclear how BLM avoids finding a reduction in abundance of

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[73] DEIS, vol. 2 Appendix E at E-3.
[74] *Id*.
[75] *Id.* at 6-3.
[76] *Id.* at 6-3.
[77] State Director, Bureau of Land Mgmt., Instruction Memorandum No. AK-2011-008: Instructions and Policy for Compliance with Section 810 the Alaska National Interest Lands Conservation Act (ANILCA) (Jan. 14, 2010) [hereinafter Instruction Memorandum] at 4.
[78] DEIS vol. 2 at E-8 (indicating that, by placing infrastructure in the high-use calving area, BLM finds that "calving would most likely shift to the east or southeast," to areas with suboptimal forage); *id.* ("More surface development within this area could result in greater displacement of maternal caribou during calving, and thus could contribute to lower pregnancy rates and lower

the Porcupine Caribou Herd, based on even the limited information in its own DEIS. This must be more clearly explained.

BLM also ignores substantial evidence from studies and traditional knowledge that disturbance to caribou in the calving and nursery grounds will have serious impacts to the herd, including reductions in calf survival. Drilling on the Coastal Plain threatens the caribou migrations and would cause lower birth rates, risking everything we hold dear. Caribou rely on stored body fat and energy reserves to get them through the long, difficult winter. The post-calving period is crucial to providing nourishment for growing calves and replenishing depleted body reserves. The Coastal Plain is critical for caribou post-calving as it provides greater concentrations and prolonged availability of plant nitrogen compared to the nearby Brooks Range.[79] This nitrogen is a limiting resource for caribou that allows them to gain weight during the brief summer months, increasing winter survival and subsequent-year reproduction.[80] Furthermore, key limiting minerals needed by caribou also appear to be more available on the Coastal Plain than in other seasonally-used areas.[81] BLM finds that "[c]aribou would be displaced from areas that no longer have suitable forage, but displacement is not expected to be widespread."[82] This statement ignores the important science behind why the Porcupine Herd calves on the Coastal Plain and how displacement could lead to great calf mortality. Disturbance to the herd's calving and post-calving area and important food sources would likely cause a decline in the population and amount of harvestable resources. BLM also fails to explain why displacement will not alter migration paths.

Furthermore, all alternatives recognize there could be vehicle collision mortality, altered movement patterns from linear infrastructure, and air traffic impacts to the Porcupine Caribou Herd.[83] These impacts are not adequately considered in BLM's ANILCA 810 analysis. For example, BLM appears to focus on only those components that it considers to be part of the 2,000 acre limitation. BLM does not address or account for impacts from all infrastructure, such as the raised pipelines, or other activities, such as gravel mining and seismic exploration. Seismic exploration on the Coastal Plain will have significant additional effects on subsistence. SAExploration's proposal seeks to pursue exploration across the entire calving grounds of the Porcupine Caribou Herd. This proposal and other seismic exploration on the coastal plain have the potential to destroy or alter large swaths of vegetation and habitat that are vital to the Porcupine Caribou Herd and other species. Disturbance will amplify detrimental subsistence

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calf survival rates."); DEIS vol. 1 at 3-117 (indicating in the DEIS that dust generation during creation of gravel roads and travel upon those roads "may add toxic metals to roadside vegetation that mammals forage"); *cf.* DEIS vol. 2 at E-7 (indicating in the draft EIS that caribou responses to aircraft can affect subsistence hunters, recognizing that "[r]esidents of Nuiqsut consistently highlight aircraft disturbance of caribou as a concern and state that aircraft activity makes animals more wary and harvest more difficult").

[79] Barboza et al. 2018.

[80] Barboza et al. 2018.

[81] Oster et al. 2018.

[82] DEIS vol. 2 Appendix E at E-8.

[83] DEIS vol. 2 Appendix E at E-8.

impacts from leasing, exacerbating the potential decline in the population resulting from impacts to calving habitat.

BLM's reliance on the DEIS's mitigation measures is misplaced. As an initial matter, it appears that all stipulations, ROPs, and mitigation measures can be waived, exempted, or modified. Therefore, their ability to provide protections is questionable at best. BLM also fails to adequately analyze the effectiveness of the mitigation measures, further calling into question their effectiveness. Regardless, the proposed measure are insufficient. For instance, Stipulation 6 seeks to protect habitat of both the Porcupine and Central Arctic Herds by minimizing disturbance and hindrance of movements.[84] However, for its requirements and standards, it simply points to ROP 23 for Alternatives B and C, with only the addition of suspension of major construction activities using heavy equipment for a short period under Alternative D. This means that this stipulation does not provide any independent protection for caribou movements across the Coastal Plain. (It is unclear what "major construction activity" means.) Stipulation 7 seeks to protect the "PCH primary calving habitat area." However, BLM has not supported the delineation of that area in the DEIS with any level of robust scientific justification.

Additionally, areas outside of the areas identified by BLM as the most commonly used concentrated calving areas are still very important for caribou for post-calving needs as well as calving. BLM needs to protect all calving and post-calving habitat, as well as protect migration corridors and movements. Protecting only the "primary calving area" as restrictively and improperly defined by BLM will provide little protection in some years, potentially increasing calf mortality and threatening the caribou population. This is especially a concern if warming conditions under climate change leads to "a western shift in concentrated calving areas," as the DEIS indicates.[85]

Because of the importance of the Porcupine Caribou Herd to all Gwich'in communities, in both Canada and the U.S., any impacts with the potential to decrease the population and harvestable resources will have a significant effect to all Gwich'in communities. BLM failed to account for the potential impacts to abundance, as well as how that will have an even broader impact to these communities in light of sharing practices. BLM's finding of no significant restriction to the abundance of subsistence resources for all Gwich'in communities that rely on the Porcupine Caribou Herd is arbitrary and contrary to science and the record before the agency.

The Oil and Gas Program Will Have Significant Impacts to the Availability of Subsistence Resources for the Gwich'in.

Oil and gas leasing on the Coastal Plain would cause reductions in the availability of resources used for subsistence purposes. Under BLM's 810 guidance, reductions in availability are caused by factors such as alterations to resources' locations, migration, or distribution patterns.[86] Any disturbance to the Porcupine Caribou herd in its calving and post-calving grounds

[84] DEIS vol. 1 at 2-11.
[85] DEIS vol. 1 at 3-110.
[86] Instruction Memorandum, *supra*, at 5.

and insect relief areas would very likely result in alteration of their movements. Any such change in the migration patterns of the Porcupine Caribou Herd is particularly problematic for subsistence activities for the Gwich'in people. The Gwich'in of Alaska and Canada are heavily dependent on the Porcupine Caribou Herd, so much so that their communities trace the historic migratory route of the herd through the Gwich'in traditional homelands. These facts more than satisfies BLM's guidance that it make a positive finding if there "may" be an impact.

Movement is central to life for barren-ground caribou, including the Porcupine Caribou Herd. Barren-ground caribou are renowned for their long-distance migrations, covering thousands of kilometers each year in some of the longest overland movements in the world.[87] These migrations allow caribou to take advantage of resources that change over space and time, such as moving to areas with greater winter food availability and shelter and then returning to calving grounds with lower densities of predators.[88] Changes to migratory patterns for the Porcupine herd could have serious impacts on the herd's availability to Gwich'in subsistence hunters throughout the Gwich'in homelands.

The hypothetical development scenario description states, without scientific analysis, "[i]n caribou areas, potential roads would be built on north-south and east-west orientations to the extent possible to limit interference with caribou migration. Figure B-2, Conceptual Layout of a Caribou Area Stand-alone Oil Development Facility, shows how the hypothetical layout could be adjusted for caribou mitigation if deemed appropriate by permitting agencies."[89] Figure B-2 depicts a slightly different layout of the roads radiating out from the Central Processing Facility to additional "satellite" drill sites, but no explanation is provided for assumptions about why it would be expected have a differing impact on caribou compared with Figure B-1. Furthermore, no analysis was provided for how a major road and transportation system and infield roads would affect caribou movements. BLM instead relies on the erroneous conclusion that caribou would simply "forage within the total footprint of a [central processing facility and its associated well pads" to dismiss the idea that infrastructure would impact the availability of the Porcupine Caribou Herd.[90] There has been extensive research on negative impacts of roads associated with the Trans-Alaska Pipeline and the Prudhoe Bay oilfield complex to the Central Arctic Herd.[91] As noted above, habituation is unlikely. BLM needs to address these issues using strongly supported scientific information, and fully consider impacts to caribou movement, which would directly impact availability for subsistence use.

Furthermore, all alternatives recognize vehicle collision mortality, altered movement patterns from linear infrastructure, and air traffic impacts to the Porcupine Caribou Herd.[92] Although BLM finds some of these impacts can be mitigated with timing and surface limitations,

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[87] Fancy et al. 1989; Bergman et al. 2000.; Schaefer and Mahoney. 2013.
[88] Dau. 2011.; Joly. 2012.; Person et al. 2007
[89] DEIS vol. 2 Appendix B at B-13.
[90] DEIS vol. 2 Appendix E at E-6.
[91] *E.g.*, Cameron et al. 1979.; Cameron and Whitten. 1980.; Dau and Cameron. 1986.; Cameron et al. 1992.; Nelleman and Cameron. 1996.; Nelleman and Cameron. 1998.; Cameron et al. 2005.
[92] DEIS, vol. 2 Appendix E at E-8.

BLM acknowledges that mitigation measures merely minimize, and do not eliminate impacts to subsistence.[93] BLM does not attempt to explain what the shortcomings of these mitigations measures may be in terms of restrictions on subsistence availability. BLM also does not adequately account for the fact that the mitigation measures are potentially subject to waivers, exceptions, and modifications. The effectiveness of any mitigation measures is in part directly tied to whether or not it is enforceable or could be waived. BLM needs to account for the potential waiver of these provisions as part of its subsistence analysis, as that could negate any of the purported protections and benefits of such provisions.

Changes to the Porcupine Caribou Herd's migration route will have significant repercussions for Gwich'in communities, who are already having to travel farther to hunt caribou as their migration shifts because of climate change. BLM's 810 analysis lacks robust science and falls far short of its duties to discern, address, and mitigate against any impacts to the availability of subsistence resources.

BLM fails to adequately account for cumulative impacts in the ANILCA Section 810 analysis.

BLM's cumulative analysis falls far short of adequately considering the impacts of other past, present, and reasonably foreseeable future actions in conjunction with oil and gas leasing on the Coastal Plain. Under ANILCA 810, "the purpose of the cumulative effects analysis is to determine the effects of the proposed action and alternatives together with other past, present, and reasonably foreseeable future actions."[94] A positive finding in the cumulative case triggers the notice, hearing, and determination requirements of ANILCA Section 810(a)."[95]

As pointed above, BLM arbitrarily limits the scope of its 810 analysis to four communities, thus ignoring the impacts of its proposed action along with cumulative impacts that will occur for the other Gwich'in communities in Alaska and Canada. This must be remedied in the revised 810 evaluation.

BLM also seems to characterize future development on the Coastal Plain as a cumulative impact itself rather than a direct and indirect impact of its proposed lease sales. Besides being illogical, this assumption leads to BLM focusing primarily on direct and indirect impacts to subsistence uses, rather than taking a hard look at the cumulative impacts of other reasonably foreseeable future actions.

Past and present actions included in the cumulative case that have affected subsistence uses and resources as recognized by BLM are:

- Oil and gas exploration, development, and production on the North Slope
- Transportation

[93] DEIS, vol. 2 Appendix E at E6–E8.
[94] Instruction Memorandum at 7.
[95] Instruction Memorandum at 7.

- Subsistence activities
- Recreation and tourism
- Scientific research
- Community development
- Climate change[96]

BLM lists the following as reasonably foreseeable future actions:

- Road and pipeline between Kaktovik and the Dalton Highway/Trans-Alaska Pipeline
- Oil and gas development in the Colville-Canning Area
- Oil and gas activity in the vicinity of Alpine.[97]

Noting these actions in passing does not constitute a meaningful cumulative impacts analysis. As discussed throughout these comments, BLM has repeatedly failed to fully discuss the potential impacts from both the leasing program and other activities in the region to a broad range of potential resources and uses, including to subsistence and key resources such as caribou that are vital to subsistence. BLM needs to substantially revise its overall analysis of the potential cumulative impacts in the preliminary evaluation and reissue it to ensure that it fully accounts for these impacts for purposes of both NEPA and its Section 810 analysis.

In describing impacts of oil and gas development, BLM focuses on impacts resulting from oil and gas development activities on the Coastal Plain. There is absolutely no discussion of the three reasonably foreseeable future actions identified by BLM. BLM completed failed to analyze or even discuss impacts from development activities in the Colville-Canning Area, Alpine, a road and pipeline between Kaktovik and the Dalton Highway/Trans-Alaska Pipeline. BLM also limits its discussion on development in Alpine to *existing* oil and gas development activities. This does not adequately account for the potential cumulative impacts to subsistence users or reasonably foreseeable projects, such as ConocoPhillips' Willow project near Nuiqsut.

Besides oil and gas development across the North Slope, BLM must also consider all reasonably foreseeable future actions that may impact the Porcupine Caribou Herd throughout its migratory range. BLM should not arbitrarily limit the scope of its analysis to the geographic area on or immediately adjacent to the Coastal Plain. BLM must consider any impacts to the herd from activities south of Brooks Range and within Canada.

BLM's ANILCA 810 analysis also fails to meaningfully account for climate change, which will exacerbate the cumulative impacts for all subsistence activities. Climate change is reshaping the Arctic landscape, and needs to be considered in light of changing migration patterns and intensity of current effects to subsistence. Currently, the only consideration in the 810 analysis provides:

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[96] DEIS vol. 2 Appendix E at E-16.
[97] DEIS vol. 2 Appendix E at E-16.

> Climate change is an ongoing factor considered in cumulative effects analyses on the North Slope. Climate change could affect the habitat, behavior, distribution, and populations of fish and wildlife within the program area. It could also impact access to these resources. The trends in climate change that were described in BLM 2018a are expected to continue.[98]

BLM's climate change analysis lacks rigor and is incomplete. It completely ignores the very real impacts which are already happening across the North Slope and Alaska. As discussed elsewhere in these comments, the traditional knowledge and the best available science demonstrates that climate change is already impacting important subsistence resources like caribou, fish, and marine mammals. Instead of conducting an analysis specific to how subsistence use in this area could be impacted by climate change, BLM instead relies on the decision document for the Greater Mooses Tooth Two development to bypass providing any meaningful analysis of the impacts of climate change.[99] The GMT-2 analysis relates to a landscape hundreds of miles away with different resources and use patterns and does not contain an analysis of the potential impacts of climate change specific to the Coastal Plain and its subsistence resources. BLM's ANILCA Section 810 analysis must be focused on the landscape and resources under consideration, and the subsistence users that will be impacted.

In conclusion, BLM needs to substantially revise its 810 analysis to fully account for the broad range of impacts that warrant a positive finding for significant restrictions to subsistence for all Gwich'in communities, which rely on the Coastal Plain and its resources. We have repeatedly expressed our concerns that oil and gas leasing will significantly restrict our subsistence way of life as Gwich'in, and BLM's conclusion in its 810 analysis for the Gwich'in ignores our traditional knowledge and human rights. BLM must revise its ANILCA 810 analysis, reissue the Draft EIS, and schedule 810 hearings in all potentially affected communities.

BLM Failed to Consider the Coastal Plain's Historical and Cultural Importance to the Gwich'in.

There is significant information missing for BLM to be able to accurate describe cultural and archeological resources of the Coastal Plain and for the agency to be able to accurately analyze the impacts of an oil and gas program on these resources. BLM needs to do extensive studies in order to make informed decisions protecting cultural resources and comply with National Historic Preservation Act (NHPA) Section 106.[100] NHPA Section 106 requires the BLM to [i]dentify historic properties and assess the effects of the undertaking on such properties.[101] Completing an accurate review and analysis of cultural and archeological resources will required a revised EIS.

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[98] DEIS vol. 2 Appendix E at E-19.
[99] DEIS vol. 2 Appendix E at E-19.
[100] 36 C.F.R. § 800.8.
[101] 36 C.F.R. § 800.8(c)(1)(ii).

Oil and gas activities in the Arctic Refuge have the potential to affect historic places and cultural resources of the Gwich'in. This may result from a wide range of oil and gas and industrial activities, including ground disturbance during seismic exploration, drilling, and excavation of gravel for construction of permanent facilities.[102] Therefore, BLM must consult as part of this process and fully comply with the requirements in the NHPA to determine how proposed activities could impact cultural resources listed on, *or eligible for inclusion in*, the National Register of Historic Places. Because only limited areas of the Arctic Refuge have been studied for cultural resources, the vast majority of lands may contain cultural resources that are unknown. The potential to discover unknown sites is high in the Arctic Refuge and BLM must conduct a survey prior to issuing any leases. As part of these cultural resource inventories, BLM should consider whether locations are eligible for listing in the National Register of Historic Places based on their significance to the Gwich'in people. Property is eligible for inclusion in the Register if it meets criteria specified in the National Register's Criteria for Evaluation ("Criteria").

The NHPA requires agencies to ensure that properties listed or eligible to be listed on the National Historic Register are preserved to maintain their historic, archaeological, architectural, and cultural values.[103] BLM must, therefore, consult with the Alaska SHPO and tribes as part of this process and fully comply with the requirements in the NHPA's implementing regulations to determine how proposed activities could impact cultural resources listed on, or eligible for inclusion in, the National Register of Historic Places. BLM did not properly evaluate the impacts of an oil and gas program on all cultural and archeological resources.

BLM cannot engage in cultural resource protection without surveys and a baseline understanding of the resources. The EIS is deficient as it presents an incomplete picture of the Coastal Plain's prehistoric and historic sites; the agency cannot sufficiently protect the unknown. Information currently available is outdated, insufficient, and incomplete. A full, comprehensive study of the Coastal Plain's cultural resources, including specific consideration archeological resources and historic resources is required to make informed decisions and to comply with the NHPA.[104]

BLM must document our broader cultural ties to the Coastal Plain. Ethnographic resources also require protections, including ethnographic landscapes, traditional cultural properties, Native American sacred sites, and intangible cultural resources (e.g. oral traditions, indigenous knowledge, and traditional skills).[105] Currently BLM recognizes "the Gwich'in people have cultural and ethnographic ties to the program area, as evidenced by cultural sites, traditional and contemporary uses, oral histories, and current beliefs and values."[106] Additionally

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[102] *See* BLM NPR-A Final IAP/EIS, Vol. 4, 98-102 (discussion of oil and gas exploration and development activities which may impact paleontological resources).
[103] 54 U.S.C. § 306102(b)(2).
[104] 36 C.F.R. § 800.8.
[105] DEIS vol. 1 at 3-154.
[106] DEIS vol. 1 at 3-156–3-157.

the EIS states that [a]ny potential impacts on [*Iizhik Gwats'an Gwandaii Goodlit,* "The Sacred Place Where Life Begins"] would constitute a cultural effect" on the Gwich'in people.[107] Deference should be given to our millennia of traditional knowledge. The current lack of research must be remedied before BLM allows any disruption or oil and gas activities that could potentially harm the Coastal Plain as a significant ethnographic cultural resource. BLM identified that the Gwich'in people in Arctic Village and Venetie requested consultation, specifically on ethnographic knowledge.[108] The NHPA requires BLM to meaningfully comply, not only with regard to the communities of Arctic Village and Venetie's requests, but BLM must pursue consultation for all Gwich'in communities along the historic migration path of the Porcupine Caribou Herd.[109]

The consultation process and these studies are critical to ensure that our cultural and religious heritage is protected. BLM must perform obtain the necessary information and conduct the required surveys to accurately analyze the impacts of an oil and gas program on cultural resources. By not completing these surveys, BLM fails to comply with NEPA and Section 106 NHPA, and cannot adequately consider the impacts of the proposed alternatives it has set forth in the EIS.[110]

Leasing on the Coastal Plain Is an Environmental Justice and Human Rights Issue.

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.[111] At the core of this definition is equal access to the decision-making process to have a healthy environment in which to live, learn, and work.[112] Oil and gas leasing, exploration, development, and production as an environmental justice issue for the Gwich'in. BLM's environmental justice analysis fails to sufficiently evaluate whether the leasing program will have "disproportionately high and adverse human health or environmental effects … on minority populations and low-income populations."[113] BLM's analysis is deeply flawed and fails to account for the full scope of potential impacts to the Gwich'in from all phases of oil and gas activities and fails to consider impacts to all potentially affected communities. BLM must revise its analysis and reissue a draft EIS.

Executive Order No. 12898 requires that all federal agencies "make achieving environmental justice part of its mission by identifying and addressing, as appropriate,

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[107] DEIS vol. 1 at 3-156.
[108] DEIS vol. 1 at 3-155.
[109] 36 C.F.R. § 800.8(c)(3).
[110] 36 C.F.R. § 800.8(c)(1)(ii).
[111] U.S. Envtl. Prot. Agency, Envtl. Justice, https://www.epa.gov/environmentaljustice (last visited June 1, 2018).
[112] *Id.*
[113] E.O. 12898, Fed. Actions to Address Envtl. Justice in Minority Populations and Low-Income Populations.

disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." BLM has failed to do so.

Communities associated with the Arctic Refuge are rural, contain many low-income households, minority populations of Alaska Natives, and retain subsistence lifestyles in a mixed, subsistence cash-income economy. Continued traditional and cultural uses of our lands and waters contribute to the physical and spiritual well-being of Gwich'in people and communities helping to maintain our close relationship to the land. Oil and gas development activities would result in the gradual loss, decline, or change in subsistence resources upon which Gwich'in depend. This would place a disproportionate weight of any adverse effects on low-income and/or minority populations.

All of the Gwich'in communities dependent upon the Coastal Plain's resources — in Alaska and Canada — meet the criteria as for being minority or low-income populations, as these are primarily communities of indigenous people with a subsistence-cash economy. As such, all of these communities should have been considered in BLM's environmental justice analysis. BLM recognizes that "environmental justice impacts related to potential adverse impacts on subsistence resources extend well beyond the immediate program area, and they encompass the social and cultural value of subsistence resources (and their uses), as described in ANILCA, as well as the value of direct reliance on these resources for physical sustenance."[114] Despite this, BLM arbitrarily limits its environmental justice analysis to four communities: Kaktovik, Nuiqsut, Arctic Village, and Venetie.[115] Thus, BLM did not adequately assess whether oil and gas leasing on the Coastal Plain would significantly impact minority populations and low-income populations, as required by relevant executive orders and BLM's own guidance.

Further, BLM downplays the potential environmental justice impacts from oil and gas leasing by relying on its own flawed analysis throughout the DEIS to justify its findings. As described above, BLM improperly limits its analysis to post-leasing activities to avoid analyzing harm from seismic exploration, and ignores the extent of pipelines and gravel mines that may occur in the Refuge as a result of oil and gas activities. BLM correctly notes that Council on Environmental Quality (CEQ) guidance directs the agency to consider any multiple or cumulative effects on human health and the environment, even if certain effects are not in the control or subject to the discretion of the agency [116] BLM further notes that impacts to economy, subsistence, sociocultural, and public health and safety are largely, if not exclusively, also of importance to environmental justice.[117] BLM then briefly summarizes its conclusions from these sections of its DEIS. However, BLM failed to adequately analyze impacts to subsistence, sociocultural systems, the economy, and public health in the Draft EIS. These flawed analyses result in BLM's inadequate discussion and analysis of environmental justice impacts.

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[114] DEIS vol. 1 at 3-195.
[115] DEIS vol. 2 Appendix E at E-3.
[116] CEQ, Envtl. Justice Guidance Under the National Envtl. Policy Act, 1997
[117] DEIS vol. 1 at 3-196.

Critically, we note that BLM should have also considered impacts to cultural resources, visual resources, acoustics and soundscapes, air quality, fish, birds, and caribou in terms of importance to environmental justice. These additional resources and issues have the potential to significantly impact Gwich'in communities dependent upon the Arctic Refuge. Thus, BLM failed to consider many of the factors that determine environmental justice impacts.

In the cumulative effects portion of its environmental justice discussion, BLM recognizes that on the North Slope "decades of oil exploration and development conducted by the federal government and industry . . . [have] directly affected habitat use and behavior of subsistence species and resulted in additive impacts on subsistence resources, harvest patterns, and users. These effects have altered livelihoods and ways of life and account for some of the social disruptions seen in villages today."[118] BLM does not, however, fully analyze how such similar direct and indirect impacts may affect Gwich'in communities that rely on Coastal Plain resources, which has been historically not been impacted by oil and gas development. BLM fails to take a hard look at the ways in which Gwich'in communities would be similarly impacted by oil and gas leasing development in the Arctic Refuge, merely relying on conclusory statements which cite to other findings in its DEIS.

We note that where BLM does correctly find a potential negative effect, the agency still falls far short of providing a meaningful analysis under NEPA to meet its environmental justice obligations. BLM acknowledges "[c]ommunities that are most likely to experience negative sociocultural impacts would be those that experience impacts on subsistence, while not having increased income or employment opportunities, such as Arctic Village and Venetie; therefore, the action alternatives would constitute a disproportionate, adverse impact on the environmental justice communities of Arctic Village and Venetie."[119] It is unclear whether this statement is tied only to cumulative impacts or to the direct and indirect impacts of oil and gas leasing and development on the Coastal Plain. BLM should clarify this. BLM must also explain why this finding does not include all of the Gwich'in communities, whose subsistence way of life is closely tied to the resources of the Coastal Plain. Additionally, BLM must explain how this conclusion is consistent with its flawed ANILCA 810 findings, which do not find a significant restriction on subsistence uses for Arctic Village or Venetie and wholly fail to consider all of the Gwich'in communities.[120]

Despite this finding of disproportionate, adverse impact on the environmental justice communities of Arctic Village and Venetie, BLM discusses no mitigation measures whatsoever to address impacts. This is contrary to CEQ guidance, which states that "agencies should elicit the views of the affected populations on measures to mitigate a disproportionately high and adverse human health or environmental effect on a low-income population, minority population, or Indian tribe and should carefully consider community views in developing and implementing

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[118] DEIS vol. 1 at 3-201.
[119] *Id*.
[120] *See* DEIS vol. 2 Appendix E at E-10, E-19 (finding that the action alternatives will not result in a significant restriction to subsistence uses, and finding that the cumulative case may significantly restrict subsistence uses and needs *solely* for the community of Kaktovik).

mitigation strategies." The environmental justice analysis contains absolutely no discussion of how BLM intends to mitigate this finding, contrary to CEQ guidance. The only stipulations and ROPs mentioned are those relevant to other resource categories such as subsistence and public health. BLM wholly failed to consider specific mitigation measures to address disproportionate, adverse impacts to environmental justice in Gwich'in communities.

Finally, BLM has failed to meaningfully engage communities in this NEPA process, worsening the environmental justice implications of its proposed leasing program. Despite recognizing that "Federal agencies also are required to give affected communities opportunities to provide input into the environmental review process, including the identification of mitigation measures,"[121] BLM has repeatedly failed to engage affected Gwich'in communities. As described in detail above, BLM's timeframes for review of the draft EIS are insufficient to allow for meaningful public involvement. Ensuring that the public has sufficient time to receive and review all of the documents and understand their relationship to what is being proposed is essential to the public's ability to analyze and provide meaningful comments to the agency on the project. Rushing the analysis and public review is not consistent with BLM's obligations when considering an issue which will gravely impact minority and low-income populations. In addition to its hasty timeframes, BLM has not coordinated with all affected communities in Alaska to hold public meetings or government-to-government consultation. Further, there is no indication that BLM contacted any communities in Canada for purposes of consultation or public meetings. And BLM never translated any of its materials into Gwich'in.

Overall, BLM's environmental justice analysis is deeply flawed and contrary to the evidence. BLM needs to substantially revise its entire DEIS to fully account for the broad range of direct, indirect, and cumulative impacts to all potentially affected Gwich'in communities, which warrants a finding for significant impacts to environmental justice.

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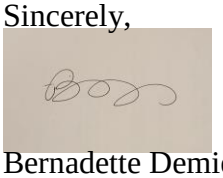
The Gwich'in remain as committed as ever to protecting the Coastal Plain. Given the potentially far-reaching impacts to our way of life and the need to mitigate against impacts to subsistence and other resources, the Gwich'in Steering Committee must be an active and engaged entity in these review processes. However, BLM limited our ability to engage meaningfully in these important decisions by charging forward with this process in roughly a single year, despite the tax bill allowing four years until the first lease sale. Despite promising a robust, scientifically sound review process, the administration has repeatedly cut corners at every step of this process by placing arbitrary deadlines and limitations on its environmental review. We do not believe that this process is sufficient to understand and analyze the impacts to our human rights and culture or to hear from all of the people impacted by this decision.

The Arctic Refuge is not just a piece of land with oil underneath; it is the heart of the Gwich'in people and our way of life. Rather than recklessly rushing to lease the Coastal Plain, DOI and BLM should listen to the Gwich'in Nation and ensure that our concerns are fully

[121] DEIS vol. 1 at 3-196.

addressed. We oppose any and all oil and gas activities on the Coastal Plain, because no government process that allows oil and gas activities will be sufficient to protect the Coastal Plain and our way of life. Thank you for your consideration of these comments.

Sincerely,



Bernadette Demientieff
Executive Director

CC:

Ted Murphy, Acting State Director, U.S. BLM, t75murph@blm.gov
Greg Siekaniec, Regional Director, U.S. FWS, greg_siekaniec@fws.gov
Joe Balash, Assistant Secretary of Land and Minerals Management, U.S. DOI, joseph_balash@ios.doi.gov
Steve Wackowski, Senior Advisor for Alaska Affairs, U.S. DOI, stephen_wackowski@ios.doi.gov

Gwich'in Niintsyaa 2016

Resolution to Protect the Birthplace and
Nursery Grounds of the Porcupine Caribou Herd

WHEREAS:
For thousands of years, the Gwich'in People northeast Alaska and northwest Canada, have relied on caribou for food, clothing, shelter, tools and life itself, and today the Porcupine (River) Caribou Herd remains essential to meet the nutritional, cultural and spiritual needs of our People; and

WHEREAS:
The Gwich'in have the inherent right to continue our own way of life; and that this right is recognized and affirmed by civilized nations in the international covenants on human rights. Article 1 of the International Covenant of Civil and Political Rights, ratified by the U.S. Senate, reads in part:

"…*In no case may a people be deprived of their own means of subsistence*"; and

WHEREAS:
The health and productivity of the Porcupine Caribou Herd, and their availability to Gwich'in communities, and the very future of our People are endangered by proposed oil and gas exploration and development in the calving and post-calving grounds in the Arctic National Wildlife Refuge; and

WHEREAS:
The entire Gwich'in Nation was called together by our Chiefs in Arctic Village June 5-10, 1988 to carefully address this issue and to seek the advice of our elders; and

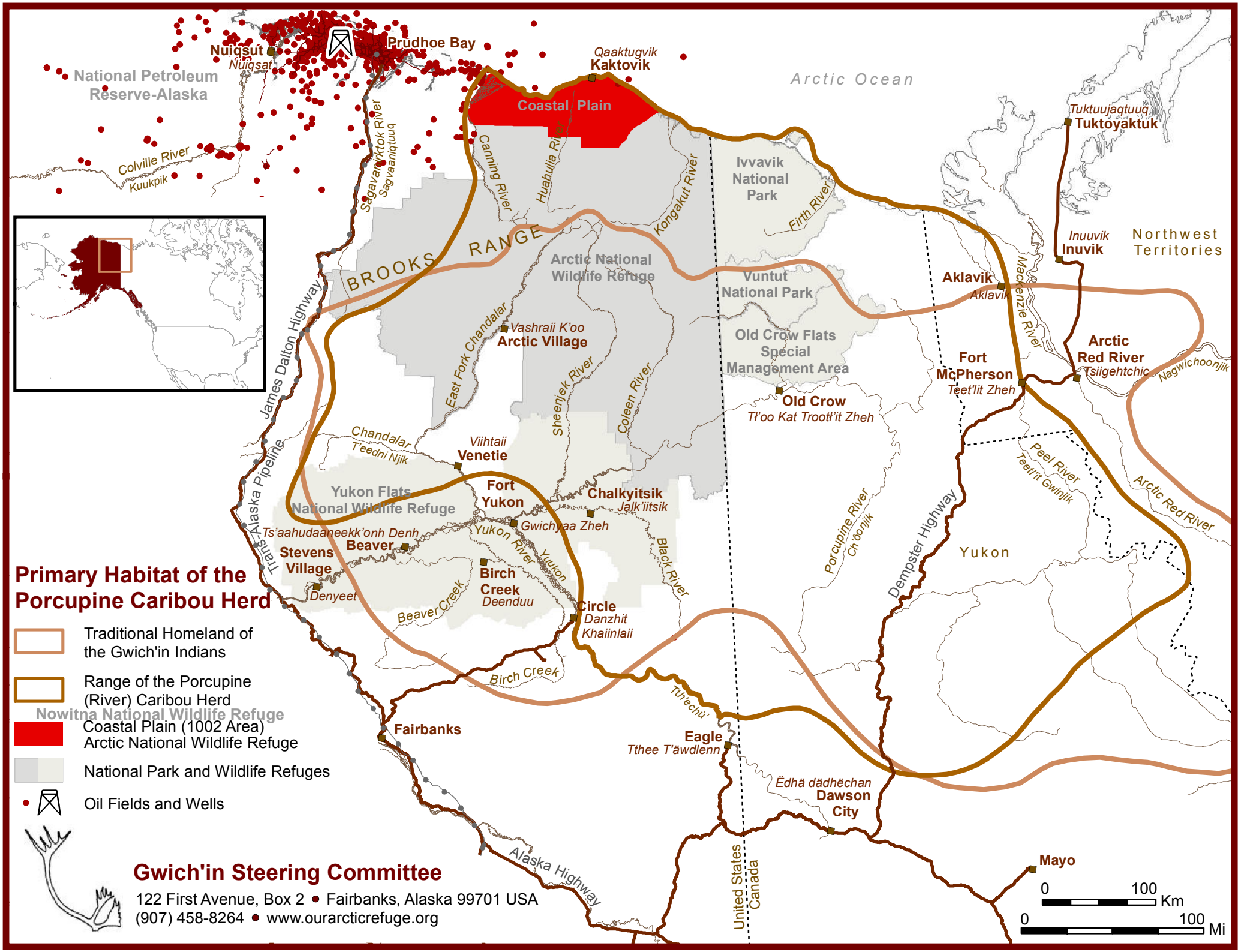
WHEREAS:
The Gwich'in people of every community from Arctic Village, Venetie, Fort Yukon, Beaver, Chalkyitsik, Birch Creek, Stevens Village, Circle, and Eagle Village in Alaska; from Old Crow, Fort McPherson, Tsiigehtchic, Aklavik, and Inuvik in Canada have reached consensus in their traditional way, and now speak with a single voice; and

WHEREAS:
The Gwich'in people and Chiefs of our communities have met biennially since 1988 to re-affirm this position guided by the wisdom of our elders; and this summer met in Arctic Village, Alaska, and now re-affirm our position.

NOW THEREFORE BE IT RESOLVED:
That the United States President and Congress recognize the rights of the Gwich'in People to continue to live our way of life by prohibiting development in the calving and post-calving grounds of the Porcupine Caribou Herd; and

BE IT FURTHER RESOLVED:
That the 1002 area of the Arctic National Wildlife Refuge be made Wilderness to protect the sacred birthplace of the caribou.

Passed unanimously this 26th Day of July, 2016 in Arctic Village, Alaska.


Primary Habitat of the Porcupine Caribou Herd
Traditional Homeland of the Gwich'in Indians
Range of the Porcupine (River) Caribou Herd
Coastal Plain (1002 Area) Arctic National Wildlife Refuge
National Park and Wildlife Refuges
Oil Fields and Wells
Gwich'in Steering Committee
122 First Avenue, Box 2 • Fairbanks, Alaska 99701 USA
(907) 458-8264 • www.ourarcticrefuge.org
Arctic Ocean
Prudhoe Bay
Nuiqsut
Nuiqsat
National Petroleum Reserve-Alaska
Qaaktugvik
Kaktovik
Coastal Plain
Colville River
Kuukpik
Sagavanirktok River
Sagvaaniqtuuq
Canning River
Huahulia River
Kongakut River
Ivvavik National Park
Firth River
BROOKS RANGE
Arctic National Wildlife Refuge
Vuntut National Park
Old Crow Flats Special Management Area
Tuktuujaqtuuq
Tuktoyaktuk
Inuuvik
Inuvik
Northwest Territories
Aklavik
Mackenzie River
Arctic Red River
Tsiigehtchic
Nagwichoonjik
Fort McPherson
Teet'lit Zheh
Old Crow
Tł'oo Kat Trootł'it Zheh
James Dalton Highway
Alaska Pipeline
Trans
Vashraii K'oo
Arctic Village
East Fork Chandalar
Sheenjek River
Coleen River
Chandalar
T'eedni Njik
Viihtaii
Venetie
Yukon Flats National Wildlife Refuge
Fort Yukon
Chalkyitsik
Jalk'iitsik
Gwichyaa Zheh
Ts'aahudaaneekk'onh Denh
Beaver
Stevens Village
Denyeet
Yukon River
Yuukon
Birch Creek
Deenduu
Beaver Creek
Black River
Circle
Danzhit Khaiinlaii
Birch Creek
Porcupine River
Ch'oonjik
Dempster Highway
Peel River
Teet'lit Gwinjik
Arctic Red River
Yukon
Tłı'ehchǫ
Fairbanks
Eagle
Tthee T'äwdlenn
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Dawson City
Alaska Highway
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A MORAL CHOICE FOR THE UNITED STATES

The Human Rights Implications for the Gwich'in of Drilling in the Arctic National Wildlife Refuge

Gwich in Steering Committee
The Episcopal Church
Richard J. Wilson, Professor of Law and Director of the
International Human Rights Law Clinic at American University

Front cover photo: Daniel Tritt in Arctic Village, Alaska (Masako Cordray)
Contents page photo: Myra Thumma in Venetie, Alaska (Masako Cordray)
Banner photo, p. iii: Arctic National Wildlife Refuge coast (Subhankar Banerjee)
Banner photo, p. 4: Arctic Village cabins in winter (Brooke Tone Boswell)
Banner photo, p. 18: Caribou cows and calves in misty calving grounds (Subhankar Banerjee)
Conclusion photo, p. 23: Gwich'in elder Jonathon Solomon (Brooke Tone Boswell)
Banner photo, p. 24: Caribou walking on the Coastal Plain (Masako Cordray)
Back cover photo: Caribou on the Coastal Plain with Brooks Range as background (Ken Whitten)

This report was prepared with the assistance of: Rebecca Bernard, Mike Steeves, and Leigh Currie, Trustees for Alaska; Lori Spicher, Esq.; Ken Whitten; Pamela A. Miller; Subhankar Banerjee; and Brooke Tone Boswell.

♦The Episcopal Church, USA has a deep and special relationship with the Gwich'in Nation of Northeast Alaska/Northwest Canada. More than 150 years ago Anglican and subsequently Episcopal missionaries traveled to Fort Yukon, Alaska, to establish a mission there. Today more than 90 percent of the Gwich'in are Episcopalian. They represent one of the few Native Anglican Nations in the world.

♦Institutional affiliation included for identification purposes only.

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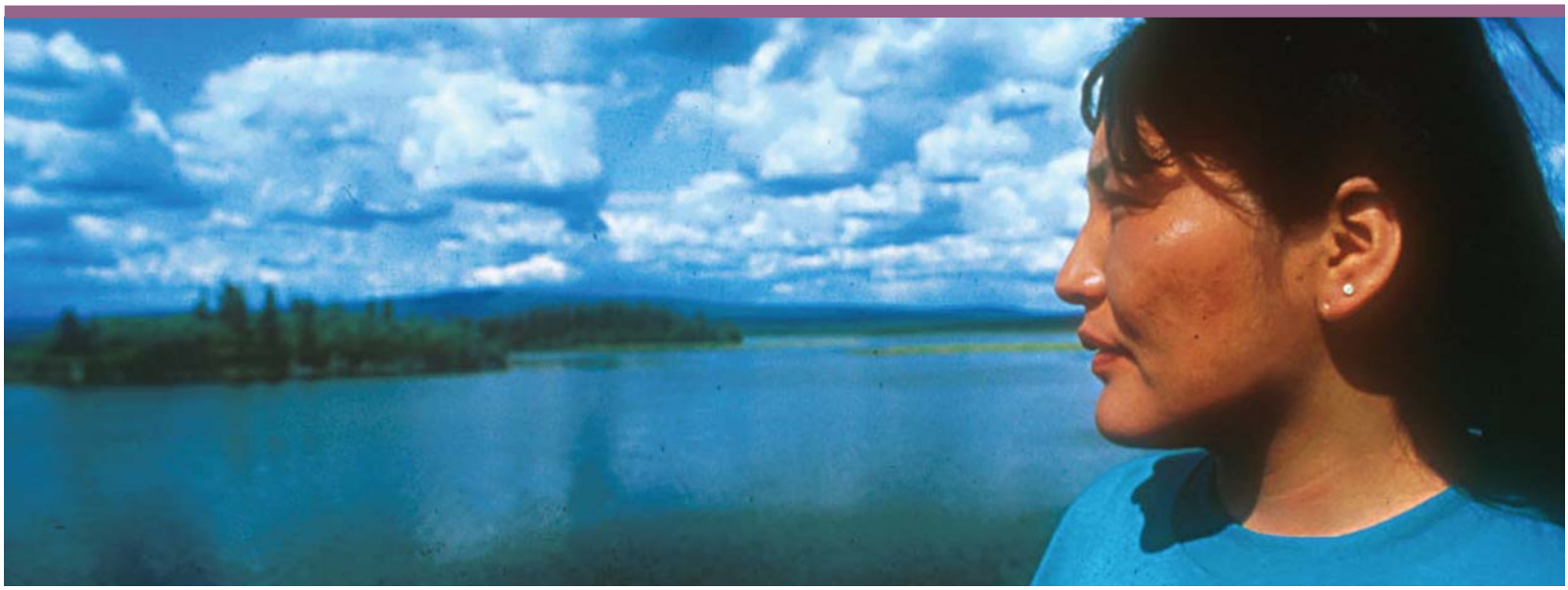


Executive Summary

The US Congress is again considering opening the Coastal Plain of the Arctic National Wildlife Refuge to oil and gas drilling. The proposal threatens to violate the internationally recognized human rights to culture, subsistence, health, and religion of the Gwich'in people of northeastern Alaska and northwestern Canada. Since time immemorial, the Gwich'in have relied physically, culturally and spiritually on the Porcupine Caribou Herd that calves each spring on the Coastal Plain. The herd and its birthing and nursery grounds are so significant to the Gwich'in that they call the Coastal Plain *Izhik Gwats'an Gwandaii Goodlit*, "The Sacred Place Where All Life Begins."

For the Gwich'in, a long-term decline in the herd's population or a major change in its migration would be physically and culturally devastating. For thousands of years, the Gwich'in have relied on the caribou as their primary food source, and despite the inroads of modern civilization, that remains true today. The caribou are also deeply intertwined with Gwich'in culture—as Gwich'in leader Sarah James has said, "The Gwich'in are caribou people …. Our whole way of life as a people is tied to the Porcupine caribou. It is in our language, and our songs and stories." Further reductions in the size of the herd could make it difficult or impossible for the Gwich'in to continue the connection they have maintained with the caribou for millennia.

The Coastal Plain, and in particular the so-called "1002 area" that is the focus of the oil exploration and development proposal, is vital calving and post-calving habitat for the Porcupine Caribou Herd. The area offers nutritious vegetation during a vulnerable part of the caribou's life cycle, as well as protection from predators and shelter from harassing swarms of insects. Researchers have shown that caribou calf survival rates drop significantly when the herd is unable to calve on the Coastal Plain; indeed, the drop in calf survival rates is enough to stop herd growth or, more importantly, to prevent the herd from recovering from the current 15-year decline in the herd's population.

Research has shown that oil drilling activity in critical caribou calving habitat, such as the Coastal Plain, displaces female caribou and calves, diminishing calf survival rates. For the Porcupine, displacement from the best calving grounds would be extremely damaging because there are no alternatives that provide the same essential protections, and the herd is already in a population decline. The stress of opening their prime calving and post-calving grounds to oil exploration and development—particularly when added to the current stress on the herd brought on by global climate change—will very likely lead to a long-term decline in the herd.

International law requires the United States to protect the fundamental human rights of Native groups like the Gwich'in to culture and religion, their own means of subsistence, and health. International human rights tribunals have ruled that governments are obligated to prevent environmental harm that would undermine these rights. For example, the United Nations' Human Rights Committee held that a government violated indigenous people's rights to culture and subsistence when it permitted oil and gas development that would destroy the people's traditional hunting and trapping areas.

Because of the impact of drilling on the Porcupine Caribou Herd, opening the Coastal Plain of the Arctic National Wildlife Refuge would deal a serious blow to the ability of the Gwich'in to continue their subsistence culture that is reliant on the Porcupine Caribou Herd. Loss of this culture would violate the internationally recognized human rights of the Gwich'in to their own means of subsistence, to culture, to health, and to religion.

THE [GWICH'IN] BELIEVE THAT A BIT OF HUMAN HEART IS IN EVERY CARIBOU, AND THAT A BIT OF CARIBOU IS IN EVERY PERSON. ANY THREAT TO THE ANIMAL IS A THREAT TO THE GWICH'IN. AS ONE GWICH'IN WOMAN EXPLAINS: "THE CARIBOU ARE OUR LIFE. WE MUST SAFEGUARD THEM FOREVER."

"IT IS OUR BELIEF THAT THE FUTURE OF THE GWICH'IN AND THE FUTURE OF THE CARIBOU ARE THE SAME."

I. INTRODUCTION

To drilling proponents, it is the "1002 area."[1] To the Gwich'in people, it is *Izhik Gwats'an Gwandaii Goodlit*, "The Sacred Place Where All Life Begins."[2] The Coastal Plain of the Arctic National Wildlife Refuge, in particular the 1002 area, plays a critical role in the continued physical and cultural survival of the Gwich'in, one of the northernmost indigenous peoples in North America. The connection between the Gwich'in and the Coastal Plain of the Arctic Refuge is the Porcupine Caribou Herd, which is the primary food source for the Gwich'in and the heart of their culture. The herd migrates hundreds of miles each year to give birth to the next generation of caribou in "The Sacred Place Where All Life Begins"—possibly the only place on earth that can sustain the herd's calving activities. A proposal under consideration by the US Congress to open the 1002 area to oil exploration and development threatens both the caribou and the Gwich'in.

The Coastal Plain is critical to successful calving and calf survival of the Porcupine River Caribou Herd. (Subhankar Banerjee)

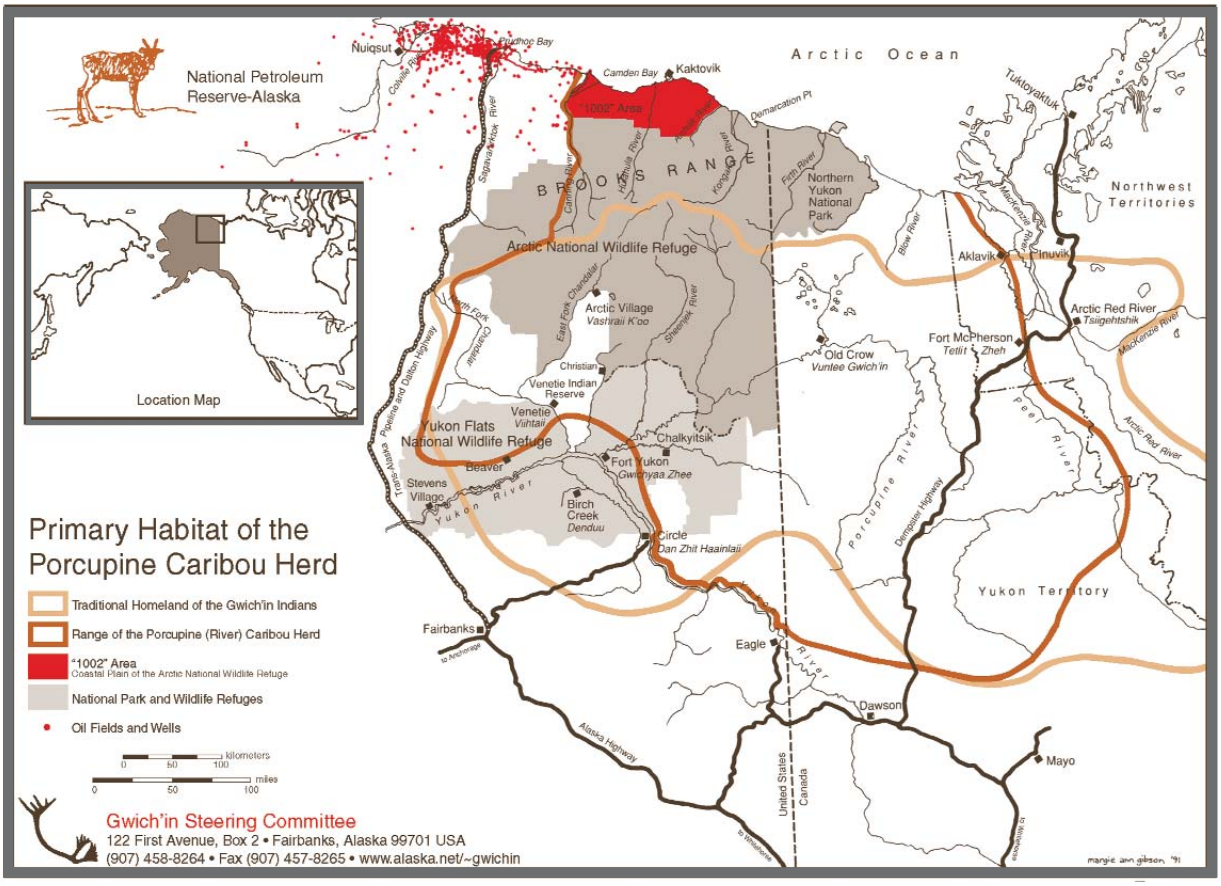
The Gwich'in live south of the Brooks Range where their villages are strategically located along the herd's migration paths,[3] and they depend on the herd for their essential physical, cultural, social, economic and spiritual needs.[4] As Gwich'in Darius Kassi explains,

> I wouldn't be sitting here talking to you now if it wasn't for Porcupine Caribou. It's our life. It is what we've lived for and what all our life revolves around …. Eighty percent plus of our diet is caribou intake. It is important to our people. It is not only important for food. It is important for spiritual, cultural, emotional and physical reasons. It is our lifestyle—a lot of it rotates around the caribou …. I don't think there are any English words that can express how important, all consuming, the protection of this herd is.[5]

This report demonstrates that opening the Coastal Plain of the Arctic National Wildlife Refuge to oil drilling would severely harm the health of the beleaguered Porcupine Caribou Herd. According to one biologist, if the herd's numbers fall much further, "the Gwich'in may have to consider cutting down on the 4000 animals they usually hunt in a year."[6] The harvest, so critical to Gwich'in physical and cultural survival, would cease to provide a reliable means of subsistence or to sustain the way of life that has defined the Gwich'in culture for millennia.

International law requires the United States to protect indigenous peoples' cultures, subsistence, and ways of life as fundamental aspects of human rights. Where these rights are dependent on maintaining a healthy environment, as they are for the Gwich'in, governments are obliged to protect the environment. The proposal being considered by the US Congress to open the 1002 area of the Coastal Plain to oil drilling would violate that obligation, by putting the Porcupine Caribou Herd—and the Gwich'in nation that depends on it—at risk.

Gwich'in woman with her baby (Masako Cordray)



The proposal for oil exploration and development in the Arctic Refuge involves the 1002 area, which is prime calving and post-calving ground for the Porcupine Caribou Herd. (Gwich'in Steering Committee)

Gwich'in youth perform the Caribou Skin Hut Dance at the 2005 Gwich'in Gathering in Fort Yukon. (Brooke Tone Boswell)

"The Gwich'in are caribou people .... Our whole way of life as a people is tied to the Porcupine caribou. It is in our language, and our songs and stories."

II. The Gwich'in Rely on the Porcupine Caribou Herd for Their Cultural and Physical Survival

"The Gwich'in are caribou people .... Our whole way of life as a people is tied to the Porcupine caribou. It is in our language, and our songs and stories."[7]

> In mythic times, it is said among the Gwich'in, the people and the caribou lived together in harmony. Eventually, however, the people began to hunt the caribou. But the bonds between the hunter and the hunted only grew stronger. For thousands of years, the Gwich'in have depended on the animal not only for food, shelter, tools, and clothing but as a source of spirituality. The [Gwich'in] believe that a bit of human heart is in every caribou, and that a bit of caribou is in every person. Any threat to the animal is a threat to the Gwich'in. As one Gwich'in woman explains: "The Caribou are our life. We must safeguard them forever."[8]

The Gwich'in continue to use ceremonial songs and dances to tell the creation story. "When the dance is fulfilled, it is in essence a spiritual walk between the two and the Gwich'in and caribou are one again."[9]

The Gwich'in live in 15 villages in northeastern Alaska and northwestern Canada: in Alaska, these are Arctic Village, Venetie, Chalkyitsik, Stevens Village, Birch Creek, Circle, Beaver, Canyon, Eagle, and Fort Yukon; in Canada, they are Fort McPherson, Inuvik, Aklavik, Tsiigehtchic (Arctic Red River), and Old Crow.[10] The Gwich'in presently number 7,000 to 9,000 people.[11] Western anthropological evidence suggests that the Gwich'in have occupied their ancestral lands and harvested caribou for more than 20,000 years; the Gwich'in believe it has been this way since time immemorial.[12]

The Porcupine Caribou Herd is the central food source for the Gwich'in people,[13] providing much of the protein for people in these villages.[14] Caribou is also the most nutritious food available to the Gwich'in.[15] In the Prudhoe Bay area of Alaska's North Slope, where intensive oil development began in the 1970s, the reduction of traditional subsistence hunting due to disruption of food species led to an "increased incidence of cancer and diabetes and disruption of traditional social systems."[16] In the remote Gwich'in villages, caribou is also the most reliable long-term food source, because other wild sources are less dependable and groceries cost twice as much

as they do in the city.[17] Caribou is an essential part of the Gwich'in diet.

In addition to food, the caribou have provided the Gwich'in with medicine, clothing, shelter, and various tools such as awls and skin scrapers.[18]

The caribou is also central to the culture and spirituality of the Gwich'in:

> Reliance on traditional and customary use (now termed "subsistence") of the Porcupine Caribou Herd is a matter of survival. Beyond the importance of our basic needs, the caribou is central to our traditional spirituality. Our songs and dances tell of the relationship that we have to the caribou. The caribou is a part of us.[19]

When the herd nears a village on its annual migration to the Coastal Plain, the entire Gwich'in community prepares to harvest food for the year. During the harvest, the Gwich'in use their vast store of traditional knowledge and take the opportunity to pass on that knowledge along with Gwich'in cultural values to the younger generation:

> This is the time when the life lessons are taught to the younger generation of the Gwich'in people. The women and grandmothers teach the younger women and girls very important traditional skills. The girls are taught the proper names of the animal parts and proper methods of taking care of the meat. They also learn the techniques of tanning the hides for clothing, what part of the animal is used for certain tools, such as needles, hooks, tanning tools and sinew. The elder women tell the younger ones of the family lineage and ties …. It is an important time of learning the functions of the tribe.
>
> The men and grandfathers teach the … hunting skills needed: the methods of stalking and taking the animal, the value of sharing what is taken, the names and memory of the hunting lands and lessons of timing. The young are taught to handle the kill with great care and respect, and to give proper thanks to the Creator for the gift. This teaches the young men of their responsibility to the tribe as a provider.[20]

The connection between the Gwich'in and the caribou continues today, as the Porcupine Caribou Herd continues to provide the Gwich'in with basic necessities:

> Today, Gwich'in community members continue to rely on the caribou to meet both their subsistence and spiritual needs. The hunting and distribution of caribou meat also enhances their social interaction and cultural expression …. Caribou skins are used for winter boots,

James Gilbert with his granddaughter in Arctic Village. (Robert Gildart)

The young are taught to handle the kill with great care and respect, and to give proper thanks to the Creator for the gift. This teaches the young men of their responsibility to the tribe as a provider.

slippers, purses, bags, and other items of Native dress. Bones continue to be used as tools. Songs, stories, and dances, old and new, reverberate around the caribou further strengthening Gwich'in cultural life.

The historical respect for the [caribou] reflected in stories and legends included the importance of using all parts of the animal (avoiding waste), cooperation, and sharing. This traditional caribou management belief system has continued into the present by legislating modern game management practices among themselves and through the establishment of an International Porcupine Caribou Commission.[21]

The significance of the Porcupine Caribou Herd to the Gwich'in people of Alaska and Canada is memorialized in an international Agreement on the Conservation of the Porcupine Caribou Herd (Porcupine Caribou Agreement).[22] The agreement acknowledges that "generations [of] certain people" rely on the Porcupine Caribou Herd "to meet their nutritional, cultural and other essential needs and will continue to do so in the future."[23] It also recognizes the importance of Porcupine Caribou Herd habitat, aims to protect subsistence uses of the herd, and "enables users of Porcupine Caribou to participate in the international co-ordination of the conservation of the Porcupine Caribou Herd and its habitat."[24] For these reasons, the governments of the United States and Canada agreed that "the Porcupine Caribou Herd, including such areas as calving,

Young hunters look for caribou. (Roy Corral)

post-calving, migration, wintering and insect relief habitat … should be conserved according to ecological principles and that actions for the conservation of the Porcupine Caribou Herd that result in the long-term detriment of other indigenous species of wild fauna and flora should be avoided."[25] The two nations also agreed that they "will take appropriate action to conserve the Porcupine Caribou Herd and its habitat."[26]

The Gwich'in have taken numerous steps to protect the caribou. They were actively engaged in the negotiations of a Porcupine Caribou Management Agreement among Canadian federal and provincial governments and tribal councils.[27] In 1988, leaders from all the Gwich'in villages gathered and reached an agreement in their traditional way to protect the birthplace and nursery grounds of the caribou by fighting attempts to open the Coastal Plain to drilling.[28]

The Gwich'in people's thorough knowledge of the herd makes them highly sensitive to changes in herd biology, as demonstrated by the fact that the Gwich'in of Old Crow, Canada, called off their caribou hunt in 2000.[29] During that year, deep and long-lasting snow prevented the Porcupine Caribou Herd cows from reaching the Coastal Plain in time to deliver their calves, and Gwich'in people in Old Crow "reported that calves a few days old were forced to swim the mighty Porcupine River. Appalled, the Gwich'in called off hunting for the season."[30]

In the words of Gwich'in elder Jonathon Solomon of Fort Yukon, Alaska, "It is our belief that the future of the Gwich'in and the future of the Caribou are the same."[31] Harm to the Porcupine Caribou Herd is harm to the Gwich'in culture and millennia-old way of life.

III. Oil Development in the Coastal Plain Would Severely Harm the Porcupine Caribou Herd

The 1002 area targeted for oil exploration and development is irreplaceable calving and post-calving habitat for the Porcupine Caribou Herd. Drilling in the area would leave the herd without adequate habitat, almost certainly leading to the long-term decline of the herd.

A majestic caribou bull surveys his surroundings. (USFWS)

A. The calving grounds and insect relief areas in the Coastal Plain are critical to the Porcupine Caribou Herd

The Porcupine Caribou Herd is named for the Porcupine River, which the herd crosses in spring and fall during its annual migration. The herd is one of four barren-ground caribou herds in America's Arctic. The herds are distinguished from one another by their spring calving grounds, and the Porcupine herd's calving ground is the "Sacred Place Where Life Begins," also known as the "1002 area" or, more broadly, the "Coastal Plain."[32] The herd currently numbers around 120,000 animals, but those numbers have been in decline since 1989, when the herd numbered nearly 180,000 animals.[33]

Of the four arctic barren-ground caribou herds, the Porcupine herd has the lowest capacity for growth.[34] According to a study by the US Geological Survey, this low capacity for growth indicates that "the Porcupine Caribou Herd has less capacity to accommodate anthropogenic, biological, and abiotic stresses than other Alaskan barren-ground herds."[35] For example, if everything else remained the same, an approximate 4.6% reduction in calf survival would be enough to prevent Porcupine Caribou Herd growth

Pregnant caribou rely on specific nutrients in cotton grass, shown here as ground cover, for nursing new born calves on the a Coastal Plain. (Subhankar Banerjee)

under the best conditions observed to date or to prevent recovery from the current decline.[36] Other barren-ground herds could continue to grow despite a similar reduction in calf survival.

The Porcupine Caribou Herd likely selects the 1002 area as its calving grounds because the area provides an optimal combination of availability of high quality forage and insect relief areas,[37] early snowmelt, and less dense predator population.[38] The Coastal Plain is "the most biologically productive part of the Arctic Refuge for wildlife and is the center of wildlife activity."[39] The high quality forage available on the Coastal Plain is crucial to the reproductive health of the herd.[40] When they arrive at the Coastal Plain calving grounds in spring, the female caribou have used up nearly all of their body fat reserves.[41] Their nutritional needs, however, are highest during the weeks during and immediately after calving, and the high quality forage available on the Coastal Plain is thus essential during this time.[42]

In a 1993 report, the International Porcupine Caribou Board identified habitats critical to the Porcupine Caribou Herd based on their relationship with critical periods in the herd's life cycle.[43] The report ranked the calving period as the most important and vulnerable in the herd's life cycle, and identified the 1002 area as embracing the "majority of the primary concentration area" of the herd during this period.[44]

The report identified the time period immediately after calving as another critical period for the herd because of the high energy demands of lactating females, and thus the need for highly nutritious forage, and again identified the 1002 area as the most important place for the herd to be during this time.[45] The caribou cows rely upon the Coastal Plain vegetation to store fat and protein for the next winter and spring, during which these resources will nourish first a new fetus and then the calf.[46] Only well-fed cows can ensure that calves survive and are fertile enough to conceive the next generation.[47] "The size of the calf in autumn is directly related to its size at birth and to the mother's size at the end of June. This means that if the cows are in poor condition when they provide milk to the calves in June, there is little opportunity for the calves to compensate."[48] The high quality forage available on the Coastal Plain is therefore absolutely critical to the long-term health of the herd.

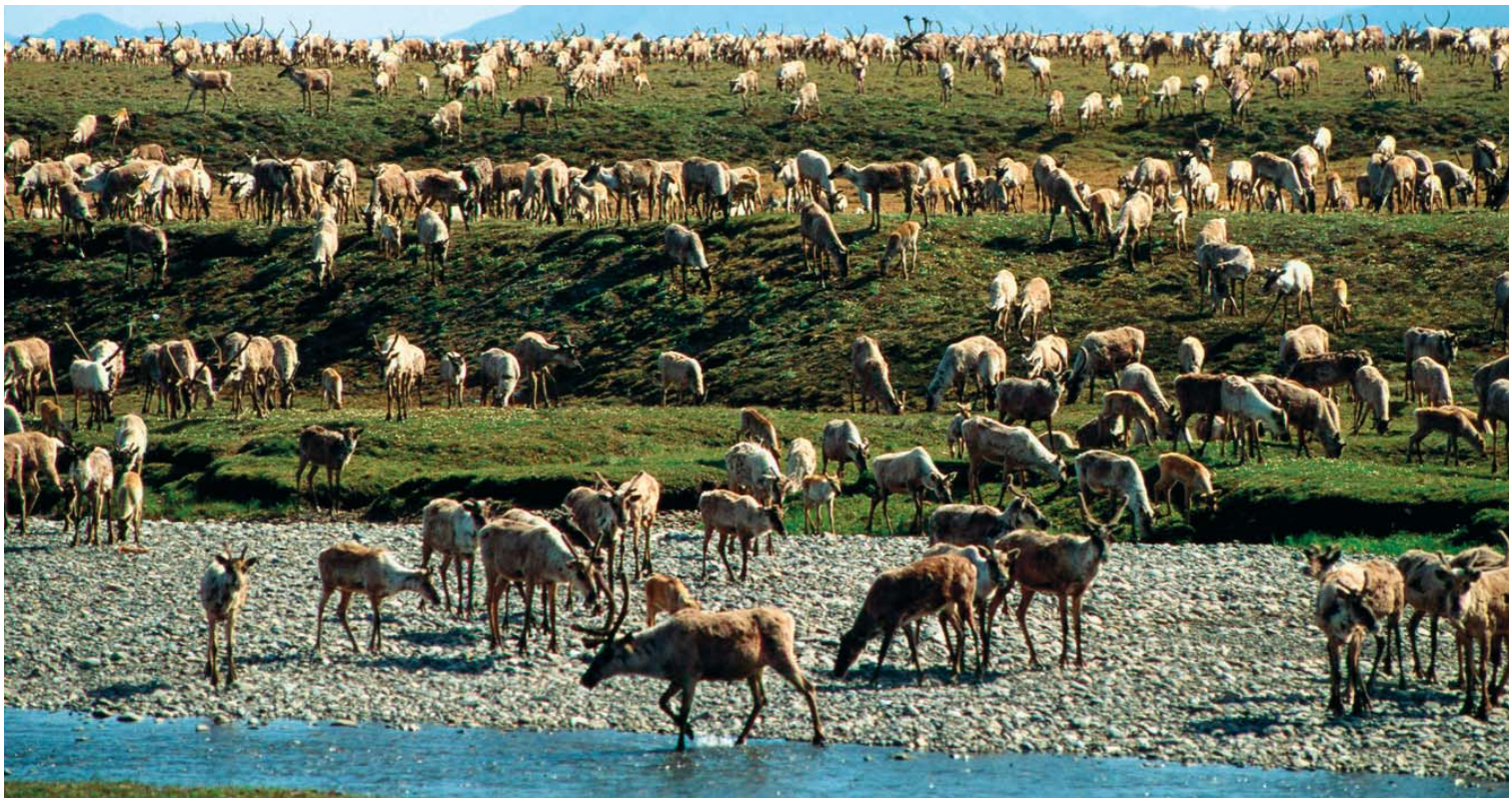
As the International Porcupine Caribou Board report demonstrates, it is the 1002 area specifically, not just the Coastal Plain in general, that is critical to calf survival and thus the long-term health of the herd. On the Coastal Plain, the female caribou tend to calve together in "concentrated calving areas," and

The Porcupine Caribou Herd is the central food source for the Gwich'in people, providing much of the protein for people in these villages.

these occur mostly in the 1002 area.[49] These concentration areas have been "deemed to be the most important calving areas because (1) they support most of the parturient females [those that are pregnant or accompanied by very young calves[50]] and their calves, and (2) they are the areas having the highest caribou densities."[51] Studies have shown a significantly higher rate of survival for calves born in concentrated calving areas than for those born in areas never used as a concentrated area, likely due to the nutritious forage and low predation risk.[52] Researchers believe that "this strong link between food for cows and calf survival is the reason that calving cows concentrate annually in the region of most rapid plant growth" and why it is so important to the continued productivity of the herd that calving cows be able to freely select the best calving grounds for the year.[53] Much of this important Porcupine caribou land lies within the 1002 area that is targeted for drilling. According to the International Porcupine Caribou Board, areas of concentrated calving use occupy virtually the entire 1002 area.[54] As shown below in Part III.B, oil development would likely displace caribou calving away from these critical areas. The importance of the 1002 area is underscored by the poor calf survival rate in the years the herd has been unable to calve there. In 2000 and 2001 the Porcupine Caribou Herd females were unable to reach the calving grounds due to unusually late springs.[55] This resulted in a much reduced calf survival rate for those years: only about 60% of calves survived, compared with a typical survival rate of 75%.[56] Even with unrestricted access to the best habitat for calving, an average of 25% of the newborn calves die in their first month of life.[57] Fifty-two percent of this mortality is attributed to birth defects and poor nutrition, while 48% is due to predation.[58] If calving were to shift away from the Coastal Plain and into the foothills and mountains to the south, the baseline mortality would likely increase not only because of reduced access to the best forage, but also because of higher predator concentrations outside of the calving grounds.[59]

The 1002 area is critical not only to females and their calves, but to the entire Porcupine Caribou Herd. The area is predictably used by nearly the entire herd during the

The migration of the Porcupine Caribou Herd is one of the largest and most impressive animal migrations in North America, covering hundreds of miles each year. (Subhankar Banerjee)



The Coastal Plain provides critical grazing habitat for the Porcupine herd. (Ken Whitten)

It is the 1002 area specifically … that is critical to calf survival and thus the long-term health of the herd.

postcalving season, even in years where a lower percentage of the herd calves on the Coastal Plain.[60] One reason for this is that the Coastal Plain provides important insect relief habitat to the herd in the post-calving period, before the herd moves inland during the fall rut. Caribou must be able to obtain relief from insects: "Insects substantially affect energy balance by reducing food intake and by increasing energy expenditure."[61] When the animals are being harassed by insects they will run erratically or stand head down to avoid larval infestation, at the expense of foraging opportunity.[62] "Access to insect-relief habitat and forage during this period may be critical to herd productivity."[63]

The Coastal Plain provides the herd with cooler, windier areas along the coast where harassment is less severe.

Once the year's calving and post-calving period is over, the Porcupine Caribou Herd eventually leaves for its winter range in eastern Alaska and the Yukon Territory.[64] This migration covers a linear distance of up to 400 miles, although the actual number of miles traveled each year by an individual animal may be closer to 3,000.[65]

The US Fish and Wildlife Service aptly summed up the situation when it stated, in response to the question whether the calving grounds are essential to the survival of the herd:

> Yes. Each spring, pregnant female caribou begin long migrations towards their traditional calving grounds. Their instinct to reach these areas is very strong, and enables them to travel through deep snow and storms, and to cross rivers flooding with icebergs to

The Coastal Plain is used by the Porcupine Caribou Herd almost exclusively during calving and postcalving, and disturbance of this important portion of the caribou's life cycle would have broad ramifications.

> reach the calving grounds at just the right time. … In summary, it is the special conditions of the calving grounds which improve the survival of calves and ultimately the entire herd.[66]

B. Oil and gas drilling would inevitably interfere with the Porcupine Caribou Herd's use of their calving grounds and insect relief areas.

Biologists who have studied the effects of oil development on caribou agree that these activities displace animals away from development areas.[67] Indeed, "[a]voidance of petroleum development infrastructure by parturient caribou during the first few weeks of the lives of calves is the most consistently observed behavioral response of caribou to development."[68] Reactions to disturbance will vary with animal characteristics, but cows with newborn calves are the most sensitive.[69] This is important because the Coastal Plain is used by the Porcupine Caribou Herd almost exclusively during calving and postcalving, and disturbance of this important portion of the caribou's life cycle would have broad ramifications.[70] "Disturbance to cow-calf groups on the calving grounds could interfere with bond formation and [could] increase calf mortality."[71]

Most of these studies have focused on the Central Arctic Caribou Herd, which occupies the Prudhoe Bay area of Alaska's North Slope, where intensive oil development began in the 1970s.[72] Studies have found that oil development on Alaska's North Slope disturbed Central Arctic herd calving. For instance, construction of the Trans-Alaska Pipeline substantially reduced use of the pipeline corridor by caribou cows and calves.[73] As to calving, only a portion of the calving grounds used by the Central Arctic herd was affected by the Prudhoe Bay development, and the initial Prudhoe Bay development area was apparently never a concentrated or highly preferred calving area like the 1002 area.[74] Nevertheless, the little calving that had been occurring in the development area ended after significant development began.[75]

More recently, caribou have responded to expanded development within several oil fields by shifting their concentrated calving almost entirely away from the development areas, largely abandoning even isolated undisturbed areas within the larger development region.[76] As scientists found in a 1998 study, "the extent of avoidance greatly exceeds the physical 'footprint' of an oil-field complex."[77]

Over 125 species of birds from six continents and all fifty states migrate to the Coastal Plain for nesting, molting, feeding and rearing their young. The highly threatened buff-breasted sandpiper that migrates from South America is shown here in a courtship display. (Subhankar Banerjee)

After 1987, the Central Arctic herd showed a slowed growth rate when compared to the Teshekpuk Lake Herd, the most ecologically comparable herd in Alaska.[78] Biologists believe the reduction in growth resulted from the shift of the Central Arctic herd away from the oilfield, which began at the same time.[79] A slowdown in growth is to be expected given that the parturition rates of female caribou "in regular contact with oil-field infrastructure … were lower than those of undisturbed females."[80]

In addition, caribou in the Central Arctic herd were often "deflected" by infrastructure, and occasionally went significant distances out of their way to avoid it. "Deflections of up to 20 miles, during which caribou ran or trotted, have been observed in the central Arctic."[81] The effect is exacerbated when groups of caribou are large, and when the caribou are being harassed by insects, especially mosquitoes. "Large mosquito-harassed groups had particular difficulty negotiating road-pipeline corridors."[82]

The effects of oil-field development accumulate with effects of insect harassment by impairing movements between coastal and inland habitats. Possible consequences of these disturbances include reduced nutrient acquisition and retention throughout the calving and midsummer periods, poorer condition in autumn, and a lowered probability of producing a calf in the following spring.[83]

The majestic Brooks Range towers over the quiet serenity of the Coastal Plain. (Pamela A. Miller)

The Porcupine herd "may be particularly sensitive to development within the 1002 portion of the calving ground."

Thus, the studies showed impacts of oil development to Central Arctic herd from displacement away from calving areas, reduced parturition rates, and impaired movement between habitats, all of which led to reduced herd health and reproduction rates.

These studies are useful in identifying the potential impacts of oil development on the Porcupine Caribou Herd; there are, however, important differences between the two herds that may exacerbate the effects of drilling on the Porcupine herd. In particular, scientists have concluded that for a number of reasons the Porcupine herd "may be particularly sensitive to development within the 1002 portion of the calving ground."[84] First, the herd is especially sensitive because of its already low productivity.[85] Second, the shift of concentrated calving areas away from development that would inevitably occur would remove calving from the best calving habitat that affords the best calf survival rate.[86] This was not true for the Central Arctic herd, for which the oil development area around Prudhoe Bay was not a crucial calving area.[87]

Third, there is a "lack of high-quality alternate calving habitat" for the Porcupine Caribou Herd.[88] The herd has typically used calving areas in Canada and away from the Alaska Coastal Plain only when the Arctic Refuge Coastal Plain, including the 1002 area, was unavailable due to late snowmelt.[89] Forage quality on the Canadian portions of the calving

Caribou cross a river during their annual migration. (Amy Gulick)

ground is substantially lower than on the Arctic Refuge Coastal Plain and 1002 portions of the calving ground, and calf survival was correspondingly lower in these years.[90] Finally, there is a strong link between free movement of females and calf survival.[91] This relationship is based on both access to the highest quality foraging habitats and decreased exposure to predation during calving.[92] If calving grounds are displaced due to development, June calf survival for the Porcupine Caribou Herd will decline, and the effect will increase with displacement distance.[93]

Biologists have used modeling as well as observations derived from the Central Arctic herd studies to predict the likely effects on the Porcupine Caribou Herd of oil development in the 1002 area. A 1987 Interior Department study based on assumptions derived from Central Arctic herd studies estimated that full development of the 1002 area would result in similar disturbance in approximately 37 percent of the total concentrated calving areas within the 1002 area,[94] although this prediction is likely to underestimate the extent and scope of impacts.[95] More recently, the US Geological Survey developed a model, also based on lessons derived from the Central Arctic herd studies, to predict the effects of 1002 area development on the Porcupine herd. Using conservative assumptions, the US Geological Survey predicted that full development of the 1002 area would likely result in complete displacement of concentrated calving away from the 1002 area, with a resulting 8.2% increase in calf mortality:[96]

> The simulations indicated that a substantial reduction in calf survival during June would be expected under full development of the 1002 Area. Eighty-two percent of observed calving distributions would have been displaced and the average distance of these displacements would have been 63 km (range 16-99 km). This would have yielded a net average effective displacement of 52 km and an expected mean reduction in calf survival of 8.2% ….[97]

An 8.2% reduction in calf survival is well above the estimated 4.6% growth rate decline sufficient to halt growth of the herd and/or prevent recovery from the current population decline.[98]

In addition to reducing the survival of calves, the Interior Department has concluded that development of the 1002 area may generally limit the herd's ability to move freely, which would reduce access to important insect-relief, forage, and predator-avoidance habitats:[99]

> Several investigators have described inhibited passage of caribou through developed areas due to linear oil-development facilities and associated activities. This is of concern in the 1002 area because the probable main pipeline/haul road route would bisect the area, rather than run parallel to caribou movements as it does in the Prudhoe Bay development.[100]

The largest groups of caribou within the Central Arctic herd are considerably smaller than the post-calving aggregations of the Porcupine Caribou Herd, which can number up to 80,000.[101] As the Interior Department concluded, "If the larger [Porcupine Caribou Herd] groups react negatively, as [some researchers] suggest, there could be significant exclusion of [the herd] from coastal areas."[102]

Decreased access to insect relief habitat because of inhibited movement is of particular concern. "If caribou are delayed or prevented from free access to insect-relief habitat, the result may be deterioration in body condition with consequences of decreased growth, increased winter mortality, and lowered herd productivity. … Postcalving aggregations could be inhibited from moving between inland feeding areas and coastal or mountainous insect-relief habitats within and to the south of the 1002 area as a result of development."[103] Although some studies have shown that caribou will seek out roads and drilling pads for relief from flies, this will not likely aid the Porcupine Caribou Herd because the caribou have usually left the 1002 area before fly season.[104] "The primary source of insect harassment for the [Porcupine Caribou Herd] while on the 1002 area is generally the swarms of mosquitoes early in the summer season. Large groups of mosquito-harassed caribou do not readily pass beneath elevated pipelines."[105] If caribou movement is inhibited by roads or pipeline development, the herd's use of 52 percent of estimated insect-relief habitats, including as much as 80 percent of the coastal habitat, could be reduced.[106]

Thus, scientific studies over the past two decades show the potential for a serious long-term problem for the Porcupine Caribou Herd if the 1002 area is developed. First, all studies agree that development displaces caribou cows from their preferred calving areas.[107] Second, this displacement leads to decreased calf survival.[108] Finally, those Central Arctic herd females that were in regular contact with oil field infrastructure had lower reproduction rates.[109] This information led to a predicted 8.2% decline in the growth rate of the Porcupine herd if full development of the 1002 area occurs.[110] This predicted decline is almost

At present, Prudhoe Bay oil fields span across 1,000 square miles of Alaska's North Slope, with 500 miles of roads and pipelines, 200 exploration and production drill pads, 4800 exploratory and production wells, 36 gravel mines, 2 airports and numerous other forms of industrial infrastructure. (Pamela A. Miller)

double the rate at which the population of the herd would inevitably begin to decline. Because the Porcupine herd has a low capacity for growth to begin with, and has been experiencing a population decline for the past 15 years, the addition of oil development in the best calving habitat could prevent a reversal of this population decline, leading to a long-term substantial reduction in the size of the herd.

Finally, it is important to consider that the Arctic Climate Impact Assessment has recently concluded that climate change is already placing additional stresses on the Porcupine Caribou Herd, and that "[t]he Porcupine Caribou Herd appears to be more sensitive to the effects of climate change than other large herds."[111] Warmer weather, earlier snowmelt, earlier break-up of river ice, and changes in the freeze-thaw cycles have already affected the health of the animals and the pattern of their annual movements.[112] As Gwich'in Steven Mills from Old Crow commented, "If I were a caribou, I'd be pretty confused right now."[113] The increased stress on the herd from climate change makes the herd even more vulnerable to new disruptions like oil and gas development in the herd's primary calving and post-calving habitat.

As early as 1987, the US Department of the Interior concluded that "[m]ajor effects on the [Porcupine Caribou Herd] could result if the entire 1002 area were leased," even with a complete and effective set of mitigation measures in place.[114] "If this major effect occurred, it would manifest itself as a widespread, long-term change in habitat availability or quality which would likely modify natural abundance or distribution of the [Porcupine Caribou Herd] in the 1002 area …."[115] This early warning assumes heightened significance given the persistent population decline in the herd over the last 15 years.[116]

Opening the Coastal Plain of the Arctic National Wildlife Refuge to oil drilling would very likely lead to a long-term decline in the Porcupine Caribou Herd. The already declining herd would experience lower calf survival rates, leading to a steeper drop in the herd's population and ultimately a smaller herd with a smaller range. "A change in distribution of the herd, shifting generally to the east for example, could result in up to a 100% loss of the animals to subsistence hunters in Arctic Village and Venetie."[117] Such a change in herd distribution or migration patterns could be devastating to the Gwich'in villages that are now strategically located along the herd's migration corridor. Additionally, with the declining population of the herd, the Gwich'in could be forced to curtail their critical harvest and cultural activities involving the herd. According to one biologist, if the herd's numbers fall much further, "the Gwich'in may have to consider cutting down on the 4000 animals they usually hunt in a year."[118] The harvest, so central and critical to the Gwich'in physical and cultural survival, would cease to provide a reliable means of subsistence or to sustain the way of life that has defined the Gwich'in culture for millennia.

Newly-born caribou calves greatly depend on their mothers for survival. (USFWS)

Opening the Coastal Plain of the Arctic National Wildlife Refuge to oil drilling would very likely lead to a long-term decline in the Porcupine Caribou Herd.

IV. The inevitable decline in the Porcupine Caribou Herd that would result from oil and gas exploitation in the Coastal Plain of the Arctic National Wildlife Refuge would violate the human rights of the Gwich'in.

"[P]rotection for indigenous populations constitutes a sacred commitment of [nations]."[119] This is a norm of customary international law, recognized and shared by the international community as a whole.[120] Indigenous peoples' human rights are often inseparable from their environment. "Indeed, it can be said that all environmental degradation has a direct impact on the human rights of the indigenous peoples dependent on that environment."[121]

The Porcupine Caribou Herd is the most critical of the Gwich'in community resources, feeding their social, cultural, and physical needs. The Porcupine herd is the central figure in the Gwich'in religion, culture, spirituality, and oral history, as well as their primary source of food. The herd plays a central role in the Gwich'in creation story. Indeed, the Gwich'in believe that the caribou's heart is part human, and that the Gwich'in heart is part caribou. The herd is the single most critical natural resource to the cultural and physical survival of the Gwich'in.

Young girls in the town of Venetie, Alaska. (Masako Cordray)

Although the Gwich'in do not occupy the Coastal Plain as a living area, its protection is nonetheless essential to Gwich'in human rights. The Gwich'in refer to the Coastal Plain as "The Sacred Place Where All Life Begins" because of its critical role in the life cycle of the caribou. Much like churches and synagogues, which have a cultural and spiritual significance separate from use and occupation, the Coastal Plain holds a sacred and symbolic place in Gwich'in religion and culture.

The rights of the Gwich'in to culture, subsistence, health, and religion are intertwined with the Porcupine herd and the Coastal Plain. Protecting the human rights of the Gwich'in thus requires protecting the Porcupine Caribou Herd and the Coastal Plain of the Arctic National Wildlife Refuge.

A. The Right of the Gwich'in to Culture

The International Covenant on Civil and Political Rights provides that ethnic minorities "shall not be denied the right … to enjoy their own culture."[122] The Charter of the Organization of American States obligates the government of each nation in the Americas "to preserve and enrich the cultural heritage of the American peoples."[123] In fact, nearly every international human rights agreement requires the protection of cultural rights.[124]

International courts and tribunals have long recognized that environmental degradation caused by a State's action or inaction can violate the human right to the benefits of culture, especially in the context of indigenous cultures.[125] "[T]he close ties of indigenous people with the land must be recognized and understood as the

fundamental basis of their cultures, their spiritual life, their integrity, and their economic survival."[126] For example, the Inter-American Commission on Human Rights noted that where the granting of mining concessions on indigenous lands would have "negative consequences for [the indigenous peoples'] culture," such concessions violated the peoples' rights,[127] as well as the nation's obligations under the Organization of American States Charter.[128] As the Commission has stated, "the use and enjoyment of the land and its resources are integral components of the physical and cultural survival of the indigenous communities."[129] Moreover, the "subsistence economy and traditional activities … such as hunting, fishing, trapping and gathering, shall be recognised as important factors in the maintenance of [indigenous] cultures."[130]

The UN Human Rights Committee has likewise recognized that degradation of natural resources may violate indigenous peoples' right to culture:

> [C]ulture manifests itself in many forms, including a particular way of life associated with the use of land resources, especially in the case of indigenous peoples. That right may include such traditional activities as fishing or hunting and the right to live in reserves protected by law. The enjoyment of those rights may require positive legal measures of protection and measures to ensure the effective participation of members of minority communities in decisions which affect them …. The protection of these rights is directed towards ensuring the survival and continued development of the cultural, religious and social identity of the minorities concerned, thus enriching the fabric of society as a whole.
>
> [O]ne or other aspect of the right … to enjoy a particular culture may consist [of] a way of life which is closely associated with territory and use of its resources. This may particularly be true of members of indigenous communities constituting a minority.[131]

"[T]he close ties of indigenous people with the land must be recognized and understood as the fundamental basis of their cultures, their spiritual life, their integrity, and their economic survival."

Arctic Village children tanning a caribou skin. (Brooke Tone Boswell)

Applying these principles, the Committee has held that oil and gas exploitation in Canada that exacerbated threats to the way of life and culture of the Lubicon Band deprived the Band of their means of subsistence and their right to self-determination, and violated the Band's right to culture.[132]

The inevitable decline in the Porcupine Caribou Herd that would result from oil and gas drilling in the Arctic National Wildlife Refuge

Earnest Erick, Evon Peters, and Don Stevens in the Gwich'in Drum Sing Dance for the Arctic Refuge vigil in 2005, Washington, DC. (Brooke Tone Boswell)

would prevent the Gwich'in from engaging in such cultural and spiritual practices as hunting, resource use, educating youth about their religion and resource use, and using traditional knowledge. Because the spiritual connection with the herd is so central to the Gwich'in culture, damage to the herd would endanger the very identity of the Gwich'in as a people.

The migration time, when the herd passes through the Gwich'in villages, is an important time in Gwich'in culture, not only for harvesting food for the year, but for passing on knowledge to the younger generations: "This is the time when the life lessons are taught to the younger generation of the Gwich'in people."[133] Hunting skills, food preparation techniques, clothing- and tool-making, as well as knowledge about family lineages and lessons about respect for the animals are all passed down during this time.[134] Without the annual hunt, these opportunities would be lost. The US Government has a clear obligation to respect, protect, and foster the Gwich'in culture. Opening the "Sacred Place Where All Life Begins" to oil drilling would violate that obligation and the fundamental right of the Gwich'in to culture.

B. The Right of the Gwich'in to Their Own Means of Subsistence

The International Covenant on Civil and Political Rights and the International Covenant on Economic, Social and Cultural Rights each provide that "[i]n no case may a people be deprived of its own means of subsistence."[135] In the context of indigenous peoples, the right of a people to its own means of subsistence has gained the status of a general principal of international law and a customary human right.[136]

The right to culture may also require protecting a people's means of subsistence.[137] In the Lubicon Lake case, the UN Human Rights Committee stated that the granting of oil and gas concessions that were destroying the Band's traditional hunting and trapping areas violated the right to culture because they "threaten[ed] the [subsistence] way of life of the Lubicon Lake Band."[138]

The US Government has an international obligation to recognize and protect the subsistence uses of the Porcupine Caribou Herd by the Gwich'in. Oil drilling in the Coastal Plain of the Arctic National Wildlife Refuge would breach this duty.

Gwich'in villages are isolated and people rely on wild game for their nutritional needs and to maintain their health.[139] The inevitable decline in the Porcupine Caribou Herd that would result from oil and gas drilling on the Coastal Plain of the Arctic National Wildlife Refuge would prevent the Gwich'in from satisfying their subsistence needs by harvesting from the herd, thus violating their right to their own means of subsistence.

The US Government has an international obligation to recognize and protect the subsistence uses of the Porcupine Caribou Herd by the Gwich'in. Oil drilling in the Coastal Plain of the Arctic National Wildlife Refuge would breach this duty.

C. The Right of the Gwich'in to Health

Under international law, "[e]very person has the right to the preservation of his health."[140] The Constitution of the World Health Organization recognizes that "[t]he enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being."[141]

"The right to health is an inclusive right, containing freedoms … and entitlements, such as the rights to adequate nutrition."[142] The UN Committee on Economic and Social Rights explained that the right to "the highest attainable standard of physical and mental health"

> is not confined to the right to health care. On the contrary, … the right to health embraces a wide range of socio-economic factors … and extends to the underlying determinants of health, such as food and nutrition, … and a healthy environment.[143]

International law recognizes the close relationship between environmental harm and the right to health, especially in the context of indigenous peoples.[144] UN Special Rapporteur Fatma Zohra Ksentini identified the right to health as a fundamental right and analyzed the effects of the environment on that right.[145] She found that, under customary international law, "everyone has a right to the highest attainable standard of health."[146] The UN Special Rapporteur on the right to health, Paul Hunt, also noted that the right to health gives rise to an obligation on the part of a State to ensure that environmental degradation does not endanger human health.[147]

In *Yanomami Indians v. Brazil*, the Inter-American Commission on Human Rights recognized that harm to people resulting from environmental degradation violated the right to

Caribou meat is a staple of the traditional Gwich'in diet. (Carol Hoover)

The inevitable damage to the Porcupine herd that would result from oil drilling in the Coastal Plain of the Arctic National Wildlife Refuge would damage the ability of the Gwich'in to practice and manifest their religion, violating their right to religion.

health in Article XI of the American Declaration on Human Rights.[148] The Brazilian government's failure to prevent environmental degradation stemming from road construction and subsequent development of Yanomami indigenous lands caused an influx of pollutants and resulted in widespread disease and death. The Inter-American Commission found that "by reason of the failure of the Government of Brazil to take timely and effective measures [on] behalf of the Yanomami Indians, a situation has been produced that has resulted in the violation, injury to them, of the … right to the preservation of health and to well-being."[149] In another case, the Commission noted that the right to health and well-being in the context of indigenous people's rights was so dependent on the integrity and condition of indigenous land that "broad violations" of indigenous property rights necessarily impacted the health and well-being of the indigenous people.[150]

Because the Gwich'in rely so heavily on the Porcupine herd for their nutritional needs, decline in the herd would result in a shortage of subsistence food. Store-bought food is very expensive in remote villages and is not nearly as nutritious as traditional foods. In other parts of Alaska, reduced consumption of traditional foods and higher consumption of nonsubsistence food, such as shortening, lard, butter, and bacon, have increased the rates of cancer and diabetes, and have disrupted traditional social systems.[151] Thus, even if caribou could be replaced with other sources, the effect would be detrimental to the health of the Gwich'in.

Opening the Coastal Plain of the Arctic National Wildlife Refuge to oil drilling would violate the US Government's duty not to degrade the environment to the point that the health of a people is threatened. The proposed drilling in the Sacred Place Where All Life Begins would violate the right of the Gwich'in to health.

The Raven Dance invokes the centuries-old relationship between Gwich'in, raven and caribou. Hunters are taught to always leave behind the parts of the caribou that they cannot use, so as to share with other creatures, and to keep the earth clean. (Subhankar Banerjee)

D. The Right of the Gwich'in to Practice Their Religion

The International Covenant on Civil and Political Rights guarantees "the right to freedom of thought, conscience and religion. This right shall include freedom [of everyone] to have or to adopt a religion or belief of his choice, and freedom, either individually or in community with others and in public or private, to manifest his religion or belief in worship, observance, practice and teaching."[152] Every other major international human rights agreement also guarantees this right.[153] Interpretations of these agreements as they apply to indigenous peoples emphasize the importance of protecting sacred sites and spiritual symbols, practices and ceremonies.[154]

The Inter-American Commission on Human Rights has recognized that the right to religion cannot be adequately protected unless traditional land and sacred sites are likewise protected.[155] The UN Human Rights Committee has noted that the right to religion is "closely associated with territory and use of its resources" and that "[t]his may particularly be true of members of indigenous communities."[156]

The Porcupine herd is one of the most potent and critical spiritual symbols in the Gwich'in religion. The herd is part of the Gwich'in creation story. Ceremonial dances and songs continue to highlight the spiritual connection between the Gwich'in and the herd. The inevitable damage to the Porcupine herd that would result from oil drilling in the Coastal Plain of the Arctic National Wildlife Refuge would damage the ability of the Gwich'in to practice and manifest their religion, violating their right to religion.

The "Sacred Place Where All Life Begins" is a sacred site. As the birthplace of the greatest Gwich'in spiritual symbol, the Coastal Plain is important for the herd, but it has independent spiritual significance as well. The Coastal Plain thus plays a central role in the spiritual life of the Gwich'in. Harm to the Porcupine Caribou Herd through oil drilling would violate the right of the Gwich'in to practice their religion.

In the words of Gwich'in elder Jonathon Solomon, "It is our belief that the future of the Gwich'in and the future of the Caribou are the same." Harm to the Porcupine Caribou Herd is harm to the Gwich'in culture and way of life.

V. CONCLUSION

The Porcupine Caribou Herd is the central feature in the Gwich'in way of life. The birthing ground of the herd, the "Sacred Place Where All Life Begins," is likewise a sacred site to the Gwich'in, both for the sustenance it gives the herd and for its independent religious significance to the Gwich'in. Oil drilling in the Coastal Plain of the Arctic National Wildlife Refuge would unavoidably damage both the plain and the herd, violating the fundamental human rights of the Gwich'in to culture, subsistence, health, and religion. "It would be comparable to the historically genocidal acts that brought the Plains buffalo to the brink of extinction, and violated the very heart of the Plains Tribes' ancestral way of life."[157]

Notes

1. The "1002 area," named for the section of the Alaska National Interest Lands Conservation Act (ANILCA) that called for a continuing inventory of its resources, *see* 16 U.S.C. § 3142, is that part of the Arctic National Wildlife Refuge Coastal Plain that lies between the Canning River to the west and the Aichilik River to the east. USGS Geological Survey, *Arctic Refuge Coastal Plain, Terrestrial Wildlife Research Summaries*, USGS/BRD/BSR-2002-0001 at 2 (Mar. 2002) (hereinafter *USGS Report*).
2. *See* Gwich'in Steering Committee website *at* http://www.gwichinsteeringcommittee.org/index.html (last visited Sept. 7, 2005).
3. *See* Figure 1 page 5, indicating the substantial overlap between the Traditional Homeland of the Gwich'in Indians and the range of the Porcupine caribou herd, *available at* http://www.gwichin.org/map-pch.pdf (last visited Sept. 8, 2005); Fred Pearce, *Sink or Swim*, in New Scientist at 16 (Aug. 5, 2000) (hereinafter New Scientist) (Gwich'in villages all lie along the Porcupine Caribou Herd migration route).
4. Arctic National Wildlife Refuge, Alaska: Hearings Before the Committee on Energy & Natural Resources of the United States Senate, 100th Cong. at 313 (1987) (Tanana Chiefs Conference, Inc., Resolution No. 87-65) (noting that Arctic Village, Venetie, and Old Crow "are extremely dependent upon the population and distribution of the Porcupine Caribou herd as a matter of economics, nutrition, and cultural heritage[.]").
5. Darius Kassi, quoted in Erin Sherry and Vuntut Gwitchin First Nation, The Land Still Speaks: Gwitchin Words About Life in Dempster County at 180 (1999) (hereinafter The Land Still Speaks).
6. New Scientist at 16 (quoting Don Russell, a Canadian biologist with the International Porcupine Caribou Management Board).
7. Arctic Coastal Plain Leasing: Hearing Before the Committee on Resources of the House of Representatives, 104th Cong. at 185 (1995) (Statement of Sarah James of Arctic Village, Alaska).
8. The Editors of Time-Life Books, Hunters of the Northern Forest at 162 (Time-Life Books 1995).
9. Written Statement Submitted by the International Indian Treaty Council to the UN Commission on Human Rights at ¶ 8–10 (1999), *available at* http://www.unhchr.ch/Huridocda/Huridoca.nsf/TestFrame/cb3fb9823f8714 2780256740003a3f45?Opendocument (last visited Sept. 26, 2005) (hereinafter "IITC Statement").
10. Arctic Coastal Plain Leasing: Hearing Before the Committee on Resources of the House of Representatives, 104th Cong. at 59 (1995) (Statement of Sarah James); http://www.alaska.net/~gwichin/culture1.html (last visited Sept. 7, 2005).
11. *See* Gwich'in Steering Committee website at http://www.alaska.net/~gwichin/culture1.html (last visited Sept. 7, 2005); Gwich'in Council International website at http://www.gwichin.org/gwichin.html (last visited Sept. 7, 2005).
12. *See* Hunters of the Northern Forest at 30; Gwich'in Council International website *at* http://www.gwichin.org/gwichin.html (last visited Sept. 7, 2005).
13. TCC Resolution, *supra* note 4; M. Lynne Corn, *Arctic National Wildlife Refuge: Background and Issues* at 87 (Congressional Research Service Report for Congress, May 15, 2003) (hereinafter *2003 CRS Report*) ("Caribou is the main food source for Arctic Village, Venetie, and other Gwich'in villages.").
14. Sarah James Statement, *supra* note 7, at 185.
15. Arctic National Wildlife Refuge, Alaska: Hearings Before the Committee on Energy & Natural Resources of the United States Senate, 100th Cong. at 295 (1987) (Statement of Sarah James, Arctic Village, Alaska, discussing study that found caribou has highest nutritional value of foods consumed in each village).
16. National Academy of Sciences, *Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope* at 139 (2003) *available at* http://www.nap.edu/books/0309087376/html (last visited Aug. 18, 2005) (hereinafter *National Academy of Sciences*) ("Higher consumption of nonsubsistence food, such as shortening, lard, butter, and bacon, and reduced consumption of traditional foods ... have increased the incidence of diabetes.").
17. Arctic National Wildlife Refuge, Alaska: Hearings Before the Committee on Energy & Natural Resources of the United States Senate, 100th Cong. at 286 (1987) (Statement of Lincoln Tritt, Chief, Arctic Village, Alaska).
18. The Land Still Speaks at 222-230 (describing various uses of caribou).
19. Gwich'in Steering Committee website *at* http://www.alaska.net/~gwichin/index2.html (last visited Aug. 18, 2005).
20. IITC Statement at ¶ 8–10.
21. *The Arctic National Wildlife Refuge: A Special Report/ The People in and around the Arctic Refuge/The Gwich'in of Alaska and Canada, at* http://arcticcircle.uconn.edu/ANWR/anwrgwichin.html (last visited Sept. 8, 2005).
22. Agreement on the Conservation of the Porcupine Caribou Herd, July 17, 1987, U.S.-Can., T.I.A.S. No. 11259, art. 4.
23. *Id.* at 1.
24. *Id.*
25. *Id.*, preamble.
26. *Id.*, art. 3(a).
27. *See* Darius Kassi Statement, *in* The Land Still Speaks at 180 ("We spend an enormous amount of our energy negotiating international agreements like the Porcupine Caribou Management Agreement, protecting our land so the caribou can have some place to go.").
28. Sarah James, *We Are the Ones Who Have Everything to Lose, in* Arctic Refuge: A Circle of Testimony at 4 (compiled by Hank Lentfer and Carolyn Service 2001).
29. New Scientist at 16.
30. *Id.*
31. Jonathon Solomon, Chairman, Gwich'in Steering Committee, in *Protect the Sacred Place Where Life Begins: Iizhik Gwats'an Gwandaii Goodlit* (Gwich'in Steering Committee).
32. *Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment; Report and Recommendation to the Congress of the United States and Final Legislative Environmental Impact Statement*, United States Department of the Interior, Apr. 1987 at 24 (hereinafter *FLEIS*) ("caribou have calved on the 1002 area every year for which detailed records have been kept (1972-86)"); *see also supra* note 1 (explaining distinction between 1002 area and Coastal Plain).
33. *USGS Report* at 13.
34. The maximum long-term growth rate for the Porcupine Caribou Herd was 4.9% during the 1970s and 1980s, *USGS Report* at 14, compared with maximum growth rates of 10.8% for the Central Arctic herd, 13% for the Teshekpuk Lake herd, and 9.5% for the Western Arctic herd, *id.* at 34. Since 1989, the Porcupine Caribou Herd has been in decline. *Id.* at 13.
35. *Id.* at 34.
36. *Id.* (citing Walsh *et al., Evaluating growth of the Porcupine caribou herd using a stochastic model*, 59 Journal of Wildlife Management 262–72 (1995)).
37. As explained in more detail below, the ability to gain relief from insects is crucial to caribou survival.
38. *USGS Report* at 24–25; International Porcupine Caribou Board, *Sensitive Habitats of the Porcupine Caribou Herd* at 14 (January 1993) (hereinafter *International Board Report*).
39. *FLEIS* at 46.
40. *National Academy of Sciences* at 107.
41. *Id.* at 108.
42. *Id.*
43. *International Board Report* at 3.
44. *Id.* at 14-15.
45. *Id.* at 17-18.
46. *National Academy of Sciences* at 108.
47. *Id.*
48. D.E. Russell & P. McNeil, *Summer Ecology of the Porcupine Caribou Herd*, Porcupine Caribou Management Board at 6 (2nd ed. 2005) (hereinafter *Summer Ecology*).
49. *FLEIS* at 24; *International Board Report* at 14 (map).
50. *USGS Report* at 11.

51. *FLEIS* at 24.
52. Calf survival is 83.8% for those born in concentrated areas versus 73.9% for those born in never-before-used areas (based on data from 1983-1994). *USGS Report* at 32-33.
53. *Summer Ecology* at 10.
54. *International Board Report* at 14.
55. *USGS Report* at 17.
56. *Summer Ecology* at 8.
57. *Id.* at 7; *see also International Board Report* at 14 (50% of first year mortality occurs within the first month).
58. *Summer Ecology* at 7.
59. *Id.* (higher predator concentrations).
60. *FLEIS* at 25.
61. *National Academy of Sciences* at 107.
62. *Id.*
63. *FLEIS* at 25.
64. *International Board Report* at 21.
65. US Fish and Wildlife Service Alaska website at http://arctic.fws.gov/carcon.htm (last visited Aug. 17, 2005).
66. *Id.*
67. *FLEIS* at 119.
68. *USGS Report* at 34.
69. *FLEIS* at 119.
70. *See generally International Board Report* at 14-19 (use of Coastal Plain during calving and post-calving).
71. *FLEIS* at 119.
72. *National Academy of Sciences* at 106 (location of CAH).
73. Raymond D. Cameron et al., *Caribou Distribution and Group Composition Associated with Construction of the Trans-Alaska Pipeline*, Canadian Field-Naturalist 93(2): 155-162, at 161 (1979).
74. *FLEIS* at 121.
75. *Id.* Despite the shift in calving locations, the overall population of the CAH nevertheless increased between 1978 and 1985. *Id.* Some researchers contend that this lack of reduction in productivity or consequent population decline is because "(1) suitable alternative high-quality habitat appears available; (2) the CAH has been displaced from only a part of its calving grounds to areas already used for calving; and (3) overall density of CAH caribou on their calving grounds (even after displacement) is much lower than the density of other Alaskan Arctic caribou herds." *Id.* These ameliorating factors are all absent for the Porcupine Caribou Herd. *See USGS Report* at 30.
76. *USGS Report* at 29-30.
77. C. Nellemann & R.D. Cameron, *Cumulative impacts of an evolving oil-field complex on the distribution of calving caribou*, Can. J. Zool. 76: 1425-1430, at 1429 (1998).
78. *USGS Report* at 29-30.
79. *Id.* at 30.
80. *National Academy of Sciences* at 116.
81. *FLEIS* at 122.
82. *National Academy of Sciences* at 110 (citations omitted).
83. *Id.* at 116.
84. *USGS Report* at 34.
85. *Id.* at 13-14.
86. *Id.* at 34.
87. *FLEIS* at 121.
88. *USGS Report* at 34.
89. *Id.*
90. *Id.*
91. *Id.*
92. *Id.*
93. *Id.*
94. *Id.* at 120.
95. According to the Interior Department, "It is important to note that the Milne Point field [the subject of one of the CAH studies from which the *FLEIS* derived its predictions] is the smallest development on the North Slope.... Under full leasing, most roads in the 1002 area would be expected to have much greater traffic.... Thus, predicted results in the 1002 area, using the Milne Point study as a basis, are likely to be conservative." *Id.*
96. *USGS Report* at 30-31.
97. *Id.* at 31.
98. *See* discussion of 4.6% growth rate decline, *supra* n. 36 and accompanying text.
99. *FLEIS* at 122.
100. *Id.* (internal citations omitted).
101. *Id.*
102. *Id.*
103. *Id.*
104. *Id.*
105. *Id.* (internal citations omitted).
106. *Id.* at 123.
107. *FLEIS* at 119.
108. *USGS Report* at 30-31.
109. *National Academy of Sciences* at 116.
110. *USGS Report* at 31.
111. *Arctic Climate Impact Assessment, Impacts of a Warming Arctic* at 71 (2004).
112. *Id.* at 72; *see also* New Scientist, *supra* note 3 at 16 (statement by Arctic Village elder Trimble Gilbert that the caribou migration has changed and the herd no longer crosses the Porcupine River at the village).
113. *Id.* (quoting Stephen Mills, Old Crow, Canada).
114. *FLEIS* at 123.
115. *Id.*
116. *See USGS Report* at 13 (noting population decline).
117. Arctic National Wildlife Refuge, Alaska: Hearings Before the Committee on Energy & Natural Resources of the United States Senate, 100th Cong. 309 (1987) (Statement of the Tanana Chiefs Conference, Inc., on Further Exploration and Oil Development in the 1002 Area of the Arctic National Wildlife Refuge).
118. New Scientist, at 16 (quoting Don Russell, a Canadian biologist with the International Porcupine Caribou Management Board).
119. Resolution of the IACHR on the Problem of Special Protection for Indigenous Populations, Inter-Am. C.H.R., OEA/Ser.L/V/II.29, doc. 38, rev. (1972), quoted The Human Rights Situation of the Indigenous People in the Americas, 1, n.1, OEA/Ser.L/V/II.108 Doc. 62 (October, 2000), *available at* http://www.cidh.org/indigenas/toc.htm ("In that resolution the Commission called on the member states 'to implement the recommendations made by the Inter-American and Indianist Conferences… and, in particular, the provisions contained in Article 39 of the Inter-American Charter of Social Guarantees.'"); *see also* Report on the Situation of Human Rights of a Segment of the Nicaraguan Population of Miskito Origin ("Miskito Report") 76, Inter-Am. C.H.R., OEA/Ser.L/V/II.62, doc. 10, rev. 3 (1983) at p. 81 § 2-B-15.
120. Case of Mary and Carrie Dann ("Dann") Report No. 75/02, Case 11.140 (United States), Annual Report of the IACHR 2002 (2002) at ¶ 127, *available at* http://cidh.org/annualrep/2002eng/USA.11140.htm (last visited September 7, 2005) ("In acknowledging and giving effect to particular protections in the context of human rights of indigenous populations, the Commission has proceeded in tandem with developments in international human rights law more broadly."); Report on the Human Rights Situation in Ecuador ("Ecuador Report"), OEA/Ser.L/V/II.96, Ch. 10, *available at* http://cidh.org/countryrep/ecuador-eng/index%20-%20ecuador.htm (last visited September 7, 2005) ("Within international law generally, and inter-American law specifically, special protections for indigenous peoples may be required for them to exercise their rights fully and equally with the rest of the population. Additionally, special protections for indigenous peoples may be required to ensure their physical and cultural survival – a right protected in a range of international instruments and conventions."); Case of The Mayagna (Sumo) Awas Tingni Community v. Nicaragua. Judgment of August 31, 2001 ("Awas Tingni") Inter-Am. Ct. H.R., (Ser. C) No. 79 (2001) at ¶ 151 *available at* http://www.corteidh.or.cr/seriecpdf_ing/seriec_79_ing.pdf (last visited September 7, 2005) (interpreting the American Convention's protection of "property" to mean protection of property rights as understood by the indigenous community involved: "As a result of customary practices, possession of the land should suffice for indigenous communities lacking real title to property of the land to obtain official recognition of that property."); Case of Maya Indigenous Communities of the Toledo District and Belize ("Belize Maya"), Case 12.053, Inter-Am. Com. H.R. Report 40/04 (2004) at ¶ 94, *available at* http://www.cidh.org/annualrep/2004eng/Belize.12053eng.htm (last visited Sept. 7, 2005) (giving "due regard to the particular principles of international human rights law governing the individual and collective interests of indigenous peoples"); Yanomami Indians v. Brazil, Case 7615 (Brazil), Inter-Am. C.H.R. ¶ 7, 9, OEA/Ser.L/V/II.66 doc. 10 rev. 1 (1985), *available at* http://www.cidh.org/annualrep/84.85eng/Brazil7615.htm (last visited September 7, 2005) ("International law in its present state…recognizes the right of ethnic groups to special protection…for all those characteristics necessary for the preservation of their cultural identity…. [T]he Organization of American States has established, as an action of priority for the member states, the preservation and strengthening of the cultural heritage of these ethnic groups and the struggle against the discrimination that invalidates their members' potential as human beings through the destruction of their cultural identity and individuality as indigenous peoples.").
121. Ksentini, Fatma Zohra, *Review of Further Developments in Fields*

with which the Sub-Commission has been Concerned: Human Rights and the Environment: Progress Report, U.N. C.H.R., Sub-Commission on Prevention of Discrimination and Protection of Minorities, 44th Sess., Agenda Item 4, at ¶ 27, para. 94, U.N. Doc. E/CN.4/Sub.2/1992/7 (1992) at 27. The right to a healthy environment is also a customary international right outside the context of indigenous peoples. *See* Ecuador Report, *supra* note 120, at 88-92; International Covenant on Economic, Social and Cultural Rights (ICESCR), Dec. 16, 1966, I.L.M. 360, 365, 993 U.N.T.S. 3, art. 12(2) (signed by United States on Oct. 5, 1977); Convention on the Rights of the Child, Nov. 20, 1989, art. 6, 28 I.L.M. 1448, 1577 U.N.T.S. 3, art. 29(e) (signed by United States on Feb. 16, 1995); Additional Protocol to the American Convention on Human Rights in the Area of Economic Social and Cultural Rights (Protocol of San Salvador), Nov. 14, 1988, art. 11, O.A.S.T.S. No. 69, 28 I.L.M. 156; African Charter on Human and Peoples' Rights, at 63 ("[a]ll peoples shall have the right to a generally satisfactory environment favorable to their development."); African Charter on the Rights and Welfare of the Child, entered into force Nov. 29, 1999, art. 14(2)(c), OAU Doc. CAB/LEG/24.9/49, art. 14 § 1(c) ("to ensure the provision of ... safe drinking water."); Charter of Fundamental Rights of the European Union, Sept. 28, 2000, 2000 O.J. (C 364), art. 37 ("A high level of environmental protection and the improvement of the quality of the environment must be integrated into the policies of the Union and ensured in accordance with the principle of sustainable development."); Convention on Biological Diversity, entered into force Dec. 29, 1993, preamble, 31 I.L.M. 818, 1760 U.N.T.S. 79; North American Agreement on Environmental Cooperation, Sept. 14, 1993, Preamble cl. 8, 32 I.L.M. 1482 (1993); Rio Declaration on Environment and Development, U.N. ESCOR, principles 1, 14, U.N. Doc. A/CONF.151/26 (Vol. I) (1992) ("Rio Declaration) ("Human beings ... are entitled to a healthy and productive life in harmony with nature."; recognizing the importance of controlling "any activities and substances that cause severe environmental degradation."); U.N. General Assembly Resolution 45/94, U.N. GAOR, 45th Sess., U.N. Doc. A/45/749 (1990) ("[A]ll individuals are entitled to live in an environment adequate for their health and well-being."); U.N. General Assembly Resolution 55/107, U.N. GAOR, 55th Sess., 3(k), U.N. Doc. A/Res/55/107 (2000) ("affirming that a democratic and equitable international order requires, inter alia, the realization of ... the entitlement of every person and all peoples to a healthy environment"); U.N. Commission on Human Rights Resolution 2000/62, U.N. ESCOR, 56th Sess., ¶ 3(k), U.N. Doc. E/CN.4/RES/2000/62 (2000) ("a democratic and equitable international order requires, inter alia, the realization of ... [t]he right to a healthy environment for everyone.").

122. International Covenant on Civil and Political Rights (ICCPR), art. 27, Dec. 16, 1966, 6 I.L.M. 368, 999 U.N.T.S. 171, 174 (ratified by United States, June 8, 1992).

123. Charter of the Organization of American States, arts. 2(f), 3(m), 30, 48, *available at* http://cidh.org/Basicos/charter.htm (last visited September 7, 2005) (Member States are "individually and jointly bound to preserve and enrich the cultural heritage of the American peoples").

124. *See*, e.g., Universal Declaration of Human Rights, art. 27, G.A. Res. 217A (III), U.N. GAOR, 3rd Sess., U.N. Doc A/810 (1948) ("Everyone has the right freely to participate in the cultural life of the community…."); ICESCR, *supra* note 121, art. 12 ("The States Parties … recognize the right of everyone … [t]o take part in cultural life…."); American Declaration of the Rights and Duties of Man ("American Declaration") art. 13, Organization of American States (O.A.S.) Res. XXX (1948), reprinted in Basic Documents Pertaining to Human Rights in the Inter-American System, OEA/Ser.L/V/I.4 rev.8 (May 2001), *available at* http://cidh.org/Basicos/basic2.htm (last visited September 7, 2005) ("Every person has the right to take part in the cultural life of the community…."); American Convention on Human Rights, Nov. 22, 1969, art. 16, 9 I.L.M. 673, 676, 1144 U.N.T.S. 123, reprinted in Basic Documents Pertaining to Human Rights in the Inter-American System, OEA/Ser.L/V/I.4 rev.8 (May 2001), *available at* http://cidh.org/Basicos/basic3.htm (last visited September 7, 2005) ("Everyone has the right to associate freely for ideological, religious, political, economic, labor, social, cultural, sports, or other purposes.").

125. *See*, e.g., Belize Maya *supra* note 120 at ¶ 120 ("It has been the Commission's longstanding view that the protection of the culture of indigenous peoples encompasses the preservation of the aspects linked to productive organization, which includes, among other things, the issue of ancestral and communal lands" (quotation omitted).).

126. Awas Tingni, *supra* note 120 at ¶ 149; *see also* Hunter, Salzman & Zaelke, International Environmental Law and Policy (2d ed. 2001), at 1310; *see also* Ecuador Report, *supra* note 120, at ch. 9 ("Certain indigenous peoples maintain special ties with their traditional lands, and a close dependence upon the natural resources provided therein—respect for which is essential to their physical and cultural survival.").

127. Yanomami, *supra* note 120 at 5-6.

128. *Id.* *See also* Miskito Report, *supra* note 119 at ¶ II.B.15 ("[S]pecial legal protection is recognized for the use of … all those aspects related to the preservation of their cultural identity. To this should be added the aspects linked to productive organization, which includes, among other things, the issue of the ancestral and communal lands. Non-observance of those rights and cultural values leads to a forced assimilation with results that can be disastrous.").

129. Belize Maya, *supra* note 120 at ¶ 154-156.

130. Convention concerning Indigenous and Tribal Peoples in Independent Countries ("ILO Convention No. 169"), art. 23.1 (June 27, 1989), 72 ILO Official Bull. 59, reprinted in 28 I.L.M. 1382, *available at* http://www.unhchr.ch/html/menu3/b/62.htm (last visited September 7, 2005); *see also* Dann, *supra* note 120 at ¶ 131 (noting the importance of interpreting the American Declaration in a manner that "safeguard[s] the integrity, livelihood and culture of indigenous peoples through the effective protection of their individual and collective human rights," because doing so respects "the very purposes underlying the Declaration").

131. General Comment No. 23: The rights of minorities, United Nations H.R.C., 50th Session, ¶ 7, 9, U.N. Doc. CCPR/C/21/Rev.1/Add.5 (1994), *available at* http://www.unhchr.ch/tbs/doc.nsf/(Symbol)/fb7fb12c2fb8bb21c12563ed004df111?Opendocument (last visited Sept. 7, 2005).

132. *Id.* at ¶ 33.

133. IITC Statement, *supra* note 9, at ¶ 8–10.

134. *Id.*

135. ICCPR, *supra* note 122, at art. 1(2); ICESCR, *supra* note 121 at art. 1; *see also* Draft Declaration on the Rights of Indigenous People, ("Draft U.N. Declaration") U.N. C.H.R., Sub-Commission on Prevention of Discrimination and Protection of Minorities, 45th Sess., U.N. Doc. E/CN.4/SUB.2/RES/1994/45 (1994), *available at* http://www.unhchr.ch/huridocda/huridoca.nsf/(Symbol)/E.CN.4.SUB.2.RES.1994.45.En?OpenDocument (last visited September 7, 2005); Proposed American Declaration on the Rights of Indigenous Peoples ("Proposed American Declaration") art. 18.4, OEA/Ser.L/V/II.110 Doc. 22, (Mar. 1 2001) *available at* http://www.cidh.org/indigenas/indigenas.en.01/index.htm (last visited September 7, 2005). The Inter-American Commission has specifically noted that many of the provisions of the Proposed Declaration, "including aspects of Article [18], reflect general international legal principles developing out of and applicable inside and outside of the inter-American system and to this extent are properly considered in interpreting and applying the provisions of the American Declaration in the context of indigenous peoples." Dann, *supra* note 120 at ¶ 129.

136. *See* ILO Convention 169, *supra* note 130, art. 14.1 (protecting the right of indigenous peoples to their own means of subsistence and their right of access to lands they do not own, but "to which they have traditionally had access for their subsistence and traditional activities"); Proposed American Declaration, *supra* note 135, art. 28 (guaranteeing indigenous peoples the "right to an effective legal framework for the protection of their rights … with respect to traditional uses of their lands, interests in lands, and resources, such as subsistence").

137. ILO Convention 169, *supra* note 130, at art. 23.1 (the "subsistence economy and traditional activities … such as hunting, fishing, trapping and gathering, shall be recognised as important factors in the maintenance of their cultures and in their economic self-reliance and development").

138. Bernard Ominayak and the Lubicon Lake Band v. Canada, U.N. HRC, 45th Sess., Supp. No. 40, at ¶ 33, U.N. Doc. CCPR/C/38/D/167/1984 139.

139. *See* IITC Statement, *supra* note 9, at ¶ 12.

140. American Declaration, *supra* note 124, at art. XI. *See also* Protocol of San Salvador, *supra* note 121, at art. 14 (interpreting the right to health as ensuring "the enjoyment of the highest level of physical, mental and social well-being"); Universal Declaration of Human Rights, *supra* note 124, at art. 25(1) (guaranteeing each person's right to "a standard of living adequate for the health and well-being of himself and his family"); ICESCR, *supra* note 121, at art. 12 (recognizing "the right of everyone to the enjoyment of the highest attainable standard of physical and mental health"); African Charter on Human and Peoples' Rights, *supra* note 121, at art. 16 ("Every individual shall have the right to enjoy the best attainable state of physical and mental health.").

141. Constitution of the World Health Organization, July 22, 1946, 14 U.N.T.S. 185, 186 (signed by United States July 22, 1946).

142. Hunt, Paul, *Right of Everyone to the Highest Standard of Physical and Mental Health: Addendum, Mission to Peru* ("Peru Report"), ¶ 6, U.N. Doc. E/CN.4/2005/51/Add.3 (2005).

143. U.N. Committee on Economic, Social and Cultural Rights, Substantive Issues Arising in the Implementation of the International

Covenant on Economic, Social and Cultural Rights, CESCR General Comment 14, 22nd Sess., at ¶ 4, U.N. Doc. E/C.12/2000/4 (2000). The Committee further states that victims of a violation of the right to health should have access to remedies at the both national and international levels and should be entitled to adequate reparation. *Id.* at ¶ 59.
144. *See*, e.g., Stockholm Convention on Persistent Organic Pollutants, *available at* http://www.pops.int/documents/convtext/convtext_en.pdf (last visited September 7, 2005) (seeking "to protect human health and the environment."); World Health Organization Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes, art. 1, U. N. Doc MP.WAT/AC.1/1999/1 (1999), *available at* http://www.euro.who.int/Document/Peh-ehp/ProtocolWater.pdf (aiming "to promote at all appropriate levels, nationally as well as in transboundary and international contexts, the protection of human health and well-being, both individual and collective"); Rio Declaration, *supra* note 121, princ. 145 (recognizing importance of controlling "any activities and substances that ... are found to be harmful to human health").
145. Drawing from various international human rights documents and national constitutions, the Special Rapporteur found that, under customary international law, "everyone has a right to the highest attainable standard of health." Ksentini Final Report, *supra* note 121, at ¶ 176-187.
146. *Id.* at ¶ 176
147. Peru Report, *supra* note 142 at ¶ 54.
148. Yanomami, *supra*, note 120 at 8.
149. *Id.*
150. Belize Maya, *supra* note 120 at ¶ 156.
151. *National Academy of Sciences*, *supra* note 16 at 139.
152. ICCPR, *supra* note 122, art. 18.
153. *See*, e.g., American Declaration, *supra*, note 124, art. 3 ("Every person has the right freely to profess a religious faith, and to manifest and practice it both in public and in private."); American Convention, *supra* note 124, art. 12 (protecting "the right to freedom of conscience and of religion"); International Convention on the Elimination of All Forms of Racial Discrimination, Article 5(d)(vii)(ix) (guaranteeing "the right of everyone freedom of thought, conscience and religion").
154. *See*, e.g., Proposed American Declaration *supra*, note 135, at art. 10.3 ("[S]tates shall adopt effective measures to ensure that [indigenous peoples'] sacred sites … are preserved, respected and protected… [and] shall encourage respect by all people for the integrity of indigenous spiritual symbols, practices, sacred ceremonies, expressions and protocols."); Draft UN Declaration, *supra* note 135, art. 13 (protecting rights "to manifest, practice, develop and teach their spiritual and religious traditions, customs and ceremonies… to the use and control of ceremonial objects; and the right to the repatriation of human remains" and requiring states to "take effective measures… to ensure that indigenous sacred places… be preserved, respected and protected").
155. The violation of the Maya's right to religion was therefore "subsumed within the broad violations of [the right to property]." Belize Maya, *supra* note 120, at ¶ 155.
156. General Comment No. 23: The rights of minorities (Art. 27): 08/04/94. CCPR/C/21/Rev.1/Add.5 3.2, *available at* http://www.unhchr.ch/tbs/doc.nsf/0/fb7fb12c2fb8bb21c12563ed004df111?Opendocument (last visited September 7, 2005).
157. Written Statement Submitted by the International Indian Treaty Council, a Non-Governmental Organization in Special Consultative Status, United Nations Commission on Human Rights, E/CN.4/2003/NGO/106 (Mar. 12, 2003) *available at* http://www.unhchr.ch/huridocda/huridoca.nsf/2848af408d01ec0ac1256609004e770b/8b49cfcf8c17656ac1256d020031bafb?OpenDocument.

For more information, please contact:

Gwich in Steering Committee
122 First Avenue, Box 2
Fairbanks, Alaska 99701
1 (907) 458 8264
www.gwichinsteeringcommittee.org

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November 6, 2020

Submitted via e-mail

Sarah LaMarr
Arctic District Office
Bureau of Land Management
222 University Ave.
Fairbanks, AK 99709
blm_ak_rdo_cp_2020_seismic@blm.gov

Comments re: Kaktovik Iñupiat Corporation's Application to Conduct Seismic Exploration in the Arctic National Wildlife Refuge (DOI-BLM-AK-R000-2021-0001-EA)

Dear Ms. LaMarr:

On behalf of the above-listed organizations and our many millions of members and supporters nationwide and internationally (collectively, Groups), we submit the following comments on Kaktovik Iñupiat Corporation's (KIC) application to conduct seismic exploration on the Coastal Plain of the Arctic National Wildlife Refuge.

We continue to oppose all oil and gas activities on the Coastal Plain of the Arctic Refuge; the Bureau of Land Management (BLM) should reject KIC's seismic application. BLM's Coastal Plain oil and gas leasing program was adopted in violation of numerous laws that protect the Coastal Plain and ensure the integrity of the decision-making process. As discussed in more detail in the attached comments, there are serious legal questions regarding the agency's ability to authorize this proposal. The proposed activities will have significant impacts and are likely to cause long-term damage to the fragile ecosystem on the Coastal Plain. BLM's rushed, politically driven timeframe to authorize these activities by this winter is inconsistent with the law and the protections necessary for this area. These unparalleled public lands, and the wildlife that depend on them, are an international treasure that must be conserved for future generations.

We have previously provided detailed comments outlining the many legal, policy, and resource issues that BLM has failed to adequately address in moving forward with its oil and gas program on the Coastal Plain. Unfortunately, BLM has not sufficiently addressed the issues we raised or adopted a program that is protective of the exceptional wildlife, wilderness, recreation,

subsistence, culture, or spiritual resources of the Coastal Plain and which complied with the law. Instead, BLM has continued to move forward with allowing the most expansive, least protective program possible, opening the entire Coastal Plain to oil and gas activities, including seismic exploration. Because of these significant legal failings, the Coastal Plain leasing program is now the subject of four separate lawsuits in U.S. District Court in Alaska.[1] Until these lawsuits are resolved, and the legal violations remedied by the agencies, BLM should not move forward with authorizing seismic exploration or any other activities on the Coastal Plain.

Despite the serious concerns identified to date with BLM's program and analyses, BLM is now rushing ahead with its review of KIC's proposal to conduct 3-Dimensional (3D) winter seismic surveys across nearly a third of the Coastal Plain without any apparent legal authority to do so, without providing adequate opportunities for public involvement, and without preparing an Environmental Impact Statement (EIS) as required by the National Environmental Policy Act (NEPA).

The cursory summary of KIC's seismic proposal and the Plan of Operations released to the public raise serious concerns about the proposed activities and the potential impacts to the Coastal Plain. These woefully inadequate documents make it impossible for the public to understand or comment on the full array of impacts from this seismic exploration proposal. Based on the limited information provided to the public to date, the impacts are likely to be significant and long lasting. BLM must comply with numerous federal laws before it can move forward with this proposal. BLM must thoroughly and comprehensively analyze the impacts to all Coastal Plain resources and ensure that it is meeting all legal obligations. The analysis should be completed in an EIS with significant and robust public involvement. We believe that a proper analysis will indicate that the proposal should be rejected.

We stand with the Gwich'in Nation and support their efforts to protect their human rights and food security by protecting the Coastal Plain. Instead of rushing to approve seismic exploration on the Coastal Plain, BLM should listen to the Gwich'in Nation and millions of Americans who support protection for the Coastal Plain and refrain from authorizing this damaging seismic program. The Coastal Plain is no place for any oil and gas activities, and reckless decision making is not what the Arctic Refuge — the crown jewel of our National Wildlife Refuge System — deserves.

Sincerely,

Kristen Miller, Conservation Director
Alaska Wilderness League

Nicole Schmitt, Executive Director
Alaska Wildlife Alliance

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[1] *Gwich'in Steering Comm. v. Bernhardt*, No. 3:20-cv-00204-SLG (D. AK); *Nat'l Audubon Soc'y v. Bernhardt*, No. 3:20-cv-00205-SLG (D. AK); *Native Vill. of Venetie Tribal Gov't v. Bernhardt*, No. 3:20-cv-00223-SLG (D. AK); *State of Wash. v. Bernhardt*, No 3:20-cv-00224-SLG (D. AK).

Jim Kowalsky, Chair
Alaskans for Wildlife

Pam Miller, President
Arctic Audubon Society

Chris Rider, Executive Director
Canadian Parks and Wilderness Society-Yukon Chapter

Nicole Whittington-Evans, Alaska Program Director
Defenders of Wildlife

Steve Blackledge, Senior Director, Conservation America Campaign
Environment America

Carla Fredericks, Director
First Peoples Worldwide

David Raskin, President
Friends of Alaska National Wildlife Refuges

Bernadette Demientieff, Executive Director
Gwich'in Steering Committee

Mary Greene, Public Lands Attorney & Senior Advisor
National Wildlife Federation

Geoffrey Haskett, President
National Wildlife Refuge Association

Nauri Toler
Native Movement

Emily Sullivan, Arctic Program Coordinator
Northern Alaska Environmental Center

Dan Ritzman, Director, Lands Water Wildlife Campaign
Sierra Club

Siqiniq Maupin
Sovereign Iñupiat for a Living Arctic

Karlin Itchoak, Alaska State Director
The Wilderness Society

Victoria Clark, Executive Director
Trustees for Alaska

George Nickas, Executive Director
Wilderness Watch

cc
Greg Siekaniec, Regional Director, FWS, greg_siekaniec@fws.gov
Chad Padgett, State Director, BLM Alaska, cpadgett@blm.gov
David Bernhardt, Secretary, Department of Interior, officeofthesecretary@ios.doi.gov

Enclosures[2]

[2] The attachments referenced in the comments below were hand delivered via thumb drive to the BLM office.

I. BLM SHOULD NOT MOVE FORWARD WITH PERMITTING KIC'S SEISMIC PROPOSAL.

1. *There Are Serious Questions About BLM's Legal Authority to Move Forward with This Proposal.*

BLM should not allow KIC to explore for oil and gas on the Coastal Plain unless and until the agency identifies the authority for permitting pre-leasing seismic exploration on the Coastal Plain. To date, BLM has not publicly identified any source of authority for permitting pre-leasing seismic exploration on the Coastal Plain, and that authority is not apparent from the face of Title II of the Tax Cuts and Jobs Act (Tax Act) or any other provision of law. Regardless, we oppose authorizing KIC to conduct seismic surveys even if BLM claims to have that authority, and strongly oppose any oil and gas activities on the Coastal Plain.

There are numerous legal questions and considerations that BLM, Department of the Interior (DOI), and the U.S. Fish & Wildlife Service (FWS) must address in this process that are critical to resolve before any activities can be authorized. To date, Groups have raised significant questions about the legality and sufficiency of BLM's analysis of the oil and gas program on the Coastal Plain, including criticisms of BLM's failure to do an adequate analysis of the impacts of seismic exploration as part of that program.[3] Because of these significant failings, the Coastal Plain leasing program is now the subject of four separate lawsuits in U.S. District Court in Alaska.[4] These lawsuits set out substantive and procedural violations of the Alaska National Interest Lands Conservation Act (ANILCA), NEPA, the Wilderness Act, Title II of the Tax Act, the National Wildlife Refuge System Administration Act (Refuge Act), the National Historic Preservation Act (NHPA), and the Endangered Species Act (ESA). Until these lawsuits are resolved, and the legal violations remedied by the agencies, BLM should not move forward with

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[3] Letter from Alaska Wilderness League et al. to Nicole Hayes, Project Coordinator for the Bureau of Land Mgmt., re: Notice of Availability of the Draft Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program and Announcement of Public Subsistence-Related Hearings (Mar. 13, 2019) [hereinafter DEIS Comments] (attached); *see also* Letter from Alaska Wilderness League et al. to Nicole Hayes, Project Coordinator for the Bureau of Land Mgmt., re: Scoping Comments re: Notice of Intent to Prepare an Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program (June 19, 2018) [hereinafter Scoping Comments] (attached); *see also* Letter from Alaska Wilderness League et al. to Shelly Jones, Acting District Manager, Arctic Field Office, Bureau of Land Mgmt. re SAExploration's Proposal to Conduct Seismic Exploration on the Coastal Plain of the Arctic Refuge (Oct. 15, 2018) (attached); Letter from Alaska Wilderness League et al. to Shelly Jones, Acting District Manager, Arctic Field Office, Bureau of Land Mgmt. (Aug. 17, 2018) (attached).

[4] First Amended Compl. for Declaratory & Injunctive Relief, *Gwich'in Steering Committee v. Bernhardt*, No. 3:20-cv-00204-SLG (D. AK Aug. 24, 2020) (attached); Compl. for Declaratory & Injunctive Relief, *Nat'l Audubon Soc'y v. Bernhardt*, No. 3:20-cv-00205-SLG (D. AK Aug. 24, 2020) (attached); Compl. for Declaratory & Injunctive Relief, *Native Village of Venetie Tribal Gov't v. Bernhardt*, No. 3:20-cv-00223-SLG (D. AK Sept. 9, 2020) (attached); Compl. for Declaratory & Injunctive Relief, *State of Wash. v. Bernhardt*, No 3:20-cv-00224-SLG (D. AK Sept. 9, 2020) (attached).

authorizing seismic exploration on the Coastal Plain. It is inappropriate for BLM to rush through this permit when there are countless outstanding problems with the NEPA analysis for the leasing program, which BLM appears to be relying on as part of its review of KIC's permit.

We further oppose the process and actions that BLM has undertaken thus far on this proposal. As a threshold matter, BLM does not have sufficient information about the project proposal to move forward. Similar to KIC's previous seismic exploration proposal in 2018, KIC's bare-bones Plan of Operations provides very little information about what, where, and how KIC plans to conduct its operations. BLM deemed the 2018 proposal insufficient for the agency to evaluate the project; the current proposal is no different.[5] KIC's application does not provide the public with sufficient information to allow for informed comments on what is being proposed. The documents posted online contain only a hypothetical proposed route and no specificity about where and when the seismic camps and scouting teams will travel, where they will build things like airstrips, or where other activities, such as water withdrawals, will occur. Additional information is needed to understand what KIC is actually proposing and to allow the agency to analyze the proposal. It is inappropriate for BLM to move forward without this information, or to allow KIC to provide it while the company is engaged in operations on the Coastal Plain. That information is needed now for BLM and the public to meaningfully evaluate this proposal.

BLM has also indicated it only intends to prepare an environmental assessment (EA) for the seismic application. As discussed in more detail below, the impacts from the proposed seismic activities will be significant and are likely to cause long-term damage to the fragile and unique ecosystem on the Coastal Plain and to numerous resources, including threatened polar bears. BLM is required under NEPA to prepare an EIS for this proposal and to provide robust opportunities for public engagement. Both the extraordinary and pristine natural values of the Refuge and the high potential for significant impacts mandate development of an EIS.

In addition, BLM has provided no clarity around how its environmental review process fits with the parallel request for an Incidental Harassment Authorization (IHA) for polar bears from FWS. BLM should wait for that analysis and the final IHA before undertaking its own environmental review and permitting process to ensure that its permit is consistent with and incorporates any necessary geographic and temporal restrictions or mitigation measures.

2. *BLM's Rushed Process Is Inadequate for Public Engagement and Meaningful Decision Making.*

Rather than encouraging and facilitating public involvement and scrutiny, as NEPA requires, the BLM has demonstrated a clear intent to suppress public engagement. The public was first informed of this application by a news article on October 4, 2020, which stated that

[5] BLM rejected the 2018 seismic application and returned it to KIC and its partners at the time. Steven Mufson & Juliet Eilperin, *Companies Take First Steps to Drill for Oil in Arctic National Wildlife Refuge*, THE WASHINGTON POST, June 1, 2018 (attached).

BLM and FWS had been holding KIC's application since August.[6] According to agency personnel, the proposal was being "unrealistically fast-tracked."[7] News reports also indicated that FWS Director Aurelia Skipwith ordered staff to meet a "completely arbitrary," fast-tracked deadline for the IHA, which "left workers scrambling to complete a review based on an application for the seismic testing that isn't yet complete."[8]

After weeks of silence in the face of public questions and concern, the BLM finally made a limited amount of information publicly available on October 23, 2020. That information included only a bare-bones Plan of Operations and a summary of the proposed action, both of which were devoid of detailed information about the locations and nature of the proposed activities.

BLM posted the Plan of Operations and Proposed Action without issuing a press release or other public notice; the agency simply posted the information on its planning website and at the same time started a 14-day comment period. This approach — posting limited information on an agency website and starting a very short comment period for a highly contentious project while not providing any public notice — suppresses public involvement and meaningful participation.

BLM's rushed 14-day comment period is also contrary to NEPA. NEPA is designed to foster informed and transparent decision-making.[9] BLM's rushed process undercuts the public's ability to meaningfully participate in planning and decision making and will not enable BLM, sister agencies, decision makers, or the public to adequately analyze and account for the environmental impacts of exploration on public resources as required by law. BLM should not only extend the current comment period, but should also provide additional opportunities for the public to comment on the agency's environmental analysis.

BLM has also not provided any indication of if and when the public will have the opportunity to review and weigh in on the agency's environmental analysis of this project. BLM staff have indicated the agency has not yet decided if it will provide a public comment period on the draft EA. That is inappropriate for a proposal of this scale and importance. It is also contrary to BLM's approach on the 2018 seismic application, where the agency committed to a 30-day public comment period on the draft EA;[10] if BLM is changing its position for the current application, BLM should explain why. Even if BLM only prepares an EA, at a minimum BLM

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[6] Adam Federman, *Trump Administration Eyes Speedy Permit for Arctic National Wildlife Refuge Seismic Tests*, POLITICO, Oct. 4, 2020 (attached). DOI's record of decision (ROD) for the leasing program was also finalized in August, raising serious questions about whether the agency knew of the proposal before issuing that ROD.

[7] *Id*.

[8] Sabrina Shankman, *Trump's Interior Department Pressures Employees to Approve Seismic Testing in ANWR*, INSIDE CLIMATE NEWS, Oct. 29, 2020 (attached).

[9] *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989).

[10] Liz Ruskin, *BLM Projects 'Insignificant' Impact from Seismic Work in ANWR*, ALASKA PUBLIC MEDIA, July 27, 2018 (attached).

must make the EA and draft finding of no significant impact available for a 30-day public review under the NEPA regulations.[11]

It is also inappropriate for BLM to be rushing through this process with a 14-day comment window in the middle of a public health crisis and the most consequential presidential election in modern history. There have been significant impacts from the COVID-19 pandemic on normal working and living conditions, impairing the ability of the general public, issue experts, and others to conduct their daily routine, regular business, and/or weigh in on federal government actions affecting them. The country's attention is focused on keeping families healthy and safe, and complying with extraordinary measures being implemented to contain and limit the spread of the disease. Additionally, the presidential election is in the middle of the comment period, and much of the public's attention is focused on the election and campaigns.

As discussed in further detail below, BLM is also required to consult with Tribes and to conduct an evaluation of the potential subsistence impacts of this proposal. State, local, and tribal governments are working tirelessly to protect their communities against the ongoing public health crisis while also engaging citizens in the election. It is an inappropriate burden for the federal government to expect other government leaders to spend the time that is necessary to adequately engage in in the process related to this permit application while the pandemic is ongoing and they are overseeing elections. State, local, and tribal engagement can and must be extended until the COVID-19 pandemic is under control and the election has taken place to allow for appropriate public engagement and oversight as required by law.

As BLM is aware from having seen the over one million comments in response to its review of the oil and gas leasing program for the Coastal Plain, the public is deeply committed to understanding and commenting on proposals for activities that could impact these vital public lands. To meet its legal obligations, BLM must not truncate the topics to be addressed, its analysis, or the timeframe necessary to do its analysis. It must provide the public with the information, analysis, and time necessary for informed and meaningful engagement.

II. BLM MUST COMPLY WITH ALL LEGAL MANDATES.

BLM is required to meet its legal obligations under numerous statutes, including NEPA, the ESA, the Marine Mammal Protection Act (MMPA), the Refuge Act, ANILCA, and the NHPA. BLM cannot allow seismic activities without first complying with all of these statutes. To date, there is no indication that BLM has addressed or complied with these mandates. Each is addressed in more detail below.

A. BLM MUST COMPLY WITH NEPA.

NEPA is our basic national charter for protection of the environment. NEPA's analysis and disclosure goals are two-fold: (1) to ensure informed agency decision making, and (2) to ensure public involvement.[12] NEPA requires that federal agencies prepare a detailed EIS for any

[11] 40 C.F.R. § 1501.4(b)(2) (1978); 40 C.F.R. § 1501.6(a)(2) (2020).
[12] *Robertson v. Methow Valley Citizen Council*, 490 U.S. at 349; 40 C.F.R. § 1500.1(a).

major Federal action that may significantly affect the quality of the human environment.[13] By focusing the agency's attention on the environmental consequences of its proposed action, NEPA "ensures that important effects will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast."[14]

BLM is required to take a hard look at the full range of effects this project will have, as well as at alternatives to the proposal and means to mitigate adverse effects. Because the impacts of seismic exploration on the Coastal Plain will be significant, BLM is required to prepare an EIS. BLM is also missing fundamental information about the proposal and does not have adequate site-specific information about the project area to meet its obligations under NEPA.

1. *BLM Should Apply the 1978 Council on Environmental Quality NEPA Regulations.*

As an initial matter, BLM indicated publicly that it will apply the Council on Environmental Quality's (CEQ) revised regulations to this proposal.[15] Groups oppose this; BLM should follow the 1978 CEQ regulations.

Since 1978, regulations promulgated by CEQ have guided every federal agency's implementation of NEPA, our nation's environmental "Bill of Rights."[16] These regulations codified early judicial opinions based on language of the statute, provided the basis for a substantial body of judicial precedent spanning over four decades, and formed the foundation for more specific regulations and policies enacted by individual agencies to implement their particular missions, including DOI and BLM.[17]

Over the objections of states, members of Congress, a myriad of conservation, environmental justice, and public health organizations, and the general public, in July, CEQ issued a final rule rewriting the entirety of its 1978 regulations.[18] The final CEQ rule upends virtually every aspect of NEPA and its longstanding practice, contradicts decades of court interpretations of NEPA's mandates, and undercuts the reliance placed on NEPA by the public, decision makers, and project proponents. It does so by limiting the scope of actions to which NEPA applies, eviscerating the thorough environmental analysis that lies at the heart of the statute, reducing the ability of the public to participate in federal agency decision-making, and

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[13] 42 U.S.C. § 4332(c).

[14] *Robertson v. Methow Valley Citizen Council*, 490 U.S. at 349.

[15] Dawn Reeves, *BLM to Use New NEPA Rule for ANWR Review Despite Prior DOJ Claims*, INSIDE EPA/CLIMATE, Oct. 29, 2020 (attached).

[16] 40 C.F.R. Part 1500 (1978).

[17] BLM's NEPA procedures are at 43 C.F.R. part 46, Department of the Interior Manual 516 DM 11, and BLM Handbook H-1790-1.

[18] Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act, 85 Fed. Reg. 43,304 (July 16, 2020).

seeking to limit review of agency NEPA compliance. The legality of the final rule — which went into effect September 14, 2020[19] — is being challenged in at least four federal lawsuits.[20]

KIC's seismic exploration proposal presents an ill-advised test case for application of the new NEPA regulations. First, it appears that the application was submitted to BLM in late August,[21] weeks before the September 14 effective date for the new CEQ regulations. For NEPA reviews in process before the final effective date, the new NEPA regulations indicate that agencies may choose whether to proceed under the 1978 regulations.[22] In analogous circumstances, BLM recently decided to continue applying the 1978 NEPA regulations.[23]

Second, applying the new CEQ NEPA regulations would create significant chaos and confusion for the agency and the public, legal liability, and harm to the public's interest in a stable regulatory environment. This is particularly so for a highly controversial and impactful proposal like seismic exploration on the Coastal Plain and where a key promise behind the 2017 Tax Act provision opening the Coastal Plain to oil and gas leasing was that BLM would adhere to NEPA and other laws that provide stringent environmental protections. Application of the new NEPA regulations, which gut many of those protections, would seriously undercut that promise.

Relatedly, it would be manifestly unwise and inefficient for BLM to begin applying the new NEPA regulations in the absence of revised agency policies, procedures, guidance, and training. CEQ's revised NEPA regulations conflict with governing case law, agency regulations and guidance, and longstanding practices that the public, decision-makers, and the courts have relied on for the past four decades. Consequently, it is foreseeable that agencies will face numerous and substantive challenges in interpreting and applying them.

Finally, given the highly uncertain fate of CEQ's final rule — with pending legal challenges and a potential change in administrations — agencies and project proponents would be wise not to complicate decision-making processes by injecting additional and unnecessary uncertainty. For these reasons, BLM should apply the 1978 CEQ regulations to its NEPA analysis of the seismic permit application.

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[19] 40 C.F.R. § 1506.13 (2020).

[20] *Alaska Cmty. Action on Toxics v. CEQ*, No. 3:20-cv-05199 (N.D. Cal. July 29, 2020); *Wild Va. v. CEQ*, No. 3:20-cv-00045 (W.D. Va. July 29, 2020); *Envtl. Justice Health Alliance v. CEQ*, No. 1:20-cv-06143 (S.D.N.Y. Aug. 6, 2020); *California v CEQ*, No. 3:20-cv-06057 (N.D. Cal. Aug. 28, 2020).

[21] Federman, *supra* note 6.

[22] 40 C.F.R. § 1506.13.

[23] *See, e.g.*, Bureau of Land Mgmt., Twin Bridges Bowknot Helium Project, Draft Envtl. Assessment (Oct. 2020) (attached), https://eplanning.blm.gov/public_projects/2001542/200383490/20028429/250034631/DOI-BLM-UT-G020-2020-0033-EA%20-%20Public%20Comment%20Period.pdf.

2. *BLM Needs to Prepare an EIS for This Proposal.*

a. The Impacts of This Proposal Are Significant and Require Preparation of an EIS.

NEPA requires that an agency proposing a major federal action consider the environmental impacts of the proposed action and prepare a "detailed statement" or EIS for "major Federal actions significantly affecting the quality of the human environment."[24] Under the statute, an EIS must analyze the environmental impact of the proposed action, any adverse effects that cannot be avoided, alternatives to the proposed action, the relationship between local short-term uses of people's environment and the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitments of resources that would be involved in the proposed action.[25]

BLM needs to analyze all of the impacts from this proposal in depth and at a site-specific level. This requires an EIS; an EA is insufficient. NEPA requires that agencies evaluate the environmental consequences of a project at an early stage of the planning process.[26] While agencies can "defer detailed analysis until a concrete development proposal crystallizes the dimensions of a project's probable environmental consequences,"[27] agencies are required to undertake site-specific analysis prior to making an irretrievable commitment of resources — as BLM is proposing to do with this seismic authorization. BLM cannot rely on vague, general statements about possible effects and some risk; it must provide quantified and detailed information about the likely impacts of the project to constitute the required hard look for purposes of NEPA.[28]

The impacts of this proposal are significant and require preparation of an EIS. KIC is proposing a very intensive seismic program to conduct 3D seismic surveys this upcoming winter across 847.8 square miles of the Coastal Plain — amounting to 450,000 acres of federal lands and 92,000 acres of KIC lands. The proposal involves the placement and retrieval of 6,459 miles of receiver lines and 3,237 miles of source lines, and the operation of 12 vibroseis machines at any given time. Each of those lines would be traveled multiple times by crews for placement and retrieval of the lines and nodes, with operations continuing 24 hours a day. The seismic program will involve a mobile camp for 180 people. There would be approximately 50 trailers and support trailers as part of the camp, with generators, lighting, temporary airstrips, incinerators and waste discharges, and other industrial equipment and activities. There would be advance scouting crews with various equipment moving ahead of this massive camp. KIC would move

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[24] 42 U.S.C. § 4332(2)(C).

[25] *Id.*; *see also Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1212 (9th Cir. 1998) ("An EIS must be prepared if substantial questions are raised as to whether a project . . . may cause significant degradation of some human environmental factor." (internal quotation marks and citation omitted)).

[26] *California v. Block*, 690 F.2d 753, 761 (9th Cir. 1982).

[27] *Id.*

[28] *Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1379–80 (9th Cir. 1998); *High Sierra Hikers Ass'n v. U.S. Dep't of Interior*, 848 F. Supp. 2d 1036, 1049 (N.D. Cal. 2012).

the camps with heavy vehicles every few days, eventually covering the entire project area. Given the extent of the proposed program, there would be numerous camp locations throughout the Coastal Plain. But the summary document and Plan of Operations do not identify the specific routes or areas where KIC will engage in activities. KIC has not identified either the locations or proposed routes for any of the camps and camp relocations. To the extent KIC has provided any information on its vague plans for resupplying the camp with fuel and water and for conducting crew changes, it has indicated it will do that multiple times a week via air or ground operations from Deadhorse or Kaktovik. KIC also proposes to conduct intensive summer clean-up operations involving 450 to 600 helicopter landings and take offs at times when caribou and many other species sensitive to such disturbance will be present on the Coastal Plain.

The impacts from these extensive activities will be significant — far more so than those associated with the two-dimensional seismic survey conducted in the 1980s, the scars of which remain detectable on the Refuge to this day. BLM itself acknowledged that the previous seismic exploration program disturbed surface vegetation and impacted the thaw of permafrost, changed drainage patterns, and changed vegetation growth for over 25 years after operations.[29] BLM has also previously acknowledged that, while some improvements have been made since the 1980s, future seismic surveys on the Coastal Plain would likely have similar impacts.[30] The Coastal Plain and its wildlife are also significantly more sensitive than during prior seismic activities due to the deleterious effects of climate change, which is impacting the Arctic at twice the rate as the rest of the country.

KIC's seismic proposal indicates numerous activities the company will engage in that will cause myriad potential significant impacts that should be analyzed in an EIS. These include, but are not limited to:

- The impacts from large numbers of personnel accessing the Coastal Plain with heavy equipment, traversing over unidentified trails within the Refuge, and with an unspecified number of river and other waterbody crossings as camps are moved across the tundra every few days and dragged with heavy equipment;
- The potential air, water quality, and other impacts from all of the proposed activities, the food waste that the summary says will be continually incinerated to avoid attracting wildlife, the discharge of gray water amounting to 5,000 gallons per day onto the tundra, and the generators that will operate 24 hours a day, 7 days a week, exposing the crews working in close proximity to hazardous air pollutants, among other health, climate, and air quality impacts;
- The effects on the unique terrain, ecology, and conditions of the Coastal Plain, where there is limited snow cover in the winter compared to other areas on the North Slope and storms can quickly scour the landscape and alter conditions;
- The impacts of the proposed overland and ice access routes, including the impacts of the proposed resupply and crew changes projected to occur multiple times per week via air and ground vehicles from Kaktovik and Deadhorse;

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[29] 1 Bureau of Land Mgmt., Draft Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program 3-48 (2019) [hereinafter DEIS].

[30] *Id.*

- The impacts of the proposed activities on threatened polar bears and designated critical habitat for this imperiled species, including the potential effectiveness of the aerial forward looking infrared (FLIR) surveys and the manner in which it is being used, and the uncertainties associated with its implementation in practice, as well as impacts to other federally protected species that use the Refuge;
- The impacts of water withdrawals and snow usage with regard to specific locations and usage volumes, including the impacts to fish and wildlife that may rely on those freshwater resources and the ability of water resources to recharge;
- The impacts to tundra, soils, and permafrost, and the potential changes to hydrology from seismic activities, including an assessment of the damage that may be expected to occur from operations at different snow depths and how that will be remediated;
- The potential for spills from up to 6,000 gallons of fuel that KIC's summary estimates it may use each day, and the ability to clean up any spills in harsh winter conditions;
- The impacts of the proposed activities on all fish and wildlife and their habitats, including migratory, resident, and overwintering species, which may be present on or in the vicinity of the Coastal Plain during the timeframe of the proposed activities, including impacts that may result from damage to the Coastal Plain's vegetation and hydrological systems;
- The impacts to subsistence resources and users, human health, environmental justice, and sociocultural systems;
- The impacts of COVID on operations and on human health, including outbreak scenarios that could foreseeably occur from large-scale seismic operations moving forward in the middle of a global health crisis;
- The impacts of flights and activities related to the summer clean-up operations on wildlife and recreation and subsistence users of the area;
- The impacts to cultural resources, which have yet to be adequately identified in the project area;
- The impacts to wilderness characteristics and summer and winter recreation, including impacts to the globally significant natural values of the area, impacts to viewsheds, and disturbances from summer helicopter flights; and
- The impacts on and potential contributions of oil and gas in the Refuge to climate change.

This list only scratches the surface of the likely impacts from this proposal and is based on the very limited information provided to date by the agency on the proposal. As explained above, the information is insufficient for the public to fully understand and meaningfully comment on the proposal. Groups urge BLM to provide the public with additional information and the opportunity to review its environmental analysis to better understand what is being proposed and to provide comments on that analysis.

In addition to the impacts and activities flagged above, Groups previously identified a broad range of concerns about specific resources and the likely impacts of seismic exploration and other activities, and highlighted how BLM's analysis in the Coastal Plain Leasing Program EIS was insufficient.[31] BLM did not remedy these failings in its final EIS.[32] The following

[31] *See generally* DEIS Comments; Scoping Comments (incorporated here by reference).

[32] *See supra* note 1 (listing the pending lawsuits related to BLM's failure to conduct an adequate analysis of the oil and gas program).

sections summarize and incorporate those previous concerns, and highlight many of the resource-specific concerns BLM will need to analyze at the site-specific level in an EIS for this proposal.

Tundra, Vegetation, & Permafrost Impacts. As numerous scientific experts and Groups have previously identified, seismic exploration and related industrial activities will likely cause considerable impacts to tundra and vegetation on the Coastal Plain.[33] BLM itself acknowledged this.[34] Because of the climate and soil conditions, the vegetation on the Coastal Plain is generally slow-growing and "very sensitive to disturbance."[35] Oil and gas exploration is known to have long-term and significant impacts to tundra and vegetation — e.g., the impacts to the tundra and vegetation from seismic that occurred in the mid-1980s is still visible today.[36] A change in plant occurrence can have significant impacts on wildlife that is dependent on the vegetation for forage and habitat.[37] Climate change and disturbance also bring the threat of invasive species.[38] BLM must fully consider the impacts to these resources and address how best to avoid and reduce them. To ensure compliance with all monitoring and mitigation requirements, BLM should also require FWS monitors to be present during all activities to monitor for tundra damage and other impacts, with the ability to halt activities when necessary to protect resources, similar to what was required as part of the program in the 1980s. BLM should not rely solely on KIC and its contractors to do this monitoring. Because of the high likelihood of significant damage from any overland travel, as evidenced by the harm to the tundra from seismic operations decades ago, BLM should also not allow access on the Coastal Plain via an overland route; an ice route should be the only access route allowed, if any.

The Coastal Plain also has relatively low amounts of winter snowfall and strong winter winds that can lead to significant scouring and unpredictable and inconsistent snow cover.[39] This in turn could lead to very different impacts from those that have occurred further to the west, where there is comparatively greater snow cover to mitigate against impacts from seismic exploration. (But even to the west, the impacts of seismic are visible.[40]) BLM cannot rely on

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[33] DEIS Comments at 153–67; D.A. "SKIP" WALKER ET AL., LIKELY IMPACTS OF PROPOSED 3D-SEIMSIC SURVEYS TO THE TERRAIN, PERMAFROST, HYDROLOGY, AND VEGETATION IN THE 1002 AREA, ARCTIC NATIONAL WILDLIFE REFUGE, ALASKA (2019) (attached) [hereinafter Seismic White Paper]; Martha K. Raynolds et al., *Landscape Impacts of 3D Seismic Surveys in the Arctic National Wildlife Refuge, Alaska*, ECOLOGICAL APPLICATIONS (2020) (attached).

[34] 1 DEIS at 3-48.

[35] Janet C. Jorgenson et al., *Long-Term Recovery Patterns of Arctic Tundra After Winter Seismic Exploration*, 20(1) ECOLOGICAL APPLICATIONS 205 (2010) (attached).

[36] *See id*.

[37] 1 U.S. Fish & Wildlife Serv., Arctic National Wildlife Refuge, Revised Comprehensive Conservation Plan: Final Environmental Impact Statement 4-59 (2015) (attached) [hereinafter CCP Final EIS].

[38] *Id.* at 4-58 to 4-59.

[39] Seismic White Paper, *supra* note 33, at 21–22.

[40] Henry Fountain, *See the Scars That Oil Exploration Cut Across Alaska's Wilderness*, NEW YORK TIMES, Aug. 3, 2018 (attached).

analyses it has done on other projects in other areas of the Arctic because those areas have very different permafrost, snow cover, terrain, ground ice content, hydrology, and other conditions. BLM's analyses to date and mitigation measures are inadequate and do not account for the unique conditions on the Coastal Plain.

KIC's proposal indicates it will send 3 to 4 advance crews into the program area 7 to 20 days before the main seismic camp to identify their route, identify areas to avoid, and ensure snow depth.[41] This is inadequate and fails to account for the rapidly changing snow and scour conditions on the Coastal Plain. The advance crew may be so far ahead of the main camp and operations that there is a serious risk that any previously identified route may no longer be sufficiently covered for the main camp and operations.

ROP 11 in the FEIS is also insufficient to protect Coastal Plain resources. It relies on an average snow depth of 9", but there is no information in the ROP, BLM's Leasing Program EIS, or in KIC's proposal for how that average will be determined. Use of an average snow depth on the Coastal Plain is inappropriate and likely to lead to substantial damage, given the issues with scouring and the significant variability in snow depth conditions.

BLM must obtain site-specific information about tundra, vegetation, and snow cover to evaluate the impacts from this proposal and to consider how to protect vegetation from impacts. Inventory and mapping of vegetation at a sufficient level to evaluate impacts and inform avoidance areas, stipulations, mitigation measures, and reclamation standards is lacking for the Coastal Plain.[42] In BLM's final Leasing Program EIS, it acknowledged it was missing a huge range of information related to vegetation, wetlands, and snow cover relevant to an evaluation of significant effects of seismic exploration, including detailed mapping of vegetation and wetland types and studies of the impacts of seismic on the Coastal Plain.[43] BLM refused to obtain that information for purposes of the Leasing Program EIS, but acknowledged that more detailed mapping and information would be required and obtained for individual proposed exploration projects.[44] It has not done so. That information is essential at this stage and BLM needs to obtain that information to conduct a meaningful impacts analysis and prior to authorizing seismic exploration on the Coastal Plain.

BLM must also address the restoration of tundra and vegetation from the impacts of seismic. The Plan of Operations and Proposed Action documents note that tundra damage will be reported, but are otherwise completely silent on how damage from seismic will be addressed and remedied. Reclamation in the Arctic is very challenging if not impossible, and its takes decades

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[41] Proposed Action at 1–2.

[42] CCP Final EIS at 4-45 to 4-53; Janet C. Jorgenson, et al., U.S. Dep't of the Interior, U.S. Geological Survey, Arctic Refuge Coastal Plain Terrestrial Wildlife Research Summaries, USGS/BRD/BSR-2002-0001 at 4 (2002) (attached); JOHN M. PEARCE ET AL., U.S. DEP'T OF THE INTERIOR, U.S. GEOLOGICAL SURVEY, SUMMARY OF WILDLIFE-RELATED RESEARCH ON THE COASTAL PLAIN OF THE ARCTIC NATIONAL WILDLIFE REFUGE, ALASKA, 2002-17, OPEN-FILE REPORT 2018-1003 at 3(2018) (attached).

[43] 2 FEIS app. Q at Q-27 to Q-28.

[44] *See, e.g.*, *id.* at Q-28.

for areas to recover, if they ever do.[45] BLM must consider how areas damaged from this program will be restored and must adopt measures to ensure that restoration takes place.

Polar Bears. KIC's seismic exploration presents a serious risk of take to polar bears and cubs in maternal dens and this risk was not adequately considered in BLM's Leasing Program EIS. The EIS did not include a site-specific evaluation of the impacts of seismic exploration, instead deferring that analysis to future proposals such as KIC's proposed program. BLM must undertake that analysis now, and must do so in an EIS. BLM cannot kick the can down the road in the Leasing Program EIS and then purport to rely on that inadequate analysis now to approve KIC's seismic project. Moreover, that EIS did not consider impacts to denning bears in the area between Deadhorse and the Refuge, which is a component of KIC's proposed action that could impact denning bears during mobilization that BLM needs to consider.

Additionally, new information has arisen since the final Leasing Program EIS was released in September 2019. In December 2019, FWS and the U.S. Geological Survey (USGS) scientists released a study, "Seismic Survey Design and Effects on Maternal Polar Bear Dens," that attempted to quantitatively model impacts on polar bears from seismic surveys on the Coastal Plain and showed that seismic operations had the potential to take denning bears even if stringent time and geographic restrictions were applied.[46] A second paper, by Tom Smith et al., published in February, evaluated the success rate of FLIR polar bear den detection surveys, and concluded that 55% of maternal dens confirmed to be present were not detected by FLIR surveys, a lower rate than previously estimated.[47] Finally, USGS recently released an analysis of polar bear populations for the Southern Beaufort Sea, which provided updated estimates regarding population numbers and denning locations and indicated that there is a high density of denning bears along the proposed mobilization route for KIC's program.[48] BLM must fully consider these new studies as part of this NEPA process.

Air Impacts. BLM must fully analyze the potentially significant air, climate, and health impacts associated with diesel fuel combustion from ground and air vehicles. The proposed action estimates average daily fuel consumption of 6,000 gallons for the camp and vehicles, but provides no concrete information about anticipated amounts of aircraft use and associated fuel consumption. Hazardous air pollutants associated with diesel fuel combustion pose significant health risks, including lung cancer, irritation and inflammatory symptoms, and exacerbation of

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[45] NATIONAL RESEARCH COUNCIL OF THE NATIONAL ACADEMIES, CUMULATIVE ENVIRONMENTAL EFFECTS OF OIL AND GAS ACTIVITIES ON ALASKA'S NORTH SLOPE, COMMITTEE ON CUMULATIVE ENVIRONMENTAL EFFECTS OF OIL AND GAS ACTIVITIES ON ALASKA'S NORTH SLOPE 158 (2003) (attached).

[46] R. Wilson & G. Durner, *Seismic Survey Design and Effects on Maternal Polar Bear Dens*, J. OF WILDLIFE MGMT. (2020) (attached).

[47] T. Smith et al., *Efficacy of Aerial Forward-Looking Infrared Surveys for Detecting Polar Bear Maternal Dens*, PLOS ONE (2020) (attached).

[48] U.S. GEOLOGICAL SURVEY, ANALYSES ON SUBPOPULATION ABUNDANCE AND ANNUAL NUMBER OF MATERNAL DENS FOR THE U.S. FISH & WILDLIFE SERVICE ON POLAR BEARS (URSUS MARITIMUS) IN THE SOUTHERN BEAUFORT SEA, ALASKA, OPEN-FILE REPORT 2020-1087 (2020) (attached).

existing allergies and asthma.[49] Mobile and stationary diesel engines are also among the largest sources of black carbon emissions in the Arctic, with significant adverse impacts on ice and snowmelt, as well as human health.[50]

BLM cannot rely upon or tier to the air quality discussion in the Leasing Program EIS because there was no quantitative analysis performed in that document for oil and gas activities on the Coastal Plain. As Groups pointed out in comments, BLM's qualitative analysis was inadequate, and in particular provided insufficient consideration of mitigation measures and their effectiveness.[51] BLM must fully analyze and address the air quality impacts of this site-specific proposal — including a quantitative analysis — and evaluate meaningful mitigation measures to ensure against adverse impacts to air quality.

BLM must independently estimate the emissions for KIC's proposal, model air pollution impacts associated with each of the action alternatives, and compare these results to the baseline of No Action.[52] Further, BLM should convene a technical workgroup under the terms of the memorandum of understanding between the U.S. Department Of Agriculture, DOI, and Environmental Protection Agency regarding air quality analyses for federal oil and gas decisions (Air Quality MOU).[53] BLM should conduct modeling for this proposal pursuant to the Air Quality MOU between these agencies for air quality analyses and mitigation in connection with oil and gas development on Federal lands due to the important air quality values of the area and potential for significant impacts form KIC's proposal.[54]

Water Withdrawals. Water is critically important to the Coastal Plain and the plant and animal resources it supports.[55] The hydrology of the area is very different than the rest of the North Slope and is being impacted by climate change, making impacts to water resources critically important to understand.[56] Importantly, by late winter/early spring, there is very little unfrozen water available.[57] There are also instream flow applications pending with the Alaska Department of Natural Resources for water rights on 140 lakes and 12 river and stream segments within the

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[49] *E.g.*, U.S. ENVTL. PROT. AGENCY, HEALTH ASSESSMENT DOCUMENT FOR DIESEL ENGINE EXHAUST (2002) (attached).

[50] *E.g.*, U.S. ENVTL. PROT. AGENCY, METHANE AND BLACK CARBON IMPACTS ON THE ARCTIC: COMMUNICATING THE SCIENCE (2016) (attached).

[51] DEIS Comments at 146–50.

[52] DEIS Comments Attachment A (detailed technical review of the air quality analysis contained in the Draft Leasing EIS, prepared by Megan Williams) (attached).

[53] Mem. of Understanding Among the U.S. Dep't of Agriculture, U.S. Dep't of the Interior, and U.S. Envtl. Prot. Agency, Regarding Air Quality Analyses and Mitigation for Federal Oil and Gas Decisions Through the Nat'l Envtl. Policy Act Process (2011) (attached).

[54] *See generally id.*

[55] DEIS Comments at 170–73.

[56] DEIS Comments at 170–71; 1 FEIS at 3-64 to 3-67.

[57] DEIS Comments at 170–71.

Coastal Plain.[58] These water right applications take precedence over other uses of water from these sources.[59]

The Plan of Operations is unclear about the proposed water use. It notes that water could be withdrawn for camp use from lakes and that "[t]he operator will identify lakes and will be permitted if used."[60] BLM must identify which lakes in the project area may have unfrozen water available so that BLM can analyze the impacts of any withdrawals prior to approving the proposal. Numerous lakes with pending instream flow applications are within the project area.[61] BLM should prohibit water withdrawals from lakes with pending instream flow application (either unfrozen water or ice chips) that would deplete the water quantity of those lakes below the application amounts. The mitigation measures adopted in the Leasing Program EIS are insufficient, as those were the quantities of water FWS deemed necessary to maintain to meet the purposes of the Arctic Refuge. The ability of any lake to recharge if water is withdrawn must also be analyzed specific to the lakes in the project area that would be used for water withdrawals. This site-specific analysis was not done in the Leasing Program EIS and cannot be deferred for this project analysis.

As Groups explained in comments on the draft Leasing Program EIS, BLM did not analyze or adopt measures that were sufficient to protect water resources.[62] With regards to ROP 9 in particular, which largely did not change from the draft to the final EIS,[63] Groups explained why BLM did not adequately analyze whether it was protective of the Coastal Plain's water resources.[64] BLM must analyze whether the ROP will protect water resources based on KIC's proposal and the specific lakes that could be used, and take into account the existing instream flow applications as limitations on all water withdrawals.

Fish and Aquatic Species. Groups previously submitted extensive comments on the Leasing Program EIS outlining the impacts of oil and gas activities, including seismic exploration, on fish and aquatic species, highlighting the serious flaws with BLM's analysis to date, and discussing the lack of adequate baseline data for the Coastal Plain.[65] BLM must analyze the potentially significant impacts of river crossings associated with mobilization, de-mobilization, and camp moves, water withdrawals, and seismic activities on juvenile and adult overwintering fish documented within the Coastal Plain. For example, in the project area, Dolly Varden (*Salvelinus malma*) presence has been documented in the Jago River, and a freshwater spring has been documented in the Okerokovik River, a tributary to the Jago River, which warms surface waters

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[58] DEIS Comments at 179.

[59] AS 46.15.050.

[60] Plan of Operations at 11.

[61] U.S. Fish & Wildlife Serv., Lakes within the 1002 Area of the Arctic National Wildlife Refuge for which Water Rights Applications Have Been Filed, https://www.fws.gov/r7/water/arctic/1002m.htm (last visited Oct. 30, 2020) (attached).

[62] DEIS Comments at 181.

[63] *Compare* 1 DEIS at 2-19 to 2-20 *with* 1 FEIS at 2-23 to 2-24.

[64] DEIS Comments at 181.

[65] DEIS Comments at 183–196.

and keeps the river from freezing to the bed surface, creating large aufeis features.[66] BLM must determine the extent of overwintering fish habitat in the project area and along the onshore mobilization route, especially within watersheds with documented fish presence. BLM must also consider new observations by USGS and FWS biologists in the Canning River that suggest there is more available overwintering habitat in Arctic Rivers than previously thought.[67] Seismic exploration directs high-intensity sound, pressure waves, and particle motion downward through ice and water, and the resulting noise or instantaneous pressure change has the potential to cause short term, but severe impacts to overwintering arctic fishes.[68]

Caribou. The Arctic Refuge and its Coastal Plain are critically important habitat for caribou, in particular for the Porcupine Caribou Herd, although the Central Arctic Herd and the Teshekpuk Lake Herd use the Coastal Plain as well (including in the winter). The Porcupine Herd uses the Coastal Plain for essential calving, post-calving, insect relief, and other summer habitat, as the Coastal Plain provides nutrient-rich forage and a refuge from predators.[69] Groups explained in detail the importance of the area and the failings of the draft Leasing Program EIS to analyze the impacts of oil and gas, including seismic, on caribou and caribou habitat — deficiencies that were not remedied in the final EIS.[70] Because the EIS largely failed to analyze seismic and specifically failed to account for seismic impacts to caribou, BLM must conduct that analysis now. The Plan of Operations and Proposed Action do not adequately account for impacts to caribou.

First, the timing of operations are a concern. Seismic operations, including demobilization, are proposed to continue through the end of May; caribou calves are born starting in late May.[71] In light of this, it is likely that calving ground arrival, and even calving itself, could coincide with the end of the proposed seismic exploration and demobilization. As calving is a time when caribou mothers and calves are highly sensitive to disturbance,[72] the unquestionably significant impacts caused by any overlap of seismic exploration with calving ground arrival and calving must be considered and protections put in place, including requiring

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[66] 1 FEIS at 3-66, 3-96 to 97.

[67] *See* U.S. Dep't of the Interior, U.S. Geological Survey, Winter Habitat of Juvenile Dolly Varden in the Canning River, https://www.usgs.gov/centers/asc/science/winter-habitat-juvenile-dolly-varden-canning-river?qt-science_center_objects=0#qt-science_center_objects (last visited Oct. 30, 2020) (attached).

[68] Letter from Dennis Higgs, Head of Dept. of Biological Sciences, Univ. of Windsor (Sept. 11, 2018) (attached); ARTHUR N. POPPER, METHODOLOGY FOR EVALUATING POTENTIAL EFFECTS OF PROPOSED SEISMIC EXPLORATION ON THE COASTAL PLAIN OF THE ARCTIC NATIONAL WILDLIFE REFUGE ON MARINE AND FRESHWATER FISHES (2018) (attached).

[69] DEIS Comments at 218–21.

[70] DEIS Comments at 218–51, 237–38 (specifically explaining the deficiencies in addressing the impacts of seismic on caribou).

[71] Plan of Operations at 3; 1 FEIS at 3-138.

[72] DEIS Comments at 237 (citing studies that show the sensitivity of caribou mothers and calves to disturbance).

the activities to cease and demobilization to be completed by the end of April.[73] The final Leasing Program EIS did not analyze the impacts of seismic on calving caribou[74] and the proposed protection of not taking actions that would cause animals to change course of behavior is insufficient.[75] KIC also proposed extensive helicopter use in late July/early August, presumably flying at low altitudes so that debris can be spotted.[76] This timeframe coincides with foraging and insect relief (especially along the coast) use of the Coastal Plain by caribou.[77] There is no indication in the Plan Operations or Proposed Action for altitude restrictions or actions taken to avoid impacts on caribou for the summer clean-up activities. BLM must analyze the impacts of the summer clean-up activities on caribou and impose measures to protect caribou from impacts.

Second, the impacts of seismic operations on tundra vegetation, which is important forage for caribou, needs to be addressed.[78] Seismic exploration will cause long-term damage to the tundra.[79] This is of great concern for caribou. The post-calving period is a crucial time for caribou to obtain sufficient high-quality forage to meet their energy needs during lactation and to begin re-building energy stores depleted during the winter.[80] BLM must fully evaluate, based on the best-available science, the impacts that damage to vegetation may have on caribou forage. The final EIS did not analyze these impacts. Relatedly, the Proposed Action asserts that there will be little impacts to subsistence communities other than Kaktovik. However, there will likely be impacts to other communities that depend on caribou for subsistence that must also be considered (in both the EIS, as part of the tribal consultation process, and in the ANILCA Section 810 analysis).

Health & COVID-19 Concerns. Both the Plan of Operations and Proposed Action fail to consider the COVID-19 pandemic. These exploration activities present substantial risks to workers, residents of the region, and to the State of Alaska's citizens and health care system. This proposed plan should not be authorized until a COVID-19 vaccine is widely available.

As a non-essential activity, these seismic surveys should not be permitted to move forward at this time.[81] It is our understanding the Governor Dunleavy's "Health Mandate 12:

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[73] Relatedly, because migrating caribou could encounter machinery from this project demobilizing outside of the Refuge on the route back to Deadhorse, that impact must be analyzed as well.

[74] 1 FEIS at 3-146.

[75] Plan of Operations at 35.

[76] Plan of Operations at 15–16.

[77] 1 FEIS at 3-140 to 3-141.

[78] DEIS Comments at 238.

[79] 1 FEIS at 3-145; 1 DEIS at 3-48; *see supra*, tundra, vegetation & permafrost impacts discussion.

[80] DEIS Comments at 219–21; 1 FEIS at 3-138.

[81] ALASKA DEP'T OF HEALTH & SOCIAL SERVS., ALASKA ESSENTIAL SERVICES AND CRITICAL WORKFORCE INFRASTRUCTURE ORDER FORMERLY "ATTACHMENT A" - Issued March 27, 2020, Amended April 10, 2020, Amended May 5, 2020 (2020), https://gov.alaska.gov/wp-

Intrastate Travel" is still official state policy. This emergency order specifically states, "All in-state travel between communities, whether resident, worker, or visitor, is prohibited unless travel is to support critical infrastructure, or for critical personal needs."[82] KIC's seismic exploration activities do not support critical infrastructure or personal needs; these proposed activities are contrary to this order.

The consequences of moving forward with these exploration activities could be dire. Currently, most of the state is under "high alert" status, meaning widespread community transmission is occurring.[83] For a seismic exploration program involving up to 180 people (and potentially many more, given crew changes), many of whom live outside the region and who would be confined to close working and living conditions, these exploration activities present considerable risk of infection and virus transmission. The state's capacity, particularly regarding intensive care unit bed space and ventilators, is already tenuous. KIC should not be permitted to jeopardize remaining healthcare delivery capacity for oil exploration purposes.

This plan presents significant risks to the communities of the region. Within the Plan of Operations, for example, KIC states that the corporation and its operator will hold a meeting within the community of Kaktovik to discuss planned activities.[84] The health and safety risks of such a meeting must be disclosed, and the proposed protocols to potentially allow such a meeting to move safety forward should be clearly articulated. Moreover, the Plan of Operations states that the operator is required by KIC to attract, hire, and train local people for these exploration activities.[85] Nowhere, however, does the applicant discuss how this would occur under the constraints of the best available public health guidance or official emergency orders pertaining to COVID-19.

In its most basic form, the applicant failed to submit a plan for how COVID-19 risk will be managed and what protocols will be enacted in the event of any detected infection and/or outbreak. KIC's Plan of Operations should include a detailed description of prevention and control guidelines, including, among others:

- The proper daily screening of employees for the signs and symptoms of the COVID-19 virus;
- The proper and sustained use of effective face coverings and hand hygiene;
- The enforcement of the prohibition of close-quarter gatherings of any size;

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content/uploads/sites/2/03232020-COVID-19-Health-Mandate-010-Attachment-A.pdf. (last visited Nov. 5, 2020) (attached).

[82] ALASKA DEP'T OF HEALTH & SOCIAL SERVS., SOA MARCH 27 COVID-19 HEALTH MANDATE: INTRASTATE TRAVEL (Mar. 27, 2020), https://content.govdelivery.com/accounts/AKDHSS/bulletins/283a7de (last visited Nov. 3, 2020) (attached).

[83] Alaska Dep't of Health & Social Servs., Alaska Department of Health and Social Services Coronavirus Response, Data Hub Presentation, https://coronavirus-response-alaska-dhss.hub.arcgis.com (last visited Nov. 3, 2020) (attached).

[84] Plan of Operations at 5.

[85] *Id.* at 5–6.

- The enforcement of established infection prevention guidelines for congregate sleeping and eating facilities;
- The enforcement of the need for social distancing and masking in all face-to-face encounters;
- The ready availability of antibody testing capacity to detect the presence of the virus among workers and any exposures to a community;
- The ready availability of testing capacity, not only for symptomatic individuals but also for workforce and community surveillance;
- Positivity rate thresholds to determine when to curtail activities in the event of workforce and/or community exposure;
- Established quarantine protocols in the event of a suspected workforce or community exposure;
- Established isolation protocols in the event of a confirmed workforce or community exposure;
- Established transportation protocols in the event of a confirmed workforce or community exposure;
- A plan for supportive and acute care services in the event there are ill individuals;
- A plan for how KIC will address the presence of equipment on the Coastal Plain in the event operations need to be halted because of a COVID-19 outbreak.

b. The Leasing Program EIS Does Not Contain an Adequate Analysis of Seismic Exploration for Tiering Purposes.

BLM cannot rely on, or otherwise tier to, the Leasing Program EIS to satisfy its NEPA obligations for this seismic proposal or to eliminate the need to conduct an EIS level of environmental analysis for this proposal. The Leasing Program EIS did not contain an adequate analysis of seismic exploration on the Coastal Plain at even the programmatic level and did not contain the site-specific analysis required under NEPA for KIC's proposal.[86]

Groups identified multiple resources for which BLM's analysis in the Leasing Program EIS was insufficient.[87] Groups heavily criticized BLM's failure to take a hard look at the impacts of seismic exploration, including at the 2018 seismic proposal that was pending at the time BLM was doing its analysis of the leasing program.[88] BLM did not remedy any of these failings in the final EIS.[89] BLM instead expressly deferred conducting a comprehensive analysis of the impacts of seismic exploration on the basis that it would conduct later, site-specific analyses of any seismic proposals.[90] BLM needs to conduct that analysis of KIC's application now, as part of a

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[86] *Muckleshoot Indian Tribe v. U.S. Forest Serv.*, 177 F.3d 800, 810–12 (9th Cir. 1999) (indicating tiering is improper when the prior EIS does not contain a sufficient analysis); *Block*, 690 F.2d at 761; *Friends of Yosemite Valley v. Norton*, 348 F.3d 789, 800 (9th Cir. 2003).

[87] DEIS Comments at 103–396 (incorporated here by reference).

[88] DEIS Comments at 49–52, 153–167.

[89] *See supra* note 1 (listing pending lawsuits, all of which raises claims under NEPA for BLM's insufficient analysis) (incorporated here by reference).

[90] *See, e.g.*, FEIS app. S at S-1529 to -31.

site-specific EIS. This necessarily includes evaluating the impact of seismic operations on KIC's lands, because the Leasing Program EIS did not analyze the impacts of any oil and gas activities on KIC's lands, deeming them too speculative.[91]

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[91] It is questionable that exploration on KIC's lands was speculative at the time of the final EIS, given SAExploration's prior proposal and that KIC submitted this application in August, the same month that the ROD was finalized. Relatedly, under the Alaska Native Claims Settlement Act (ANCSA), KIC could select lands, but only 69,120 of those acres could be within the Arctic Refuge. *See* 43 U.S.C. §§ 1611(a)(1), 1613(a). In ANILCA, Congress authorized KIC to select an additional 23,040 surface acres within the Arctic Refuge. In general, regional corporations like Arctic Slope Regional Corporation (ASRC) were entitled to acquire the subsurface rights to lands selected by village corporations like KIC but could not acquire the subsurface rights to surface lands selected by a village corporation if those surface lands were within a pre-ANCSA refuge like the Arctic Refuge. 43 U.S.C. §§ 1611(a)(1), 1613(f). Despite these legal prohibitions, in 1983 DOI Secretary Watt entered into the Chandler Lake Agreement and ASRC obtained an interest in 92,160 acres of subsurface estate below the KIC surface lands and most allotments.

The agreement expressly barred oil and gas activities on these lands. Agreement Between Arctic Slope Regional Corporation and the United States of America app. 2 at 5 (Aug. 9, 1983) [hereinafter Chandler Lake Agreement] (attached). The Chandler Lake Agreement also acknowledges that the land is subject to section 22(g) of ANCSA. *Id.* app.1 at 1; 43 U.S.C. § 1621(g); *see also* 43 C.F.R. 2650.4-6(b). Section 22(g) of ANCSA makes Refuge laws generally applicable to private lands within the Refuge. 43 U.S.C. § 1621(g). Section 22(g) is applied to these lands via a FWS compatibility determination. 50 C.F.R. § 25.21(b).

BLM's position is that the Tax Act opened these lands to oil and gas. 2 FEIS app. S at S-1019. That interpretation is legally questionable. Subsection (a) of the Tax Act defined the "Coastal Plain" in relation to two maps. Tax Act, Sec. 20001(a)(1). These maps depict the original three KIC townships as not being part of the Coastal Plain/1002 Area, while the fourth township and pending selections are part of the Coastal Plain/1002 Area. Subsection (b) of the Tax Act repealed section 1003 of ANILCA — the prohibition of leasing or development or activities leading to leasing and development of oil and gas in the Arctic Refuge — for the Coastal Plain only, not for the entire Arctic Refuge. It appears that only the fourth township may no longer include the prohibition on oil and gas, but the original three townships still do.

To the extent that any portion of those lands are open to oil and gas, then DOI must abide by the terms of the Chandler Lake Agreement. The Agreement extensively addresses possible oil and gas development. It identifies numerous stipulations which were deemed necessary to ensure that activities complied with ANILCA and includes a specific process that is to be followed for any proposed activities, including a role for the Regional Director of FWS and an opportunity for the Regional Director to identify alternatives or changes to the proposal necessary to protect the resources. Chandler Lake Agreement app. 2 at 1, 4, 9–10, 15–22, 24–25, 28–29.

BLM's failure to adequately analyze the impacts of seismic exploration on the Coastal Plain and its resources deprives BLM of the ability to rely on the Leasing Program EIS to satisfy its NEPA obligations for this seismic proposal. It also means that the agency failed to adopt sufficient mitigation measures to protect Coastal Plain resources and unique areas within the Coastal Plain from seismic operations.

3. BLM Must Consider Foreseeable Future Impacts of the Proposed Action.

To comply with NEPA, BLM must consider how KIC's seismic program would impact the Coastal Plain's resources by taking into consideration other actions occurring at the same time and those that are reasonably foreseeable consequences of this program. BLM's impact analysis cannot be limited solely to present impacts on the Coastal Plain; the agency must fully analyze impacts to each resource across its appropriate temporal and geographic scope.

For instance, previous seismic exploration has affected surface vegetation and permafrost on the Coastal Plain. BLM must analyze how this and future additional seismic exploration (such as an area-wide program for the remaining portions of the Coastal Plain) would have similar impacts, and a synergistic effect on vegetation and permafrost into the future. BLM should also consider how its authorizations would impact polar bears — a species already threatened by loss of sea ice from climate change — and how this program would exacerbate impacts to the species as climate change worsens and industrialization in the area increases. BLM must consider how climate change will interact with impacts caused by seismic exploration and future industrialization for all resources.

Geographically, BLM cannot limit its impacts analysis to just the program area. For instance, noise and sound impacts would affect a broad area; changes to soils, permafrost, and drainage could occur in adjacent areas; birds that use the Coastal Plain are migratory and use other areas of the Arctic Refuge, Alaska, and the world; and migrating terrestrial mammals, such as caribou, could be affected throughout their range if their calving and post-calving grounds are significantly impacted. To fully analyze how KIC's exploration program will impact the Coastal Plain's resources, BLM must also consider how other proposed and current projects also affect those resources throughout their range.

4. BLM Does Not Have Sufficient Information About the Proposal to Adequately Analyze the Impacts.

As briefly noted above, BLM does not have sufficient information about the project proposal to move forward. Similar to the 2018 seismic exploration proposal, KIC's bare-bones Plan of Operations provides very little information about what, where, and how KIC plans to

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To date, there is no indication that KIC and ASRC are abiding by the provisions of the agreement and FWS has not conducted a compatibility determination to ensure that activities on the KIC/ASRC lands are consistent with Refuge laws. Before any activities can take place on these lands, the agreement and ANCSA 22(g) must be complied with.

conduct its operations. For example, the following information is missing or incomplete in the application materials:

- route options for snow trails that would avoid gradients that cannot be driven by the proposed machinery (note that these must be mapped without snow to ensure that gradients are properly measured);
- route options for snow trails that would avoid polar bear denning habitat (note that these also must be mapped without snow to ensure that gradients are properly measured);
- mapping of the locations of willows that will be avoided;
- locations of potential runways and how many could be needed;
- the number of flights that are anticipated in support of the operations;
- lakes with sufficient water that are likely to remain unfrozen for water withdrawals and whether those same lakes have pending instream flow applications to protect water quantity;
- the likely area that would be covered by the proposed operations. Groups note that the permit area is 847.8 square miles, but based on the camp move distances provided (1–2 miles per move) and the number of moves provided (4–6 moves per month),[92] the maximum total miles covered by the camp moves could be just 48 miles over the four months of data acquisition assuming there are no weather or other delays. It is possible that the project as proposed may only be able to actually cover a small portion of the proposed project area, even though KIC is asking for authorization to do seismic exploration across a vast area.[93] The project proposal does not identify which portion of the program area would be the project focus, but should, and it also should provide additional details such as how far from camps seismic workers can travel on a daily basis;
- protocols for managing and minimizing COVID-19 risk, including detailed prevention and control guidelines;
- the number of air and overland trips anticipated for fuel and/or water deliveries; and
- identification of the cultural resources in the project area.

In many places, the proposal notes that KIC will obtain information on these issues prior to activities beginning or while in the field. It is inappropriate and unlawful for BLM to allow KIC to gather this information or make these determinations on the fly, while it is engaged in operations on the Coastal Plain. By not including this information now, the public is not able to understand the proposal and weigh in on the potential impacts and the agency cannot make an informed decision or impose necessary protective measures to protect the Coastal Plain. Additionally, there is nothing explaining why this information was not obtained prior to the application being submitted. All of this missing and incomplete information could in fact have been obtained by the applicant prior to submitting the application. The applicant's failure to do so, combined with BLM's rushed process, frustrate review and analysis and prohibit the agency

[92] Plan of Operations at 10.
[93] Plan of Operation at 3–4.

from being able to meet its legal duties. BLM deemed SAExploration's 2018 proposal insufficient due to a similar lack of information.[94] The agency must do so again.

5. BLM Does Not Have Adequate Site-Specific Baseline Data for the Proposed Area.

BLM's rush to approve this project means that the agency is moving forward without adequate site-specific baseline information necessary to evaluate the impacts. As Groups identified in comments on the Leasing Program EIS, there are significant data gaps for resources on the Coastal Plain, including for resources relevant to KIC's seismic proposal such as polar bears, air quality, fish, wildlife, water resources, snow cover, cultural resources, wetlands and vegetation (including soils and permafrost), subsistence, and climate change.[95] Many of these same information gaps were identified by FWS and BLM as part of a Rapid Response Resource Assessment.[96] BLM did not remedy these information gaps in its final Leasing Program EIS.[97] Instead, the agency stated that the information was not necessary to make a decision on the leasing program.[98] But for many resources, including resources that will be impacted by this seismic proposal — such as fish, water, soils, wildlife, vegetation and wetlands, and cultural resources — the agency also stated that the information would be obtained when the agency was considering a permit application so that the agency could conduct a site-specific analysis.[99] That additional baseline information has not been obtained. BLM must delay consideration of the seismic proposal until it can obtain the baseline data necessary for the agency to evaluate the impacts of the proposal.

6. BLM Must Consider Alternatives to the Proposed Action.

To comply with NEPA, BLM must also consider alternatives or limitations to the proposed action. While we oppose any exploration activities, under NEPA, BLM must analyze a range of alternatives beyond the proposed action and no action alternatives in its environmental analysis. For example, BLM must consider alternatives that would limit the spatial extent of the survey to reduce or avoid impacts to the most sensitive and vulnerable resources of the Refuge. BLM should also consider an alternative that delays any proposal until next winter to allow time to gather the baseline information needed to evaluate the project, including cultural resource surveys, vegetation mapping, and additional snow studies, as well as to minimize the operational and health risks from COVID. Although it is plain that significant impacts to the Refuge would result from any action alternative, BLM is bound by NEPA to consider alternatives including but

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[94] BLM deemed the 2018 seismic submission incomplete and returned it to KIC and its partners at the time. Mufson & Eilperin, *supra* note 5.

[95] DEIS Comments at 31–33.

[96] *See generally* 2 FEIS app. Q (referencing the Rapid Response Resource Assessments, which are submitted with these comments).

[97] As explained above, the final EIS largely omits actual analysis of seismic exploration and its impacts. Tiering to the document, therefore, does not relieve BLM of having to conduct this analysis now.

[98] *See generally* 2 FEIS app. Q.

[99] *See generally* 2 FEIS app. Q.

not limited to: limiting the survey to areas at least 1.6 km outside of suitable polar bear denning habitat; limiting the survey to a far smaller portion of the Refuge than what is proposed;[100] excluding areas where the hydrology could be impacted by seismic tracks; using only an ice route to access the project area; requiring a less intensive program with grid lines spaced further apart; requiring summer clean-up activities to occur on foot to the extent practicable and greatly limiting the permitted number of helicopter landings; and eliminating or vastly reducing the proposed mobile camps.

7. BLM Needs to Analyze and Adopt Mitigation Measures.

BLM must require KIC to mitigate the impacts of its proposal and must analyze the effectiveness of any such measures as part of its analysis. The Proposed Action does not describe any mitigation measures for the project aside from acknowledging that KIC would perform FLIR surveys in advance of on-the-ground activities. The Proposed Action does not even identify the applicable Required Operating Procedures from the ROD for the Leasing Program that would apply to KIC's proposal. Nowhere does BLM explain its own process or plan for requiring mitigation.

The Plan of Operations is also sparse. It contains a Wildlife Interaction Plan/Mitigation Plan to attempt to satisfy its obligations, but does not include any additional mitigation measures to reduce impacts to resources other than wildlife and its wildlife measures are insufficient.[101] The Plan of Operations acknowledges that required operating procedures (ROPs) from BLM's Leasing Program EIS ROD would apply to the project,[102] but does not provide a list of which measures would be applicable or whether the company would seek any waivers, exceptions, or modifications. To comply with NEPA, BLM must identify what mitigation measures will apply to this project (including any waivers, exceptions, or modifications) and analyze the effectiveness of these measures.[103] As explained, the program has the potential for significant impacts to Coastal Plain resources. For these reasons, BLM should not undermine any of its existing ROPs by granting any waivers, exceptions, or modifications. If the agency may grant any waivers, exceptions, or modifications, it must fully justify that decision and explain how the objectives of ROPs would still be met before such a waiver, exception, or modification could be granted.[104]

Once BLM clarifies which ROPs would apply to KIC's program, it must consider additional mitigation beyond what was considered in the Leasing Program EIS and what is contained in KIC's Wildlife Plan. The Leasing Program EIS and ROD's consideration and adoption of mitigation measures fail to protect the sensitive resources of the Coastal Plain and additional measures are needed for this proposal. Those documents did not provide sufficient

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[100] As explained above, it appears that the operations will only be able to actually cover a much smaller area than the proposed project area.

[101] Plan of Operations at 26.

[102] Plan of Operations at 11.

[103] Groups understand that because these activities are not occurring under lease, they would be subject to ROPs but not lease stipulations.

[104] 2 FEIS app. S at S-182.

detail about the stipulations and ROPs being contemplated, and failed to analyze their effectiveness by only considering the amount and purported benefit of the measures, instead of analyzing the adverse effects that are still likely to occur.[105] Moreover, those measures were not adopted based on a site-specific analysis or conditions and were unduly vague. As a result, BLM cannot satisfy its obligations under NEPA to consider mitigation measures and their effectiveness specific to this proposal by relying solely rely on the mitigation contained in the Leasing Program EIS.

BLM must require mitigation to protect the sensitive resources of the Coastal Plain that would be adversely impacted by KIC's massive seismic proposal and must analyze the effectiveness of those mitigation measures as part of its analysis. For instance, steps must be taken to minimize and avoid disturbance to resources, including but not limited to: tundra from vehicle travel (particularly in light of the inconsistent snow cover and rapidly changing snow conditions on the Coastal Plain); local communities from an influx of outside workers, especially during a global pandemic; water resources to ensure water levels are not depleted below quantities necessary to protect Refuge purposes or otherwise adversely impacted by contamination or use by KIC's operator; and air quality from emissions resulting from operations. All mitigation should have measurable performance standards and adequate mechanisms for implementation, monitoring, and reporting.[106]

B. BLM AND FWS MUST COMPLY WITH THE MMPA AND ESA.

We understand that FWS is preparing an Incidental Harassment Authorization (IHA) permitting take of threatened polar bears for the proposed seismic program. The polar bear (*Ursus maritimus*) was listed as threatened under the ESA in 2008 and is also federally protected under the MMPA.[107] Of the two polar bear populations (or stocks) found in the United States, the Southern Beaufort Stock (SBS) is the most likely to occur on the Coastal Plain.[108] Threatened polar bears den on the Coastal Plain and are using it with increasing frequency for denning and other activities. The majority of the Coastal Plain (approximately 77 percent) is designated as critical habitat for the species.[109] The entire program area for KIC's proposed exploration is designated as polar bear critical habitat.

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[105] DEIS Comments at 39–41; *see also supra* note 1 (listing pending lawsuits, which raises claims under NEPA for BLM's insufficient mitigation measures analysis) (incorporated here by reference).

[106] Final Guidance for Federal Departments and Agencies on the Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact, 76 Fed. Reg. 3843, 3843 (Jan. 21, 2011).

[107] Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the Polar Bear (*Ursus maritimus*) Throughout Its Range, 73 Fed. Reg. 28,212 (May 15, 2008); Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Polar Bear (*Ursus maritimus*) in the United States, 75 Fed. Reg. 76,086 (Dec. 7, 2010).

[108] 75 Fed. Reg. at 76,090.

[109] *Id*. at 76,086.

Even if FWS could demonstrate compliance with the MMPA, which Groups dispute, BLM must also consider impacts to polar bears and all other marine mammals protected by the MMPA, and all threatened and endangered species under the ESA. BLM cannot merely rely on FWS's analysis in order to fulfill its own obligations under NEPA and the ESA for protected species that would be impacted by KIC's proposed program.

1. *The Seismic Program Must Comply with the Marine Mammal Protection Act and BLM Cannot Issue a Permit Until KIC Provides Documentation of MMPA Compliance for Polar Bears.*

Congress enacted the MMPA in 1972 based on its finding that "marine mammals have proven themselves to be resources of great international significance, esthetic and recreational as well as economic[.]"[110] The MMPA's stated purpose is "that [marine mammals] should be protected and encouraged to develop to the greatest extent feasible commensurate with sound policies of resource management and that the primary objective of their management should be to maintain the health and stability of the marine ecosystem."[111] To carry out its protective and conservation purposes, the MMPA imposes a moratorium on the taking of marine mammals.[112] Within the context of the MMPA, "take" is broadly defined as "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal."[113] Harassment is further defined as "any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal [Level A harassment] or has the potential to disturb a marine mammal [Level B harassment]."[114] Prohibited harassment includes any act that may disrupt behavioral patterns such as migration, breeding, and feeding.[115]

The MMPA contains several narrow exceptions to the moratorium on take. The exception relevant here allows FWS, upon request, to authorize taking by harassment of small numbers of marine mammals for a period of less than one year, provided certain conditions are met. The activity that could result in take: (i) must be "specified" and limited to a "specific geographical region," (ii) must result in the harassment of only "small numbers" of marine mammals of a species or stock, (iii) can have no more than a "negligible impact" on species and stocks, and (iv) cannot have "an unmitigatable adverse impact on the availability of such species or stock for taking for subsistence uses."[116] To allow incidental take, FWS must make specific findings that the take will be limited to "small numbers" and have no more than a "negligible impact" on polar bears. These findings must be "based on the best scientific evidence available."[117]

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[110] 16 U.S.C. § 1361(6).
[111] *Id.*
[112] *Id.* § 1371(a).
[113] *Id.* § 1362(13).
[114] *Id.* § 1362(18).
[115] *Id.*
[116] *See* 16 U.S.C. § 1371(a)(5)(D)(i).
[117] 50 C.F.R. § 18.27(b).

FWS treats the findings of "small numbers" and "negligible impacts" as two separate and distinct requirements.[118] The Ninth Circuit confirmed that the MMPA requires FWS to separately find both that only small numbers of marine mammals will be harmed *and* that the impacts to the species or stock will be negligible.[119] As described below, FWS cannot make these findings with regards to KIC's exploration program.

If FWS authorizes an incidental taking, its authorization must prescribe (1) "permissible methods of taking by harassment pursuant to such activity, and other means of effecting the least practicable impact on such species or stock and its habitat"; (2) the measures determined to be "necessary to ensure no unmitigable adverse impact on the availability of the species or stock for taking for subsistence uses"; and (3) "requirements pertaining to the monitoring and reporting of such taking by harassment[.]"[120]

There are serious questions as to whether FWS can make the requisite determination that KIC's proposed seismic program would cause only a negligible impact on SBS polar bears. As described in comments to BLM on its Leasing Program EIS, the effects of noise, vibration, human presence, and other disturbance to polar bears produced by seismic exploration activities could significantly impact denning bears on the Coastal Plain.[121] Seismic activities such as those proposed by KIC could have population-level impacts on threatened polar bears and BLM must not assume that MMPA authorization will be guaranteed.

Importantly, BLM cannot issue any approvals for this program unless and until the FWS completes its process and issues a final IHA. In BLM's ROD for the leasing program, BLM included Lease Notice 2, which states:

> The lease area and/or potential project areas may now or hereafter contain marine mammals. The BLM may require modifications to exploration and development proposals to ensure compliance with Federal laws, including the MMPA. The BLM would not approve any exploration or development activity absent documentation of compliance under the MMPA. Such documentation shall consist of a Letter of Authorization, Incidental Harassment Authorization, and/or written communication from USFWS and/or NMFS confirming that a take authorization is not warranted.[122]

BLM confirmed that this requirement applies equally to pre-leasing exploration activities as well as to oil and gas activities on leases during its Section 7 consultation with FWS. The biological opinion for BLM's leasing program expressly states, based on communications with BLM, that the requirements of Lease Notices will "apply to any exploration and development

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[118] *See* 81 Fed. Reg. at 36673 (June 7, 2016); *see also* 50 C.F.R. § 18.27 (defining the terms "negligible impact," "unmitigable adverse impact," and "small numbers").

[119] *Ctr. for Biological Diversity v. Salazar*, 695 F.3d 893, 917 (9th Cir. 2012).

[120] 16 U.S.C. § 1371(a)(5)(D)(ii)(I)–(III).

[121] DEIS Comments at 285–88.

[122] ROD at app. A at A-33.

actions that are not dependent on an oil and gas lease . . . in the same manner the Notices would apply to lease-based activities."[123] This requirement applies to polar bears as well as ringed seals, which are present in the Refuge's nearshore waters. There is a serious lack of transparency around BLM's process for authorizing KIC's proposed program; however, it is clear that BLM cannot approve this program unless and until KIC provides documentation of its compliance with the MMPA.

2. *The BLM Must Comply with Its Obligations Under the Endangered Species Act for Polar Bears.*

Congress enacted the ESA to ensure the protection and conservation of threatened and endangered species.[124] The fundamental, express purpose of this statute is to conserve endangered and threatened species and the ecosystems upon which they depend.[125] The obligations imposed by the ESA on federal agencies are clear: "Each Federal agency, shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [critical] habitat."[126] The action agency's duty to consult with either FWS or the National Marine Fisheries Service (NMFS) (the "wildlife agency") is triggered when the action agency determines that its actions "may affect" a threatened or endangered species.[127]

The action agency is responsible for initiating consultation[128] and is responsible throughout the consultation process for providing the best available scientific and commercial data to the wildlife agency.[129] If the action agency properly determines, with the written concurrence of FWS, that its action is likely to affect, but not likely to adversely affect, listed species or critical habitat ("NLAA finding"), consultation may terminate at the informal stage without formal consultation.[130] To concur in an NLAA finding, FWS must find that "effects on listed species are expected to be discountable, or insignificant, or completely beneficial."[131]

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[123] U.S. Fish and Wildlife Serv., Biological Opinion for Coastal Plain Oil and Gas Leasing Program Arctic National Wildlife Refuge 25 n.2 (Mar. 13, 2020) [hereinafter Leasing BiOp] (attached).

[124] 16 U.S.C. § 1531(b).

[125] *Id.*

[126] *Id.* § 1536(a)(2).

[127] *Id.* § 1536(a)(3); 50 C.F.R. § 402.14(a).

[128] 50 C.F.R. § 402.14(a), (c).

[129] *Id.* § 402.14(d).

[130] *Id.* §§ 402.13(a), 402.14(b).

[131] U.S. FISH & WILDLIFE SERV. & NAT'L MARINE FISHERIES SERV., ENDANGERED SPECIES CONSULTATION HANDBOOK 3–12 (1998), https://www.fws.gov/ENDANGERED/esa-library/pdf/esa_section7_handbook.pdf. "*Insignificant effects* relate to the size of the impact and should never reach the scale where take occurs. Based on best judgment, a person would not . . . be able to meaningfully measure, detect, or evaluate insignificant effects[.]" *Id.* at 3-12 to 3-13.

If the action may adversely affect listed species or critical habitat, including via potential incidental take, the action agency must request formal consultation.[132] Formal consultation under the ESA concludes with the wildlife agency's issuance of a biological opinion (BiOp).[133] In a BiOp, the wildlife agency must determine whether the federal action subject to the consultation is likely to jeopardize the listed species or destroy or adversely modify critical habitat.[134] The BiOp must include a summary of the information upon which the opinion is based, an evaluation of the current status of the listed species, the effects of the action, and the cumulative effects of the action on the species and critical habitat.[135] The wildlife agency is also obligated to use the best available scientific and commercial data throughout the consultation process.[136]

The ESA regulations require that the consultation process consider "all consequences to listed species or critical habitat that are caused by the proposed action," meaning "it would not occur but for the proposed action and it is reasonably certain to occur."[137] Cumulative effects "are those effects of future State or private activities . . . that are reasonably certain to occur within the action area of the Federal action subject to consultation."[138] To comply with its Section 7 consultation requirements, BLM must consult not only on the seismic proposal, but on the impacts of research and monitoring prior to seismic exploration, such as FLIR surveys. Because the entire purpose of this proposal is to identify areas with potential for oil and gas development, BLM should also consult on the impacts of subsequent oil and gas leasing, production, and development on the Coastal Plain and on the KIC lands.

Section 7(a)(2) imposes an ongoing, substantive duty on BLM to ensure against jeopardy so long as it maintains discretionary control over its action.[139] Although an action agency satisfies its "*procedural* obligations under the ESA" by engaging in formal consultation, it "may not rely solely on a . . . biological opinion to establish conclusively its compliance with its *substantive* obligations under section 7(a)(2)."[140] An agency violates its substantive section 7(a)(2) duty by relying on an invalid BiOp.[141]

Here, BLM has independent and substantive legal obligations to ensure that KIC's proposed seismic program will not jeopardize polar bears and designated critical habitat. BLM cannot rely on the BiOp produced for its leasing program due to that BiOp's myriad legal and technical flaws: it relies on uncertain mitigation measures to avoid jeopardy; it fails to consider the best available scientific data; it fails to analyze the total impacts of the whole oil and gas

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[132] 50 C.F.R. § 402.14(a).
[133] *Id.* § 402.14(g)–(h).
[134] *Id.* § 402.14(h)(1)(iv).
[135] *Id.* § 402.14(g)(2), (g)(3).
[136] 16 U.S.C. § 1536(a)(2).
[137] 50 C.F.R. § 402.02.
[138] *Id.*
[139] *Cottonwood Envtl. Law Ctr.*, 789 F.3d 1075, 1087–88 (9th Cir. 2015).
[140] *Pyramid Lake Paiute Tribe of Indians v. U.S. Dep't of the Navy*, 898 F.2d 1410, 1415 (9th Cir. 1990); *see also Fla. Key Deer v. Paulison*, 522 F.3d 1133, 1145 (11th Cir. 2008).
[141] *Wild Fish Conservancy v. Salazar*, 628 F.3d 513, 532 (9th Cir. 2010).

program on critical habitat; and it fails to consider impacts from increased greenhouse gas emissions in making its "no jeopardy" determination.[142] Moreover, the leasing program BiOp does not quantitatively analyze impacts from seismic exploration, stating that the timing locations of specific exploration and development activities are unknown at the leasing stage.[143] It also failed to consider impacts to polar bears on KIC lands. As a result, that BiOp does not analyze KIC's current proposal and cannot be relied on to meet BLM's ESA obligations.

Further, ESA Section 9 prohibits any person, including any federal agency, from "taking" any member of a threatened or endangered species without a valid permit.[144] "Take" includes habitat modification or degradation that results in actual injury.[145] Only through the Section 7(a)(2) consultation process may a federal agency (the "action agency") receive authorization, via an incidental take statement included in a biological opinion, to undertake agency actions that may result in incidental take of listed species.[146] Should FWS determine that the proposed seismic program will result in take of polar bears, BLM must obtain an Incidental Take Statement as part of its consultation process.

KIC's proposed program poses a serious threat to denning polar bears and BLM's Proposed Action and KIC's Plan of Operations do little to address how harm to denning bears would be avoided. BLM states that the operator would use two FLIR surveys to identify and subsequently avoid known polar bear dens.[147] The efficacy of FLIR, however, is dependent upon a host of factors and may overlook maternal dens.[148] Dens that are overlooked are subject to potential disturbance from vehicle traffic or direct crushing.[149]

The Proposed Action states that "designated polar bear critical denning habitat would have a 330-foot avoidance buffer. Crossings over major drainages within denning critical habitat (where necessary to cross) would be surveyed for dens using handheld or truck mounted FLIR instruments prior to movement."[150] The description of the Proposed Action and Plan of Operations appear to be misusing the term "critical habitat" egregiously, creating confusion for the public on precisely what is being proposed. Designated terrestrial denning critical habitat

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[142] *See* Letter from Trustees for Alaska and Sierra Club to Dep't. of the Interior, Bureau of Land Mgmt., & Fish & Wildlife Serv., re: Notice of Intent to Sue Under ESA Section 7 (Aug. 24, 2020) (attached); *see also* First Amended Compl. for Declaratory and Injunctive Relief, *Gwich'in Steering Committee v. Bernhardt*, No. 3:20-cv-00204-SLG (D. AK).

[143] Leasing BiOp at 123.

[144] 16 U.S.C. § 1538(a)(1)(B) (FWS regulation extending the "take" prohibition to threatened species under FWS jurisdiction). The prohibition against jeopardy, however, extends to both endangered and threatened species.

[145] 16 U.S.C. § 1532(19); 50 C.F.R. § 17.3.

[146] 16 U.S.C. §§ 1536(b)(4)(iv), (o)(2).

[147] Proposed Action at 5.

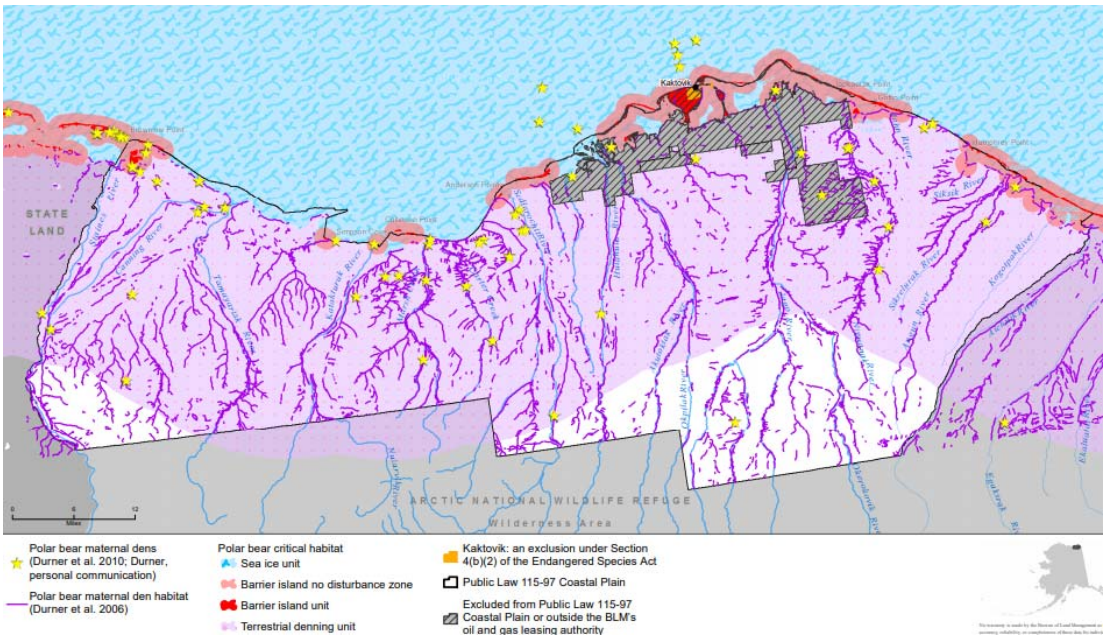
[148] Letter from Steven Amstrup, Chief Scientist for Polar Bears International, to Bureau of Land Mgmt., re: Draft Leasing EIS at 22–23 (Mar. 8, 2019) (attached).

[149] *Id*. at 4–7.

[150] Proposed Action at 5.

includes not only the areas identified as suitable denning habitat (as mapped by Durner et al. 2006), but also the surrounding areas that are necessary to prevent disturbance to dens and obstruction of access routes from dens to the sea.[151]

As shown on the map below,[152] designated terrestrial denning critical habitat (shown in light purple) encompasses essentially the entirety of the proposed project area. Maintaining a 330-foot buffer from all designated critical habitat would mean staying entirely out of the federal lands. The summary of the proposed action and proposed mitigation to prevent impacts to polar bears is, therefore, extremely misleading.



KIC's Plan of Operations describes the buffer around "defined denning critical habitat" as an important mitigation measure to protect polar bears.[153] However, the entire proposed program area is terrestrial denning critical habitat. KIC's definition of "defined denning critical habitat" in its Plan of Operations lacks any clear scientific or regulatory basis. The Plan of Operations states that areas with a 16 degree slope and height of 1.6 meters would be subject to the 330-ft buffer discussed above.[154] The map above denotes suitable denning habitat based on mapping by Durner et al. in 2006.[155] That study indicated that suitable denning habitat for polar bears occurs in drainages and other areas with a greater than or equal to 16 degree slope and

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[151] *See* 75 Fed. Reg. 76086; Leasing BiOp at 71.

[152] 2 FEIS app. A, Map 3-37.

[153] Plan of Operations at 27.

[154] *Id*.

[155] George M. Durner et al., *Polar Bear Maternal Den Habitat in the Arctic National Wildlife Refuge, Alaska*, 59 ARCTIC 31, 33 (2006) (attached); *see also* 2 FEIS app. A, map 3-37 (map pictured above).

height greater than or equal to 1.3 meters. BLM and KIC must explain why this proposed mitigation measure excludes habitat with a height of 1.3 to 1.6 meters, and confirm whether this measure applies to slopes greater than 16 degrees, and heights greater than 1.6 meters. Furthermore, other studies indicate that suitable denning habitat may be present where slopes are 8 degrees or greater.[156] As noted above, field measurements of bank characteristics must be taken prior to snow accumulating in drainages and altering slopes.

In its Leasing Program EIS, BLM focused much of its discussion on what it called "suitable denning habitat," referring to the potential denning locations themselves, such as drainages and areas along the coast.[157] But maternal denning habitat includes, inter alia, corridors between the dens and the coast, and BLM's discussion in its Leasing Program EIS obscured the reality that BLM only considered a small portion of the actual critical habitat designated for terrestrial denning. The assertions in KIC's Plan of Operations that it would avoid critical habitat are similarly incorrect and misleading to the public. In sum, it is not clear from the posted documents how KIC and its operator will meaningfully avoid denning mothers and cubs. BLM and FWS are obligated under the ESA to fully consider impacts to denning mothers and cubs and must include meaningful mitigation measures in order to prevent jeopardy from KIC's program.

Additionally, the consultation process must consider whether KIC's program would destroy or adversely modify designated critical habitat.[158] Although bears prefer sea ice habitat to hunt, roam, and rest, both males and females are known to use land habitat in late summer and early fall, with females remaining on land an average of 56 days and increasing.[159] The Coastal Plain has already become the denning habitat used by a large proportion of SBS bears, and will likely become progressively more important for bears to hunt, roam, and rest, as well, as sea ice diminishes from climate change. KIC's proposed seismic exploration program is extensive and involves a network of seismic lines that would mean a large portion of the terrestrial denning unit

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[156] George M. Durner et al., *Habitat Characteristics of Polar Bear Terrestrial Maternal Den Sites in Northern Alaska*, 56 ARCTIC 55, 59 (2003) (attached) (describing 8 degree minimum slope); George M. Durner et al., *Mapping Polar Bear Maternal Denning Habitat in the National Petroleum Reserve–Alaska with an IfSAR Digital Terrain Model*, 66 ARCTIC no. 2, at 197, 199 (2013) (attached) (describing how a 5m x 5m map section was considered to be denning habitat where the elevation difference between it and any neighboring 5m x 5m section was at least 1.0 m); *id.* at 200 (describing how field verification used minimum slope of 8° and height of 1.3m to for field evaluation of model); GEORGE M. DURNER & TODD C. ATWOOD, A COMPARISON OF PHOTOGRAPH-INTERPRETED AND IFSAR-DERIVED MAPS OF POLAR BEAR DENNING HABITAT FOR THE 1002 AREA OF THE ARCTIC NATIONAL WILDLIFE REFUGE, ALASKA 5 (2018) (attached) ("The procedures of Durner and others (2013) were followed and GIS tools were used to identify individual pixels from the DTM that had an elevation difference of greater than or equal to 1.0 m between the focal pixel and all surrounding pixels within a 3 × 3 neighborhood. Pixels meeting this criterion were deemed sufficient to facilitate the accumulation of drifting snow to allow polar bears to den (that is, polar bear maternal denning habitat).").

[157] 1 DEIS at 3-134.

[158] 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.14(g)(8).

[159] 1 DEIS at 3-127.

and the bank habitat within the unit no longer meet the requirement of being free from obstructions and disturbances.

Finally, it is unclear when Section 7 consultation will occur and what level of activities BLM intends to consult on for purposes of this project with either FWS (for polar bears and spectacled eider) or NMFS (for whales and ice seals). BLM is obligated to satisfy its consultation obligations on any action that *may* affect any listed species or its critical habitat.[160] The consultation process must consider transportation impacts between Deadhorse and the Refuge, both for the initial staging and demobilization activities as well as refueling trips. In addition to winter exploration, the consultation process must account for KIC's helicopter activity in the summer months. For instance, spectacled eiders are protected under the ESA and may be present in the program area in the summer,[161] and thus these ESA-protected birds must be included in any section 7 consultation impacts analysis.

3. *BLM and KIC must comply with the MMPA and ESA for Ice Seals.*

There is insufficient information in the Plan of Operations and Proposed Action to analyze what KIC is proposing in areas where ice seals could be present or how BLM will address impacts to seals. Ringed seals are protected under both the ESA and MMPA. KIC's Plan of Operations notes that ringed seals will be present in the project area during the winter season and makes a vague reference in its list of authorizations that it will do "[c]onsultation while working on Sea ice" with the National Marine Fisheries Service (NMFS).[162] The Proposed Action states the following with regard to ringed seals and activities on sea ice where ringed seals could be present:

> To minimize impacts to ringed seals, vibroseis (with vibroseis or univibe vehicles) would be conducted on grounded sea ice. Although unlikely, it is possible that receivers could be deployed beyond grounded sea ice with Tuckers or snow machines. Grounded sea ice would be determined by using ground penetrating radar and handheld drills. In addition to staying on grounded sea ice for vibroseis, impacts to ringed seals would also be minimized by having a subsistence representative from Kaktovik as an advanced crew member as well as using traditional knowledge to avoid areas used by seals during mobilization, scouting, ice checks, and operations.[163]

Based on this description, it appears KIC plans to do seismic activities in the lagoons and other nearshore areas where ringed seals are likely to be present. Despite this, there is no indication BLM has engaged in ESA Section 7 consultation with NMFS. BLM must complete this consultation prior to authorizing any activities that may affect ringed seals. Likewise, it does not appear that KIC is seeking an IHA from NMFS for either ringed seals or bearded seals, both of which could be impacted by the proposed activities. KIC must obtain an MMPA authorization

[160] 50 C.F.R. § 402.14.
[161] 1 DEIS at 3-86.
[162] Plan of Operations at 7.
[163] Proposed Action at 8.

prior to beginning any activities, and BLM must require documentation of that compliance before issuing its permit.

C. DOI NEEDS TO COMPLY WITH THE REFUGE ADMINISTRATION ACT AND ANILCA; FWS MUST COMPLETE A COMPATIBILITY DETERMINATION.

A compatibility determination from FWS is required before BLM can approve the seismic proposal. Compatibility is a cornerstone of refuge management. The compatibility requirement obliges the Secretary to determine whether proposed "uses are compatible with the major purposes for which such areas were established."[164] The Refuge Act is clear that a new use cannot be permitted until a compatibility determination is made, which requires a public comment opportunity.[165] Section 304(b) of ANILCA adopted the compatibility standard for refuges in Alaska.

BLM continues to dispute the application of these clear compatibility requirements and claim that FWS cannot participate in any way in regulating an oil and gas program.[166] This is incorrect. Congress was clear when it passed the Tax Act that no laws were being waived.[167] This includes ANILCA and the Refuge Act. BLM's position also ignores FWS's role as administrator of the Refuge[168] and the fact that FWS often does compatibility determinations for activities that are also refuge purposes.[169] The seismic proposal cannot proceed prior to completion of a compatibility determination by FWS to ensure that all Coastal Plain purposes are protected.

In completing the compatibility determination, FWS must consider and protect all seven conservation purposes of the Coastal Plain, which include: (1) preserving wildlife values, (2) preserving wilderness values, (3) preserving recreation values, (4) conserving fish and wildlife and habitat, (5) meeting international treaty obligations regarding fish, wildlife, and habitat, (6) continuing to provide for subsistence, and (7) protecting water quantity and quality needed to meet fish, wildlife, and habitat needs.[170]

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[164] 16 U.S.C. § 668dd(d)(1)(A).

[165] *See id.* § 668dd(d)(1)(A), (d)(3)(B); 50 C.F.R. § 26.41.

[166] U.S. DEP'T OF THE INTERIOR, BUREAU OF LAND MGMT., COASTAL PLAIN OIL AND GAS LEASING PROGRAM RECORD OF DECISION 7 (2020) [hereinafter ROD].

[167] *See, e.g.*, Senator Lisa Murkowski, Floor Speech on Reconciliation Legislation (Nov. 30, 2017) (attached), www.murkowski.senate.gov/press/speech/floor-speech-reconciliation-legislation-tax-reform.

[168] DEIS Comment Letter at 63–64, 66–67.

[169] *See, e.g.*, 2 CCP Final EIS app. G at G-122 to G-128 (compatibility determination for subsistence activities).

[170] Pub. Land Order 2214 at 1 (Dec. 6, 1960) (attached); ANILCA § 303(2)(B); *see also* DEIS Comment Letter at 64–66.

D. BLM MUST CONSULT WITH TRIBES AND COMPLY WITH ANILCA SECTION 810 SUBSISTENCE PROTECTIONS.

1. BLM Must Consult with Tribes.

The Gwich'in people live in fourteen small villages across a vast area extending from northeast Alaska to the northern Yukon and Northwest Territories in Canada. It is unclear which communities have been contacted by BLM for consultation on the seismic proposal. Although the Iñupiat community of Kaktovik is the only community located on the Coastal Plain, other villages such as Arctic Village, Fort Yukon, Venetie, Chalkyitsik, Beaver, and Canadian villages such as Old Crow and Fort McPherson, are located within the range for the Porcupine Caribou Herd and will be impacted by any oil and gas activities on the Coastal Plain including seismic.[171] BLM has also recognized that many other communities, such as Wiseman, Birch Creek, and Stevens Village, have reported geographic, historic/prehistoric, or cultural ties to the Arctic Refuge as a whole.[172] BLM further acknowledged that subsistence harvesting and sharing patterns for "22 Alaskan communities and seven Canadian user groups are relevant if post-lease oil and gas activities change[] caribou resource availability or abundance for those users."[173]

BLM has not meaningfully engaged with all of these potentially affected communities in general or on this specific proposal. The impacts are not limited to solely the community of Kaktovik, as asserted by KIC.[174] The impacts of this proposal will extend to the Gwich'in, who consider this area sacred and who depend on subsistence resources like caribou that could be impacted. Tribal governments for every affected community within Alaska and Canada must be contacted for government-to-government consultation prior to allowing any seismic activities. BLM's consultation efforts to date are insufficient.

2. BLM Must Conduct an ANILCA 810 Analysis for This Proposal.

BLM must assess the potential impacts to subsistence from the seismic proposal and consider alternatives that would reduce impacts to subsistence. Section 810 of ANILCA requires BLM to analyze the potential impacts to subsistence and ways to eliminate or reduce those impacts when authorizing seismic:

> In determining whether to withdraw, reserve, lease, or *otherwise permit the use*, occupancy, or disposition of public lands . . . [BLM] shall evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for the purposes sought to be achieved, and other alternatives which

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[171] Gwich'in Steering Comm., Primary Habitat of the Porcupine Caribou Herd Map (2012) (attached), *available at* http://ourarcticrefuge.org/wp-content/uploads/2012/10/mappch.pdf.

[172] 1 FEIS at 3-222.

[173] 1 FEIS at 3-229.

[174] Proposed Action at 10.

> would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes.[175]

BLM's policy related to ANILCA Section 810 acknowledges that this evaluation "is required for all land use actions."[176] BLM's policy recognizes that there is no equivalent to a categorical exclusion for 810 analyses and that such an analysis must take place for all land use actions.[177] BLM is, therefore, required to conduct an 810 analysis prior to approving the seismic proposal.

In conducting a Section 810 analysis for the seismic proposal, BLM cannot rely on its prior Section 810 analysis for the leasing program. Groups, including the Gwich'in Steering Committee and three Tribes, explained how the Section 810 analysis for the Leasing Program EIS was insufficient to satisfy BLM's Section 810 mandates.[178] BLM did not remedy these failings in its final analysis.[179] The Proposed Action indicates that KIC believes that no other community's subsistence use would be impacted by the proposal.[180] But as explained above, the impacts to caribou would impact other communities, and these communities must be considered in the Section 810 evaluation. Additionally, BLM must consider all feasible alternatives to the proposal that would "minimize the impact of a proposed project on resources which rural village residents of Alaska use for subsistence," such as those suggested above, and steps to minimize the adverse impacts to subsistence uses and resources from seismic.[181] Finally, regardless of whether BLM allows public review of the EA (which it should do, as explained above), BLM's Section 810 analysis should be made available for public review and comment by subsistence users.[182]

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[175] 16 U.S.C. § 3120(a) (emphasis added).

[176] U.S. Bureau of Land Mgmt., Instruction Memorandum No. AK-2011-008: Compliance with ANILCA Section 810 at 1-1 (2011) [hereinafter Instruction Memorandum] (emphasis added) ("Conducting ANILCA 810 evaluations in Alaska on public lands is mandatory for virtually all Federal land use decisions . . . ."). *Cf. id.* at 1-1 to -2 (listing actions that Section 810 evaluations are not required for, neither of which includes authorizing seismic).

[177] Instruction Memorandum at 1-2 ("There are no categorical exclusions for 810 evaluations. Therefore, Section 810 Evaluations are required for all land use actions on public lands.").

[178] DEIS Comments at 396–412; Letter from Bernadette Demientieff, Executive Director, Gwich'in Steering Committee, to Nicole Hayes, Project Manager, Bureau of Land Management 18–30 (Mar. 13, 2019) (incorporated here by reference) (attached).

[179] *See supra* note 1 (listing *Gwich'in Steering Committee* and *Native Village of Venetie* lawsuits, which include ANILCA 810 claims) (incorporated here by reference).

[180] Proposed Action at 10.

[181] *City of Tenakee Springs v. Clough*, 915 F.2d 1308, 1310, 1311–12 (9th Cir. 1990); 16 U.S.C. § 3120(a).

[182] 16 U.S.C. § 3120(a).

E. DOI MUST COMPLY WITH ANILCA TITLE XI TEMPORARY ACCESS REQUIREMENTS.

The Plan of Operations indicates that KIC seeks to access its private lands to conduct seismic exploration via a route across the Coastal Plain.[183] KIC does not list an ANILCA Title XI permit or authorization as one of the requirements for the project.[184] ANILCA Title XI Section 1111 applies when a private landowner seeks temporary access to their land across a conservation system unit, including specifically access for geophysical or exploratory purposes.[185] Section 1111 imposes permitting requirements and allows FWS (as the land manager) to impose necessary protections for the area, including allowing the agency to prohibit access that would cause permanent harm.[186] Those requirements were not superseded by the Tax Act, and BLM's seismic permit for activities on public lands does not supplant the parallel requirement for KIC to obtain a FWS authorization under Section 1111 to access its private lands to conduct seismic. KIC must comply with the Title XI Section 1111 procedures for this proposal. Groups note that an overland route would cause permanent harm to Coastal Plain resources as evidenced by the harm to the tundra from seismic operations decades ago, and therefore, an ice route should be the only access authorized (subject to limited safety exceptions on an as-needed basis requiring notice to FWS).

F. BLM MUST COMPLY WITH THE NHPA.

NHPA Section 106 requires the BLM to "[i]dentify historic properties and assess the effects of the undertaking on such properties."[187] There is significant information missing for BLM to be able to accurately describe cultural and archeological resources and for the agency to be able to accurately analyze the impacts of seismic on these resources. There has been only one attempt to systematically survey the Coastal Plain and ascertain cultural resources, and that study was conducted in 1982.[188] Even to the extent there is some information, it is mostly concentrated in the Coastal Areas; "vast inland areas of the program area have received little to no systematic investigation for cultural resources."[189] Overall, research on cultural resources for the Coastal Plain has been minimal and information is severely lacking. KIC's statements in the Plan of Operations that it will do a cultural resources study — which it has yet to do and which it appears it will only do via a literature review[190] — is insufficient for purposes of the NHPA and is not adequate to ensure cultural resources are protected. BLM needs to do extensive studies in order to make informed decisions protecting cultural resources and must comply with NHPA Section 106 prior to allowing any seismic exploration.[191] This will necessarily preclude

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[183] Plan of Operations at 7, 18.
[184] Plan of Operations at 7.
[185] 16 U.S.C. § 3171(a); 43 C.F.R. § 36.12(b).
[186] 16 U.S.C. § 3171; 43 C.F.R. § 36.12(c), (d).
[187] 36 C.F.R. § 800.8(c)(1)(ii).
[188] 1 FEIS at 3-210.
[189] *Id.*
[190] Plan of Operations at 15.
[191] 36 C.F.R. § 800.8.

permitting the proposed seismic operations this winter, since BLM cannot possibly conduct the required surveys at this time.

BLM must also document the broader cultural ties to the Coastal Plain for the Iñupiat and Gwich'in. Ethnographic resources also require protections, including ethnographic landscapes, traditional cultural properties, Native American sacred sites, and intangible cultural resources (e.g. oral traditions, indigenous knowledge, and traditional skills). As BLM has recognized:

> Both the Iñupiat and the Gwich'in people have cultural and ethnographic ties to the program area, as evidenced by cultural sites, traditional and contemporary uses, oral histories, and current beliefs and values. When these are viewed as a whole, these ties to land and place are often documented and identified in the cultural resource regulatory framework as [traditional cultural properties (TCPs)] or cultural landscapes.
>
> These types of cultural resources have not been documented to date in the program area under the existing regulatory frameworks . . . .[192]

Additionally, the Leasing Program EIS states that "[a]ny potential impacts on [the Porcupine Caribou Herd] would constitute a cultural effect" on the Gwich'in people, as would the presence of development within the Coastal Plain, which is known as *Iizhik Gwats'an Gwandaii Goodlet*, or "The Sacred Place Where Life Begins."[193] Deference should be given to traditional knowledge, which "is built on millennia of residence in the region."[194] The lack of a cultural-resource inventory must be remedied before BLM undergoes any disruption from seismic exploration or other activities that could potentially harm the Coastal Plain, a significant ethnographic cultural resource.

In its rush to authorize oil and gas on the Coastal Plain, BLM has not completed "surveys and research to identify and document potential sacred sites, TCPs, ethnographic landscapes, or intangible resources . . . in the program area."[195] Any archeological resources discovered through the required studies are also protected by the Archaeological Resources Protection Act as an "irreplaceable part of the Nation's heritage."[196] BLM must obtain the necessary information and conduct the required surveys to accurately analyze the impacts of an oil and gas program on cultural resources. By not completing these surveys, BLM fails to comply with NEPA and Section 106 NHPA, and cannot adequately consider the impacts of the proposed project.[197]

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[192] 1 FEIS at 3-216 to -217.
[193] 1 FEIS at 3-216.
[194] 1 FEIS at 3-216.
[195] 1 FEIS at 3-213.
[196] 16 U.S.C. § 470aa *et seq*.
[197] 36 C.F.R. § 800.8(c)(1)(ii).