ALASKA SOLES GREAT OLD BROADS FOR WILDERNESS – ALASKA WILDERNESS LEAGUE – AUDUBON ALASKA CENTER FOR BIOLOGICAL DIVERSITY – CONSERVATION LANDS FOUNDATION – DEFENDERS OF WILDLIFE EARTHJUSTICE – NORTHERN ALASKA ENVIRONMENTAL CENTER – SIERRA CLUB – SOVEREIGN IÑUPIAT FOR A LIVING ARCTIC – THE WILDERNESS SOCIETY – TRUSTEES FOR ALASKA WATER PROTECTOR LEGAL COLLECTIVE

Sent via email & ePlanning portal

August 29, 2022

Stephanie Rice, Project Lead
Alaska State Office
Bureau of Land Management (BLM)
222 West Seventh Avenue – Mailstop 13
Anchorage, Alaska 99513
srice@blm.gov

Re: Comments on the Willow Master Development Plan Draft Supplemental Environmental Impact Statement

Dear Ms. Rice:

Please accept these comments on behalf of our millions of members and supporters in Alaska and around the country for the Willow Project Master Development Plan (Willow, Willow Project, or Willow MDP) supplemental draft environmental impact statement (draft SEIS or DSEIS).

BLM's approval of the expansive development of the Willow Project garnered great public scrutiny and culminated in the District Court vacating BLM's decision due to the deficient environmental analysis this SEIS purports to supplement. As our comments outline, getting the analysis right will require a comprehensively revised, updated, and expanded EIS. Supplementing the deficient prior analysis in order to expedite the National Environmental Policy Act (NEPA) process has, once again, resulted in an inadequate analysis.

As an initial matter, we requested an extension to the public comment period for this DSEIS in order to allow for meaningful participation by the public. The extension was especially important given that this comment period fell during important subsistence harvest seasons for local communities — as explained in separate extension requests submitted by the City of Nuiqsut and tribal government — and a time when people are taking time away from work. We understand that BLM communicated to Nuiqsut community members during the comment period that a roughly 30-day extension would be granted and that the public hearing date would be moved commensurately, but then reversed course with no explanation. Such an arbitrary bait and switch approach is at best incredibly disrespectful, and at worst gives the appearance of being calculated to suppress participation by the most impacted community. Given BLM's rejection of

our reasonable request to extend the public comment period, we provide these comments to preserve our high-level concerns but do not waive our objections to this rushed public process.

A thorough analysis of this project is critical, as there is no doubt Willow will have serious and irreversible impacts on the ecological and cultural systems of the region, subsistence resources and users, and ecologically sensitive areas such as the Teshekpuk Lake Special Area. Willow will also have significant ramifications for the climate. The court struck down BLM's approval in part due to BLM's failure to account for those impacts — a grave oversight for a project that would "single-handedly emissions negate the greenhouse gas emissions avoided by meeting the administration's renewable energy goals on public lands for the year 2030 avoided by meeting the administration's climate goals for the year 2030."[1]

We remain opposed to this project and maintain that any valid scientific review will show that Willow will have unavoidable and un-mitigatable destructive impacts on the western Arctic's wildlife and habitat and on the climate. It should not be approved.

If you have any questions or wish to clarify anything in our comments, please do not hesitate to contact Bridget Psarianos at (907) 433-2011 or by e-mail at bpsarianos@trustees.org. Thank you for your prompt attention to our comments.

Sincerely,

Kathleen M OReilly-Doyle & Loren Karro
Co-Leaders
Alaska Soles – Great Old Broads for Wilderness

Dr. Peter Winsor
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[1] EARTHJUSTICE & EVERGREEN ACTION, HOW PRESIDENT BIDEN CAN ALIGN THE FEDERAL FOSSIL FUEL PROGRAM TO DELIVER ON CLIMATE AND PUT PEOPLE OVER PROFITS 21 (2022).

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OVERVIEW OF THE NORTHEASTERN RESERVE

I. THE NORTHEASTERN RESERVE CONTAINS EXCEPTIONAL VALUES.

The Reserve is home to many of our nation's Arctic treasures, including two large caribou herds, globally significant migratory bird populations, polar bears, extraordinary lakes, ponds, rivers, floodplains, wetlands, and upland areas, and sensitive coastal resources. These values are central to the subsistence livelihood and cultural identity of Alaska Natives and our nation's conservation heritage.

Since 1977, and pursuant to the Naval Petroleum Reserves Production Act (NPRPA), various Secretaries of the Interior have upheld Interior's responsibility to identify and protect Special Areas, including the Teshekpuk Lake, Utukok River Uplands, Colville River,[2] Kasegaluk Lagoon,[3] and Peard Bay[4] Special Areas. The 2013 Integrated Activity Plan (IAP) Record of Decision (2013 IAP ROD) — which Interior recently readopted — protects approximately 11 million acres within Special Areas, while leaving parts of the Teshekpuk Lake Special Area, Utukok River Uplands Special Area, and much of the lower portion of the Colville River Special Area open for leasing and development. Protecting these, and other undeveloped areas, is consistent with BLM's obligation to provide maximum protection for these areas based on their significant subsistence, recreational, fish and wildlife, historical, and scenic values.[5]

The Teshekpuk Lake Special Area was first established in 1977 and is an area of international conservation importance. It is also one of the areas Congress expressly recognized as having significant subsistence, recreational, fish and wildlife, and historical and scenic values, for which BLM is obligated to provide maximum protections.[6] The Teshekpuk Lake Special Area contains one of the most productive wetland complexes in the Arctic and provides vital nesting habitat for hundreds of thousands of migratory birds. The Teshekpuk Lake area, along with the neighboring Smith Bay marine habitat, supports the highest density of shorebirds in the circumpolar Arctic, including threatened spectacled eiders, Steller's eiders, yellow-billed loons, dunlins, and American golden-plovers. This region is also the primary calving grounds and a key foraging and insect-relief area for the Teshekpuk Lake Caribou Herd, an important subsistence resource for communities on the North Slope. This area also contains designated Critical Habitat for the polar bear, which is listed as Threatened under the Endangered Species Act (ESA). This Special Area supports a variety of fish, including lake trout, whitefish, Bering cisco, and rainbow smelt, among other species. The 2013 and 2022 IAP RODs safeguarded much of the Teshekpuk Lake Special Area from leasing and non-subsistence permanent infrastructure because of its high conservation and subsistence values.

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[2] National Petroleum Reserve in Alaska Designation of Special Areas, 42 Fed. Reg. 28,723 (June 2, 1977).
[3] Designation of Addition to Special Areas in National Petroleum-Alaska; Alaska, 70 Fed. Reg, 9096 (February 24, 2005).
[4] 1 Bureau of Land Mgmt., National Petroleum Reserve-Alaska Final Integrated Activity Plan/Environmental Impact Statement 17 (2012) [hereinafter 2012 IAP Final EIS].
[5] 42 U.S.C. §§ 6504, 6506a(n)(2); 43 C.F.R. § 2361.1(c).
[6] 42 U.S.C. § 6504(a).

The Colville River Special Area was designated by the Secretary of the Interior in 1977 to assure maximum protection of its subsistence, wildlife, recreational, and other identified values, such as the unique bluff and riparian habitats associated with the Colville River and its tributaries. In particular, its purpose was to protect the arctic peregrine falcon, which at that time was an endangered species.[7] The Colville River Delta is the largest and most productive river delta in northern Alaska, and the river has been considered an Aquatic Resource of National Importance by the Environmental Protection Agency.[8] The Colville River Special Area lies along that river and two of its larger tributaries, the Kogosukruk and Kikiakrorak rivers, encompass 2.44 million acres.[9] The cliffs along the Colville River provide critical nesting sites and adjacent hunting areas for peregrine falcons, gyrfalcons, golden eagles, and rough-legged hawks. In recognition of the importance of this area, the 2013 IAP ROD expanded the protections for the Colville River Delta by prohibiting permanent oil and gas facilities, including gravel pads, roads, airstrips, and pipelines within two miles of the Colville, Kikiakrorak, and Kogosukruk Rivers.[10]

In April 2022, Interior completed its review of the 2020 IAP/EIS — a development-intensive management plan that opened nearly 82 percent of the Reserve to oil and gas leasing and minimized or eliminated Special Area boundaries — and decided to reinstate protections that were in place under the 2013 IAP.[11] In adopting the 2022 IAP ROD, BLM reduced the total acres available to new oil and gas leasing and restored the protections for sensitive areas such as the Teshekpuk Lake Special Area and Colville River Special Area.[12] BLM took this action in order to "provide greater protections for environmental values and subsistence uses" within the Reserve and to support the administration's "commitment to addressing climate."[13] To act consistently with the 2022 IAP ROD's renewed commitment to protecting the Reserve's sensitive resources, subsistence access, and reaching the administrations climate goals, BLM should not approve the Willow Project.

II. THE HISTORY OF BLM MANAGEMENT AND DEVELOPMENT IN THE NORTHEASTERN RESERVE.

BLM adopted the first management plan covering the entire Reserve in 2013.[14] The 2013 IAP established broad directives for how BLM would manage the resources and values in the Reserve. As part of the process for adopting the 2013 IAP, BLM prepared an EIS to look at

[7] 1 2012 IAP Final EIS at 17.
[8] *Id*.
[9] *Id*.
[10] Bureau of Land Mgmt., National Petroleum Reserve-Alaska Final Integrated Activity Plan/Environmental Impact Statement Record of Decision, 73–74 Lease Stipulation/Best Management Practice K-1(a), (d) (2013) [hereinafter 2013 IAP ROD].
[11] 1 Bureau of Land Mgmt., National Petroleum Reserve-Alaska Final Integrated Activity Plan/Environmental Impact Statement 1 (2022) [hereinafter 2022 IAP ROD].
[12] *Id*. at 11.
[13] *Id*. at 12.
[14] *See generally* 2013 IAP ROD.

various management and land-allocation alternatives for the Reserve. In issuing the 2013 IAP ROD, BLM made approximately 11.8-million acres — roughly 52% — of the Reserve available for oil and gas leasing and development subject to a list of stipulations and best management practices. The decision also protected many of the wildlife, habitat, and subsistence values of the Reserve by making areas unavailable for leasing. Under the 2013 IAP ROD, a large majority of lands within Special Areas were not available for oil and gas leasing in order to protect and conserve important surface resources and uses in these areas.[15] The decision also prohibited new non-subsistence permanent infrastructure in much of these unavailable areas, in particular "1.1 million acres encompass[ing] Teshekpuk Lake and lands surrounding the lake, habitat of special importance for nesting, breeding, and molting waterfowl and for the Teshekpuk Lake Caribou Herd."[16]

While undertaking its prior NEPA analysis for Willow, the Trump administration simultaneously moved ahead with its plan to revise the IAP for the Reserve. As described above, the 2020 IAP ROD improperly minimized or eliminated Special Area boundaries and opened an expansive area — nearly 82% of the Reserve — to leasing. In April 2022, BLM reversed course and adopted the 2022 IAP ROD, reinstating a management scheme and protections consistent with the 2013 IAP.

While BLM asserts abandoning the 2020 IAP "will likely result in less leasing over time,"[17] BLM has approved development projects at a staggering pace since first adopting the 2013 IAP less than a decade ago. In 2015, BLM approved the first development on federal lands in the Reserve — the Greater Mooses Tooth 1 (GMT-1) development project. GMT-1 included a drilling pad and road that would extend ConocoPhillips oil and gas infrastructure at the existing Alpine field further west into the Reserve. This development, considered previously in 2004 in the Alpine Satellites Development Plan EIS, required preparation of a Supplemental EIS to address new circumstances and information in the project area as well as changes to the project design since 2004.[18] When adopting ConocoPhillips' proposed action in the GMT-1 ROD, BLM waived a protective provision in the IAP that would have kept oil and gas infrastructure out of an established buffer around Fish Creek, an important subsistence use area for the community of Nuiqsut.[19]

In a stark departure from its earlier analysis in the 2013 IAP, BLM determined in the GMT-1 final EIS that there would be significant impacts to subsistence users from the development. To address these significant impacts, BLM required compensatory mitigation funding of $8 million from ConocoPhillips to support development of a regional mitigation

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[15] 2013 IAP ROD at 2.
[16] *Id*.
[17] 2022 IAP ROD at 12.
[18] Bureau of Land Mgmt., Final Supplemental Environmental Impact Statement for the Alpine Satellite Development Plan for the Proposed Greater Mooses Tooth One Development Project, at *i* (2014) [hereinafter GMT-1 Final SEIS].
[19] Bureau of Land Mgmt., Record of Decision for the Alpine Satellite Development Plan for the Proposed Greater Mooses Tooth One Development Project, at 7 (2015) [hereinafter GMT-1 ROD].

strategy (RMS) for the northeastern Reserve and to address the major impacts to subsistence. BLM intended the RMS to serve as a roadmap for mitigating impacts from both GMT-1 and future oil and gas projects in the northeastern region of the Reserve, by incorporating additional avoidance, minimization, and compensatory mitigation measures into future decisions.

In 2016, only one year after approving GMT-1, BLM began the scoping process for Greater Mooses Tooth 2 (GMT-2). BLM issued the ROD approving GMT-2 in October 2018, and released the final RMS along with the final EIS for that project. Willow is designed to be constructed in such a way that it will connect back to ConocoPhillips' existing infrastructure via the roads and pipeline route at the GMT-2 drillsite.

III. THE HISTORY OF CONOCOPHILLIPS' MASSIVE WILLOW PROJECT AND THE FEDERAL DISTRICT COURT'S DECISION.

Willow is the "largest single oil and gas drilling operation currently proposed on federal lands"[20] and would push development even further west into the Reserve.[21] As currently proposed, Willow would involve the construction, operation, and maintenance of a massive oil and gas development project that includes a new central processing facility within the Reserve and a related infrastructure pad, up to five drill pads with up to fifty wells on each pad, access and infield roads, an airstrip, pipelines, a gravel mine, and an ice bridge over the Colville River to support module delivery via sealift barges. It would also involve construction of additional drill sites in the near future. It would produce more than 600 million barrels of oil over the next 30 years, adding at least 280 million metric tons of CO_2E to the atmosphere.

In August 2018, BLM began the scoping process for Willow for the first time. BLM released the draft EIS in August 2019, for an approximately 60-day comment period following extension requests. Shortly after releasing the draft EIS, ConocoPhillips informed BLM that it would be making significant changes to its Willow proposal. Yet, BLM continued holding public comments on the draft EIS. In March 2020, BLM issued a supplemental EIS to consider an additional alternative proposed by ConocoPhillips.[22] The supplemental EIS acknowledged that ConocoPhillips had proposed alterations to nearly every aspect of the Willow project — its size, location, facilities, and levels of activity — but pushed forward with analysis of only three additional project components despite lacking critical details about those components. Following this rushed NEPA process, BLM issued its final EIS in August 2020[23] and approved the project

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[20] EARTHJUSTICE & EVERGREEN ACTION, HOW PRESIDENT BIDEN CAN ALIGN THE FEDERAL FOSSIL FUEL PROGRAM TO DELIVER ON CLIMATE AND PUT PEOPLE OVER PROFITS (2022) at 20–21.

[21] Press Release, ConocoPhillips Provides Strong Outlook for Its Alaska Business; Announces Discovered Resource of 0.5 – 1.1 Billion Barrels Gross from Recent Exploration Activity with 75 Percent of Prospective Acreage Yet to Be Drilled (July 16, 2018), *available at* http://static.conocophillips.com/files/resources/nr-corp-alaska-ops-update-final.pdf.

[22] 1 Bureau of Land Mgmt., Supplemental Draft Environmental Impact Statement for the Willow Master Development Plan 1 (2019).

[23] Bureau of Land Mgmt., Final Environmental Impact Statement for the Willow Master Development Plan 1 (Aug. 2020)[hereinafter Willow Final EIS].

in a ROD on October 27, 2020. As described below, the U.S. District Court vacated that approval in August 2021.[24]

If approved, Willow will be a lose-lose for the American public, locking in "at least another 30 years of fossil fuel extraction" while doing "nothing to lower gas prices in the near or mid-term."[25] Willow's approval would effectively disregard what President Biden has explicitly acknowledged — that climate change is occurring and the American public is "totally understandabl[y]" worried when "they look around and see, my god, everything is changing."[26] In the face of this crisis, Willow would single-handedly increase U.S. greenhouse gas emissions on a scale that would undermine the Biden Administrations efforts to address climate change.[27] The draft SEIS estimates that the Willow discovery may hold upwards of 629 million barrels of oil.[28] Willow has capacity to produce up to 200,000 barrels of oil per day for at least 30 years, adding 279–287 million metric tons of CO_2E to the atmosphere. As John Kerry, the U.S. Special Presidential Envoy for Climate Change, recently explained, greenlighting projects like Willow based on "revisionism suggesting that we need to be pumping oil like crazy" and "moving into long term [fossil fuel] infrastructure" would be "absolutely disastrous."[29] The decision to approve Willow in the face of the ever-intensifying global climate crisis will truly be legacy-defining for Secretary Haaland and President Biden.

Willow will also have harmful and irreversible impacts on the Reserve and local communities. Under ConocoPhillips' proposal, portions of Willow's infrastructure and many industrial activities would be within the boundaries of the Teshekpuk Lake and Colville River Special Areas. These Special Areas were designated because of the importance of multiple biological resources and process at a landscape level, and are intended to protect the healthy functioning of resources, habitat, and wildlife populations.[30] As described in more detail below many important subsistence species, such as the Teshekpuk Lake Caribou Herd, rely on these Special Areas and other areas within and near the Willow Project area and stand to be harmed by further habitat fragmentation.[31]

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[24] *See Sovereign Iñupiat for a Living Arctic v. Bureau of Land Mgmt*., 555 F. Supp. 3d 739, 805 (D. Alaska 2021).
[25] EARTHJUSTICE & EVERGREEN ACTION, HOW PRESIDENT BIDEN CAN ALIGN THE FEDERAL FOSSIL FUEL PROGRAM TO DELIVER ON CLIMATE AND PUT PEOPLE OVER PROFITS 21 (2022).
[26] Josh Boak, *Transcript of AP Interview with President Joe Biden*, AP (June 16, 2022), available at https://apnews.com/article/biden-ap-interview-transcript-fefb405f8383c6fdb4674eef9706fd65
[27] Jenny Rowland-Shea, *The Biden Administration's Easiest Climate Win Is Waiting in the Arctic*, CAP (Mar. 3, 2022), available at: https://www.americanprogress.org/article/the-biden-administrations-easiest-climate-win-is-waiting-in-the-arctic/.
[28] Bureau of Land Mgmt., Draft Supplemental Environmental Impact Statement for the Willow Master Development Plan, at 2 (July 2021) [hereinafter Willow DSEIS].
[29] John Kerry, U.S. Special Presidential Envoy for Climate Change, Comments at the 2020 TIME 100 Gala and Summit (June 7 2022), available at https://time.com/6184946/john-kerry-2022-time100-summit/.
[30] 2 2012 IAP Final EIS at 22; IAP ROD at 4.
[31] *Infra* Legal/Policy V.E.2 (describing impacts to Special Areas).

Two lawsuits challenged Willow's approval and in August 2021, the U.S. District Court vacated BLM and the U.S. Fish and Wildlife Service's (FWS) approvals due to serious errors and deficiencies in the agencies' analyses under NEPA and the ESA.[32] Rather than preparing a revised draft EIS to comprehensively address the numerous flaws in its prior analysis, BLM has prepared a supplemental EIS that attempts to narrowly address the Court's ruling.

BLM failed to fulfill its mandate and broad authority to protect the Reserve's environment and people in its previous analysis of the Willow project. As the District Court explained, BLM's assertion that it lacked authority to limit ConocoPhillips' activities was "inconsistent with [the agency's] statutory responsibility to mitigate adverse effects."[33] The NPRPA provides that BLM "*shall* include or provide for such conditions, restrictions, and prohibitions" on activities within the Reserve as it determines necessary to protect the Reserve's surface resources.[34] The statute places no limitation or conditions on this authority. Indeed, BLM has considerable discretion to suspend all operations on existing leases or units.[35] Under the NPRPA, BLM may suspend operations and production "in the interest of conservation of natural resources" or to mitigate "reasonably foreseeable and significantly adverse effects on surface resources."[36] BLM also has authority to deny or delay an application for permit to drill (APD),[37] and ConocoPhillips' leases reflect BLM's authority to condition, restrict, or prohibit activities.[38] This authority should be acknowledged in the SEIS process and fully considered as part of the project alternatives and mitigation measures.

BLM also did not comply with its mandate to provide maximum protection to Special Areas in its previous process. As the District Court found, BLM improperly failed to consider alternatives in the prior EIS that protected the values of Teshekpuk Lake Special Area (TLSA):

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[32] *Sovereign Iñupiat for a Living Arctic v. Bureau of Land Mgmt*., 555 F. Supp. 3d 739, 804–05 (D. Alaska 2021).
[33] *Id*. at 769.
[34] 42 U.S.C. § 6506a(b) (emphasis added).
[35] *Id*. § 6506a(k)(2) ("The Secretary may direct or assent to the suspension of operations and production on any lease or unit.").
[36] 43 C.F.R. § 3135.2(a)(1), (3).
[37] *Id*. § 3162.3-1(h)(2) (BLM has authority to "[r]eturn the application and advise the applicant for the reasons for disapproval"); *id.* § 3162.3-1(h)(3) (stating that BLM can respond to an APD by advising the applicant of the reasons why final action will be delayed along with the date such final action can be expected); *see also N. Alaska Evtl. Ctr. v. Kempthorne*, 457 F.3d 969, 976 (9th Cir. 2006) (assuming government could deny a specific application altogether if adequate mitigation measures are not available).
[38] *See* U.S. Department of the Interior, Offer to Lease and Lease for Oil and Gas, Form 3100-11 (Oct. 2008) § 6 (BLM can require additional reasonable mitigation measures as conditions of approval to "minimize[] adverse impacts to the land, air, and water, to cultural biological, visual, and other resources, and to other land uses or users"); *id*. § 4 ("Lessor reserves the right to specify rates of development and production in the public interest.").

> The TLSA is not "only an administrative boundary." Congress specifically directed the agency to ensure that oil and gas activity in the TLSA "be conducted in a manner which will assure the maximum protection of such surface values to the extent consistent with the requirements of this Act for the exploration of the reserve." The EIS's assertion that Project impacts may not "necessarily be greater within the TLSA than they would outside the TLSA" entirely distorts this Congressional directive.[39]

The Court then held that because "BLM failed to consider the statutory directive that 'maximum protection' be given to surface values within the TLSA, it acted contrary to law."[40] BLM is also obligated to ensure the Colville River Special Area is provided with maximum protections. There was a lack of site-specific baseline and other information about ConocoPhillips' proposed Colville River crossing as part of the prior approval process, including if there will be grounded ice at the time of the crossing, if there will be free-water pockets, how large those pockets will be, and the extent to which the area may be used by overwintering fish. BLM needs to obtain additional information about that proposal and ensure that the area is adequately protected. BLM must ensure that any potential new approvals of the Willow project will provide for maximum protection of these Special Areas (as discussed below) and other surface resources consistent with the NPRPA.

The District Court also found that FWS's consultation and approvals for Willow violated the ESA in several important respects that must be rectified. In consulting on impacts to polar bears, FWS improperly relied on future mitigation measures enacted under the Marine Mammal Protection Act (MMPA) in making its no-jeopardy and no-adverse-habitat modification determinations;[41] FWS arbitrarily quantified non-lethal take of bears from disturbance to be zero, despite finding that disturbance could result in "biologically significant" impacts;[42] the incidental take statement for the project failed to authorize take by hazing that was reasonably certain to occur, and FWS impermissibly conflated Willow's ESA take authorization with the MMPA process.[43]

The Court's decision creates an obligation and opportunity for BLM to fully reconsider Willow. Any assessment rooted in science "will make clear that the project as proposed poses unacceptable risks" for the western Arctic's wildlife and habitat and the climate.[44] More fundamentally, Willow is contrary to the action necessary to address the climate emergency and is inconsistent with this administration's priorities and policy commitments. It should not be approved.

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[39] *Sovereign Iñupiat for a Living Arctic v. Bureau of Land Mgmt*., 555 F. Supp. 3d 739, 769 (D. Alaska 2021)
[40] *Id*. at 770.
[41] *Id*. at 800–01.
[42] *Id*. at 802.
[43] *Id.* at 803.
[44] EARTHJUSTICE & EVERGREEN ACTION, HOW PRESIDENT BIDEN CAN ALIGN THE FEDERAL FOSSIL FUEL PROGRAM TO DELIVER ON CLIMATE AND PUT PEOPLE OVER PROFITS (2022) at 21.

BLM'S DRAFT EIS IS LEGALLY DEFICIENT AND CONTRAVENES AGENCY POLICY.[45]

Our organizations are deeply concerned about the direct, indirect, and cumulative effects of the proposed project. ConocoPhillips' proposal will cause a large, undeveloped area to become industrialized and will disturb wildlife, destroy wetlands, and permanently alter rural lifestyles dependent on traditional food resources like fish and caribou. BLM failed to consider the potentially significant negative environmental impacts of this project and has not included a sufficient range of mitigation measures. As the lead agency, BLM must ensure this process complies with NEPA, the Federal Land Policy and Management Act (FLPMA), the ESA, and the legal and permitting requirements of its cooperating agencies. Its actions to date still fail to satisfy its legal requirements.

The DSEIS is unclear regarding the NEPA regulations that it is applying to the Willow project. It describes that the Council for Environmental Quality promulgated a first phase of revisions to regulations that took effect in 2020.[46] However, as groups described in scoping comments, BLM must make clear that it will apply the same level of NEPA analysis as required under the 1978 NEPA regulations in effect prior to the Council for Environmental Quality's September 2020 revisions. The 2020 regulations state that "[a]n agency may apply the regulations in this subchapter to ongoing activities and environmental documents begun before September 14, 2020."[47] As a supplement to the Willow EIS that was undisputedly subject to the 1978 regulations, this supplemental process qualifies as an "ongoing activity." Consistent with direction in Secretarial Order No. 3399 and because of ongoing CEQ rulemaking to restore the regulatory provisions modified in 2020, BLM should apply the level of NEPA analysis required under the 1978 regulations and expressly state that it is doing so in the DSEIS. The comments below largely cite to the 1978 regulations, and attempt to cite the first phase of revisions to the 2020 regulations where applicable.

The comments below highlight a number of legal, technical and policy shortcomings with BLM and its cooperating agencies' consideration of Willow. We have also submitted studies cited in this letter to become part of the record.[48] BLM must consider these in reviewing our comments. Approval of Willow is contrary to our nation's climate, biodiversity, and social justice policies. Moreover, we are deeply concerned that BLM's process is hindering public participation and fails to comply with NEPA, and that the current EIS process may also violate a number of other laws which BLM and its cooperating agencies must comply with in issuing any project approvals.

I. WILLOW IS CONTRARY TO OUR NATION'S CLIMATE GOALS AND IMPERATIVES.

The world, and especially the Arctic, cannot afford the greenhouse gas emissions that will result from burning the more-than-600 million barrels of oil Willow would produce.

[45] Hereinafter "Legal/Policy."
[46] 1 DSEIS at 1.
[47] 40 C.F.R. § 1506.13 (2020).
[48] Trustees for Alaska submitted the documents referenced in this letter via USB drive for inclusion in the administrative record.

Overwhelming evidence demonstrates we are in a climate crisis caused largely by the burning of fossil fuels.[49] This is not a hypothetical, future catastrophe. It is happening now, causing devastating heatwaves, fires, and floods, among many other critical problems, around the world.[50] Without significant, rapid emissions reductions, continued warming beyond 1.5 degrees Celsius will result in catastrophic damage around the world and within the Reserve.[51] Unlike the national policy in place when Willow was approved, the Biden administration recognizes the scientific consensus regarding climate change and has prioritized addressing this emergency, as described below. In this context, approving Willow would be contrary both to the science, which clearly demonstrates there is no room for developing and burning new sources of fossil fuels, and to this administration's promises to take urgent action consistent with that science to lead the world in transitioning away from fossil fuels.[52] BLM can and should reach a decision that is in accordance with the science, the federal government's commitment to respond to the climate crisis, and, importantly, the agency's statutory authority to conserve resources in the Reserve by selecting the no action alternative.

Approving the Willow project, or any new Arctic oil development, is inconsistent with the demonstrated need to swiftly transition away from fossil fuel use. There is little, and rapidly diminishing, space in the global carbon budget for new fossil fuel infrastructure and extraction if we are to avoid catastrophic damage from climate change.[53] Instead, new fossil fuel exploration, production, and infrastructure projects need to be halted and much existing production phased out to meet the Paris Agreement climate targets to limit warming to 1.5 degrees Celsius and avoid catastrophic climate damages, including in the Reserve.[54] Indeed, the carbon emissions that would be released from burning the fossil fuel reserves from the world's currently operating oil and gas fields and coal mines would fully exhaust and exceed the carbon budget consistent with staying below 1.5°C.[55]

Halting new fossil fuel production and rapidly phasing out existing production on federal public lands must play an important part in meeting climate goals. In 2018, the U.S. Geological Survey and the Department of the Interior estimated that carbon emissions released from extraction and end-use combustion of fossil fuels produced on federal lands alone accounted for

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[49] *Infra* Scope Deficiencies II.A.
[50] *Id*.
[51] *Id.*
[52] *Id.*
[53] D. Tong et al., Committed emissions from existing energy infrastructure jeopardize 1.5 °C climate target, 572 NATURE 373 (Aug. 2019) (Tong et al. 2019).
[54] *Id*.
[55] Oil Change International, *The Sky's Limit: Why the Paris Climate Goals Require a Managed Decline of Fossil Fuel Production* at 17 & 19, Tbl. 3 (Sept. 2016) (Oil Change International 2016). According to this analysis, the CO_2 emissions from developed reserves in existing and under-construction global oil and gas fields and existing coal mines are estimated at 942 $GtCO_2$, which vastly exceeds the IPCC-estimated 1.5°C-compatible carbon budget of 420 $GtCO_2$ to 570 $GtCO_2$ (66% probability). IPCC, *Global Warming of 1.5 Degrees, Summary for Policy Makers* at 12 (2018) (IPCC 2018).

approximately one quarter of total U.S. carbon emissions during 2005 to 2014.[56] A 2015 analysis of U.S. fossil fuel resources shows 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 even a 2°C target.[57] The production horizons for already leased federal fossil fuels extend decades past the dates by which carbon budgets consistent with 1.5°C or 2.0°C will be exhausted at current emissions levels. [58] Moreover, the largest annual increases in global oil and gas production over the next decade are projected to occur in the U.S.[59] Based on a 1.5°C IPCC pathway, U.S. production alone would exhaust nearly 50 percent of the world's total allowance for oil and gas by 2030 and exhaust more than 90 percent by 2050.[60]

Developing new oilfields in the Arctic is especially incompatible with a transition away from fossil fuels on the short timeframe necessary to avoid catastrophic climate change. 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.[61] That is especially true for development in the Arctic, where constructing the infrastructure necessary to produce and transport oil is difficult and expensive. Willow would produce oil for more than 30 years into the future — past the time by which the United States has committed to reaching carbon neutrality[62] — undermining the implementation of national and global goals for moving swiftly away from dependence on carbon-based fuels. Rather than developing new sources of fossil fuel, the U.S. must focus its resources and technology on rapidly phasing out oil and gas extraction while investing in a just transition for affected workers and communities currently living on the front lines of the fossil fuel industry and its pollution.[63]

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[56] Nathan Ratledge et al., Emissions from fossil fuels produced on US federal lands and waters present opportunities for climate mitigation at 2, Climatic Change (Mar. 14, 2022); 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 at 8 (2018).

[57] 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).

[58] D. Mulvaney et al., Over-Leased: How Production Horizons of Already Leased Federal Fossil Fuels Outlast Global Carbon Budgets at 5 (July 2016).

[59] P. Achakulwisut & P. Erickson, *Trends in fossil fuel extraction: Implications for a shared effort to align global fossil fuel production with climate limits*, Stockholm Environment Institute working paper (Apr. 2021).

[60] Oil Change International, Drilling Towards Disaster: Why U.S. Oil and Gas Expansion Is Incompatible with Climate Limits at 6 (Jan. 2019) (Oil Change International 2019).

[61] *Id*. at 13.

[62] Executive Order 14057: Catalyzing Clean Energy Industries and Jobs through Federal Sustainability, 86 Fed. Reg. 70935, 70935 (Dec. 8, 2021).

[63] G. Piggot *et al.*, *Realizing a just and equitable transition away from fossil fuels*, Stockholm Environment Institute discussion brief (Jan. 2019).

The Biden administration has recognized the climate imperative and committed the government to taking decisive action. As President Biden stated at the United Nations climate summit in Glasgow, we are at an "inflection point" in the fight against climate change and have only a "brief window" to act.[64] Executive Order 14008 recognizes that acting to address the climate crisis is "more necessary and urgent than ever."[65]

> The scientific community has made clear that the scale and speed of necessary action is greater than previously believed. There is little time left to avoid setting the world on a dangerous, potentially catastrophic, climate trajectory. Responding to the climate crisis will require both significant short-term global reductions in greenhouse gas emissions and net-zero global emissions by mid-century or before.[66]

Executive Order 14008 also establishes national policy that places the climate crisis "at the center of United States foreign policy and national security."[67]

The U.S. has committed to reduce greenhouse gas (GHG) emissions by 50–52 percent below 2005 levels in 2030,[68] and to reach net-zero emissions by 2050.[69] President Biden has ordered all agencies "to immediately commence work to confront the climate crisis,"[70] and committed to deploying the "full capacity" of agencies "to implement a Government-wide approach" to combat the climate crisis.[71] This approach includes a "reconsideration of Federal oil and gas permitting . . . practices."[72] BLM has substantial capacity and a legal obligation to contribute to this government-wide effort by managing the Reserve to safeguard its resources and the communities who rely on them from the ravaging impacts of climate disruption, which will also support climate resilience and not undermine efforts to limit emissions.

Approving the Willow project would undermine urgently needed efforts to speed the transition away from fossil fuels and would be inconsistent with the administration's priorities and commitments. Given the significance of the Willow Project's GHG emissions on the

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[64] M. Chalfant & R. Frazin, Biden warns of 'existential' climate threat at Glasgow summit, THE HILL (Nov. 1, 2021), https://thehill.com/policy/energy-environment/579403-biden-calls-for-collective-action-at-glasgow-climate-summit?rl=1.
[65] Executive Order 14008: Tackling the Climate Crisis at Home and Abroad, 86 Fed. Reg. 7619, 7619 (Feb. 1, 2021).
[66] *Id*.
[67] *Id.*
[68] The United States of America Nationally Determined Contribution, Reducing Greenhouse Gases in the United States: A 2030 Emissions Target at 1 (undated).
[69] Executive Order 14057: Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability, 86 Fed. Reg. at 70935 (Dec. 8, 2021).
[70] Executive Order 13990: Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, 86 Fed. Reg. 7037, 7037 (Jan. 20, 2021).
[71] Executive Order 14008: Tackling the Climate Crisis at Home and Abroad, 86 Fed. Reg. 7619, 7622 (Jan. 27, 2021).
[72] *Id.* at 7624.

Reserve itself in the context of the worsening climate crisis, and the administration's commitments to respond to that crisis, BLM should select the no action alternative. This choice would be consistent with BLM's broad management authority and obligations in the Reserve,[73] and would be consistent with this administration's commitments to address the climate crisis.

II. WILLOW IS CONTRARY TO THIS ADMINISTRATION'S BIODIVERSITY AND SOCIAL JUSTICE POLICIES.

On his first day in office, just hours after being sworn in, President Biden issued Executive Order 13990, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis.[74] The Executive Order committed the Administration to "promote and protect public health and the environment; and conserve our national treasures and monuments, places that secure our national memory" as well as to "advance environmental justice."[75] In doing so, the President explained that decisions "must be guided by the best science and be protected by processes that ensure the integrity of Federal decision-making."[76] The President then announced his policy:

> It is, therefore, the policy of my Administration to listen to the science; to improve public health and protect our environment; to ensure access to clean air and water; to limit exposure to dangerous chemicals and pesticides; to hold polluters accountable, including those who disproportionately harm communities of color and low-income communities; to reduce greenhouse gas emissions; to bolster resilience to the impacts of climate change; to restore and expand our national treasures and monuments; and to prioritize both environmental justice and the creation of the well-paying union jobs necessary to deliver on these goals.[77]

The President included a list of actions that agency leaders should review to "determine consistency" with his Order, which included the Willow Project.[78] Neither BLM nor the Department of the Interior has made public the Secretary of the Interior's review of the Willow Project directed by the President.

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[73] *Supra* Legal/Policy V.E.1

[74] Executive Order 13990, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, sec. 1, available at: https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-protecting-public-health-and-environment-and-restoring-science-to-tackle-climate-crisis/.

[75] *Id*.

[76] *Id*.

[77] *Id*.

[78] Fact Sheet: List of Agency Actions for Review (Jan. 20, 2021), available at: https://www.whitehouse.gov/briefing-room/statements-releases/2021/01/20/fact-sheet-list-of-agency-actions-for-review/.

Within a week of taking office, President Biden signed another executive order that announced his commitment to protecting 30% of U.S. land and water — over 720 million acres — by 2030:

> Conserving Our Nation's Lands and Waters. (a) The Secretary of the Interior, in consultation with the Secretary of Agriculture, the Secretary of Commerce, the Chair of the Council on Environmental Quality, and the heads of other relevant agencies, shall submit a report to the Task Force within 90 days of the date of this order recommending steps that the United States should take, working with State, local, Tribal, and territorial governments, agricultural and forest landowners, fishermen, and other key stakeholders, to achieve the goal of conserving at least 30 percent of our lands and waters by 2030.[79]

President Biden also made a commitment to environmental and economic justice in that same executive order, stating:

> To secure an equitable economic future, the United States must ensure that environmental and economic justice are key considerations in how we govern. That means investing and building a clean energy economy that creates well-paying union jobs, turning disadvantaged communities — historically marginalized and overburdened — into healthy, thriving communities, and undertaking robust actions to mitigate climate change while preparing for the impacts of climate change across rural, urban, and Tribal areas. Agencies shall make achieving environmental justice part of their missions by developing programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts. It is therefore the policy of my Administration to secure environmental justice and spur economic opportunity for disadvantaged communities that have been historically marginalized and overburdened by pollution and underinvestment in housing, transportation, water and wastewater infrastructure, and health care.[80]

In early April, 2021, Secretary Haaland issued Order No. 3399, "prioritiz[ing] action on climate change."[81] That order was issued in response to Executive Orders 13990 and 14008 and established a Departmental Climate Task Force, the purpose of which is to "develop a strategy to reduce climate pollution; improved and increase adaptation and resilience to the impacts of

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[79] Executive Order 14008, Tackling the Climate Crisis at Home and Abroad, § 216 (Jan. 27, 2021), available at: https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/.
[80] *Id.* § 219.
[81] Secretary of the Interior, Order No. 3399 (Apr. 16, 2021), available at: https://www.doi.gov/sites/doi.gov/files/elips/documents/so-3399-508_0.pdf.

climate change; address current and historic environmental injustice; protect public health; and conserve Department-managed lands."[82]

On May 6, 2021, Interior, in conjunction with other resource management agencies and departments, published *Conserving and Restoring America the Beautiful*, a preliminary report about the "30 by 30 plan."[83] The report recognized that "[t]his challenge is the first-ever national goal for the stewardship of nature in America."[84] The report recognized eight key principles to achieve the goal of 30 by 30, including "Conserv[ing] America's Lands and Waters for the benefit of All People," "Honor[ing] Tribal Sovereignty and Support[ing] the Priorities of Tribal Nations," and "Us[ing] Science as a Guide."[85] The report concluded by recognizing:

> The President's goal of conserving 30 percent of America's lands and waters by 2030 is more than a number — it is a challenge to build on the nation's best conservation traditions, to be faithful to principles that reflect the country's values, and to improve the quality of American's lives — now and for decades to come.[86]

Collectively, these Presidential and Secretarial actions evidence an incredibly strong commitment to combating climate change, listening to science, addressing environmental justice, and conserving and restoring the health and productivity of our nation's lands and waters.

Permitting Willow — with its proposed spiderweb of gravel roads, pads, airports, ice roads and bridges, massive central processing facility, gravel mines, and its function as a catalyst to further westward development in the Reserve — is plainly inconsistent with the Administration's and Department's goals. Willow accelerates climate change, perpetuates environmental injustice, and harms biodiversity in the northeastern Reserve and across Arctic Alaska. BLM must acknowledge this and endeavor to explain how the agency can still permit Willow, in conflict with the President's goals and Department's commitments.

III. BLM'S PROCESS IS HINDERING PUBLIC PARTICIPATION.

We are greatly concerned that BLM's process has not been transparent, nor is the timing of the process appropriate. It is still not clear what approvals BLM intends to authorize via this EIS, and what decisions and authorizations will be subject to future NEPA and permitting processes, if any. Also, BLM and other agencies with permitting authority need to fully analyze this massive project and should not truncate either their analysis by artificially limiting it to the issues the District Court ruled unlawful or the timeframe necessary for the analysis and public outreach. BLM has eschewed vital components of an open and transparent process by narrowly

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[82] *Id.* at 2.
[83] U.S. Departments of the Interior, Agriculture and Commerce, and the White House Council on Environmental Quality, Conserving and Restoring America the Beautiful (May 6, 2021), available at: https://www.doi.gov/sites/doi.gov/files/report-conserving-and-restoring-america-the-beautiful-2021.pdf.
[84] *Id.* at 10.
[85] *Id.* at 14–15.
[86] *Id.* at 22.

supplementing its analysis rather than fully revising the deficient analysis in the draft EIS, failing to hold a formal scoping period, and failing to provide adequate time for impacted communities and the public to comment.

A. BLM Must Ensure Meaningful Opportunities for Public Engagement and Should Not Proceed on a Timeline Dictated by the Project Applicant or Politicians.

As discussed throughout, BLM's NEPA process for Willow to date has been rushed and has not provided for meaningful public involvement.[87] BLM's DSEIS process has been similarly truncated. In proceeding without a formal scoping period, BLM skipped a valuable opportunity to seek input from affected communities, Tribes, and interested parties, such as by holding public hearings in affected communities to allow stakeholders to share concerns more openly and ask BLM questions about its process.

Despite receiving requests for an extension of the comment period from Commenters, the City of Nuiqsut, the Native Village of Nuiqsut, and others, BLM denied these reasonable requests for an extension. It is particularly troubling that Nuiqsut's mayor and the city's attorney testified during BLM's August 8 virtual hearing that BLM had officially informed the community that a 30-day extension, through September 30, would be granted given the need for the community to engage in subsistence harvesting activities during the month of August. However, BLM appears to have reneged on that extension after the fact, causing confusion and creating travel and meeting participation problems for the community.[88] The manner in which the administration and ConocoPhillips are operating suppresses the public's ability to review and engage in the evaluation of this project, contrary to NEPA. Such behavior rivals even the Trump administration's disrespectful approach to coordinating with tribes and affected communities. In sum, BLM's rejection of reasonable requests to extend the comment period with the singular goal of allowing ConocoPhillips to begin operations this winter is contrary to law and policy.

Additional time would have allowed communities engaged in subsistence activities during the summer and fall to respond to the proposal and to review the many documents BLM is relying on for its analysis. Public participation is a core purpose of NEPA and BLM must ensure adequate time and opportunity to engage the public in each step of this process.[89] A 45-day comment period during the summer on the SEIS is insufficient to meet BLM's NEPA obligations to provide robust participation by the interested public, given the sensitive resources, the complexity of the issues and analysis required, and the timing of the proposal review.[90]

We are concerned that BLM is rushing this review period to achieve the goal of issuing a Final EIS and ROD prior to this winter's North Slope construction season, at the expense of the

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[87] *See e.g. supra* Overview III.
[88] Adam Federman, Interior Department backtracks on public comment period for Willow Project, GRIST (Aug. 10, 2022), *available at* https://grist.org/politics/interior-department-backtracks-on-public-comment-period-for-willow-project/.
[89] 40 C.F.R. §§ 1500.2(d), 1506.6.
[90] *Id.* § 1503.1(a)(4).

public and a thorough analysis.[91] In particular, Senator Lisa Murkowski has made clear that she is pushing the agency to come to a decision on an expedited timeframe[92] and urged the administration to limit the public comment period.[93] Interior's denial of Nuiqsut's and others' extension requests appears to be an attempt to placate Senator Murkowski's political agenda and rather than addressing the public's need for additional time to understand and comment on this massive project. In addition, political cries from Senator Murkowski and ConocoPhillips to keep a truncated comment period since there have been other, prior comment periods[94] ignore the fact that the public has not yet had an opportunity to weigh in on these new, voluminous documents. It also ignores that, despite those prior public comment opportunities, the previous decision was thrown out by the federal court as contrary to law and the public needs additional time to understand and carefully evaluate the adequacy of the revisions in this new supplement.

Rushing the analysis and public review is not consistent with BLM's obligations when considering a project as important and massive as the Willow Project. The rushed NEPA process is also concerning because BLM is pushing forward before receiving basic permit applications. ConocoPhillips has yet to reapply for the right-of-way permits or applications for permits to drill that were vacated by the U.S. District Court. It makes no sense for BLM to proceed with a NEPA process when it does not have the necessary permit applications. Moreover, the fact that no permit applications have been received render BLM's blanket refusal to delay project permitting arbitrary.[95] The Court's order vacating ConocoPhillips' permits did not order the agency to rush ahead to reapprove the project; to the extent BLM has represented that it must work on this EIS to respond to the Court's remand, such assertions are incorrect factually and as a matter of law. We are unaware of any authority mandating BLM proceed in this manner, rushing forward with an environmental review of permits that ConocoPhillips has not even applied for, nor does BLM

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[91] For example, in March, Ben Stevens said of BLM, "They're working to get it to completion and they're on the timeline, working with us on our timelines, we want the timeline for the record of decision to be done by the end of this year so we can have a construction cycle in 2223 winter and to begin it. . ." 46:35. Energy Task Force - March 1, 2022 - ConocoPhillips Alaska North Slope and Willow Project Update, https://www.youtube.com/watch?v=djmsmvobkrs.

[92] U.S. Senator Lisa Murkowski, Press Release, July 14, 2022 *available at* https://www.murkowski.senate.gov/press/release/alaskans-voice-strong-support-for-willow-project ("I will continue to hold [the Administration] accountable to their commitment to see this additional environmental review through so that construction can begin this winter.").

[93] Letter from Sen. Lisa Murkowski & Sen. Dan Sullivan to Sec'y Deb Haaland (July 15, 2022), *available at* https://www.murkowski.senate.gov/imo/media/doc/7.15.22%20-%20Alaska%20Delegation%20Letter%20to%20Secretary%20Haaland%20re.%20Willow%20SEIS%20(003).pdf.

[94] *Id*.

[95] "BLM is obligated to approve development of leases in some form, and although BLM may put stipulations and mitigation measures in place to reduce impacts, BLM is required by the NPRPA to administer an "expeditious" program of oil and gas leasing (42 USC 6506a(a)) and may not deny development. BLM must process permits for development as it receives them and delaying permitting of the entire Project for an arbitrary length of time could make the entire Project uneconomic." 5 DSEIS, App. D.1 at 38.

cite any provision of law or regulation mandating or even allowing this approach. BLM should stop the supplemental NEPA process until ConocoPhillips submits new applications. This will also ensure that the agency is evaluating the project that the proponent is actually proposing as opposed to project concepts that may shift in the future.

B. BLM and the Corps Need to Increase Transparency in Their Processes and Clarify the Nature of Their Decisions.

As an initial matter, BLM's process lacks transparency due to the agency's decision to obfuscate its selection of a preferred alternative — Alternative E — in the draft SEIS. BLM identified Alternative E in its biological assessment to FWS, seeking to consult on it as the agency's preferred alternative. The language in states in relevant part: "[t]his BA describes the BLM's preferred alternative and preferred module delivery option… this BA reflects the following changes to the proposed action…[description of alternative E]."). [96] NEPA's regulations make plain that "the draft environmental impact statement should identify the bureau's preferred alternative or alternatives, if one or more exists."[97] Moreover, an initial version of the draft SEIS posted to BLM's ePlanning website expressly identified Alternative E as BLM's preferred alternative; this version was abruptly switched the same day with no explanation, with the preferred alternative language removed. Because BLM identified a preferred alternative, it was obligated under NEPA to make that preference clear in the draft SEIS. Its failure to do so violates NEPA and raises serious questions about why the agency would take such steps to suppress information regarding its selection of a preferred alternative.

By rushing to proceed with a supplemental EIS, BLM has not addressed confusion surrounding the scope of its analysis. As groups noted in previous comments, BLM has not made it clear what the agency is actually approving through the Master Development Plan process. The draft SEIS states:

> BLM and other authorizing cooperating agencies will, in their respective ROD(s), decide whether to approve the Willow MDP and the associated issuance of permits and rights-of-way for the construction of the development plan, in whole or in part, based on the analysis contained in this Supplemental EIS. The ROD(s) associated with this Supplemental EIS will not constitute the final approval for all actions, such as approval for subsequent individual applications for permits to drill and rights-of-way associated with the Proposed Action.[98]

It is inappropriate for BLM to proceed with a supplemental analysis without explaining what the agency is actually considering and potentially approving. The status of the Corps' 404 permit is likewise unclear. It is inappropriate for the Corps to leave its original decision intact in light of the changes and other revisions occurring to the underlying NEPA analysis and consideration of this project. BLM and the Corps must be clear and transparent about what future authorizations and associated analyses it believes will be necessary — for its own analysis and

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[96] Bureau of Land Mgmt., Biological Assessment for the Willow Master Development Plan Submitted to the U.S. Fish and Wildlife Service at 1, 3 (June 2022).
[97] 43 C.F.R. § 46.425.
[98] 1 DSEIS at 3.

that of its cooperating agencies — so that the public can comment on the sufficiency of the agency's approach.

BLM cannot predetermine that future applications associated with Willow will be sufficiently analyzed before applications are submitted, or presume that no new circumstances or information will arise in the interim, such that approving future applications now would be appropriate. The DSEIS obfuscates what the true purpose of the Willow MDP process is, given the agency states in the DSEIS that it is not meant to issue permit approvals.[99] The document states that through this process, BLM and cooperating agencies would "decide whether to approve subsequent individual applications for permits to drill and rights-of-way" for Willow.[100] This in essence appears to admit that BLM is making a decision now to approve permits later without having the actual permit applications in hand. BLM must be transparent about this process and clearly describe the agency's future intent and why the agency is not simply requiring the submission and review of the permit applications as part of the current process.

BLM must also identify the source of its authority to issue an EIS for such a "master development plan" absent any permit applications, as no such authority is apparent under applicable statutes and regulations.

IV. BLM'S DRAFT SEIS FAILS TO COMPLY WITH NEPA.

NEPA is "our basic national charter for protection of the environment."[101] NEPA's analysis and disclosure goals are two-fold: (1) to ensure informed agency decision making, and (2) to ensure public involvement.[102] NEPA requires that federal agencies prepare a detailed EIS for any major Federal action that may significantly affect the quality of the human environment.[103] 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."[104] NEPA "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."[105]

BLM's draft SEIS still fails to comply with NEPA in multiple respects. Indeed, the draft SEIS is so deficient that BLM must revise 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, fails to take a hard look at the project's impacts, and fails to properly evaluate mitigation measures.

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[99] *Id*.
[100] *Id*.
[101] 40 C.F.R. § 1500.1(a).
[102] *Robertson v. Methow Valley Citizen Council*, 490 U.S. 332, 349 (1989).
[103] 42 U.S.C. § 4332; 40 C.F.R. § 1508.18(b)(4).
[104] *See Marsh v. Or. Nat. Res. Council*, 490 U.S. 360, 371 (1989).
[105] *Kern v. U.S. Bureau of Land Mgmt.*, 284 F.3d 1062, 1072 (9th Cir. 2002).

A. BLM Must Issue a Revised SEIS.

As an initial NEPA issue, BLM's draft SEIS should be revised and re-released for public comment. BLM should prepare a revised draft SEIS that re-examines the project purpose and need and develop an appropriate range of alternatives for detailed analysis. It is troubling that BLM is preparing a supplemental NEPA analysis instead of a new DEIS given the broad number of legal problems with the prior Willow FEIS. The FEIS failed to adequately assess Willow's impacts on a number of resources, including but not limited to climate change, water resources, wetlands, wildlife, air quality, subsistence, and public health. BLM should comprehensively revise the Willow analysis to address the numerous flaws in its prior analysis, as identified in public comments, as well as to consider new information and ensure that its analysis and decision is consistent with current national policy to follow science, protect biodiversity, tackle the climate crisis with the urgency it demands, and advance environmental justice and the interests of Indigenous peoples. The FEIS failed to adequately assess Willow's impacts on a number of resources, including but not limited to climate change, water resources, wetlands, wildlife, air quality, subsistence, and public health.

BLM's decision to perform a narrow supplemental analysis is also inappropriate because the original EIS, which adhered to constrained page limit set out in Secretarial Order 3355, is deficient and warrants comprehensive revision. Application of Secretarial Order 3355 to the DEIS resulted in less transparency, more mistakes, and missing key data. BLM should prepare a revised draft EIS with as many pages of analysis necessary to "provide full and fair discussion of significant environmental impacts and [to] inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment."[106]

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."[107] 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."[108] It must also be "supported by evidence that the agency has made the necessary environmental analyses."[109] "The information must be of high quality" because "[a]ccurate scientific analysis . . . and public scrutiny are essential to implementing NEPA."[110]

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

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[106] 40 C.F.R. § 1502.1.
[107] *Id*. § 1500.2(d).
[108] *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.").
[109] 40 C.F.R. § 1502.1; *see also id*. § 1502.8.
[110] *Id*. § 1500.1(b).

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."[111] "If changes [in an EIS] in response to comments are minor and are confined to the 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."[112]

Conversely, non-minor changes that require modified or new alternatives or analyses generally require revision or supplementation of the draft EIS.[113] "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."[114] The agency must then seek public comment on the revised draft EIS.[115] An EIS that fails to enable meaningful public review and understanding of the agency's proposal, methodology, and analysis of environmental consequences violates NEPA.[116] BLM's draft SEIS will need to be revised for at least three reasons: it fails to include key information about the project, fails to analyze a reasonable range of alternatives, and fails to take a hard look at the direct, indirect, and cumulative impacts of the proposed project.

BLM's draft SEIS for the Willow project contains numerous gaps in information and analysis that seriously frustrate public review and understanding. Critically, the draft SEIS fails to accurately analyze Willow's significant impacts on our climate, an issue of global concern. Certain highly significant issues that affect important resources and uses of the project area, such as wilderness and recreation, site-specific information on the hydrology and wetlands that will be impacted, and detailed dust control plans, are largely missing from the draft EIS. Many issues, such as impacts to hydrology, wildlife, marine mammals, subsistence, vegetation and wetlands, and spill risks are only partially addressed, with key elements of the draft EIS analysis missing, incomplete, inaccurate, inconsistent with the best available science, or otherwise inadequate. As discussed later in these comments, there are significant gaps with regard to the information necessary for the Corps to conduct an analysis under the 404 Guidelines. Our comments address these and numerous other serious deficiencies below. The significant and numerous information and analytical gaps render BLM's draft EIS "so inadequate as to preclude meaningful analysis"

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111 *Id*. § 1503.4(a).
112 *Id*. § 1503.4(c).
113 *See id*. §§ 1503.4, 1502.9(a) & (c).
114 *Id*. § 1502.9(a).
115 *See id*. §§ 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.").
116 *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).

and review by the public.[117] To remedy the extensive gaps in information and analysis, a revised draft EIS is necessary.

BLM's failure to analyze a reasonable range of alternatives also necessitates a revised EIS. NEPA requires that an EIS analyze a range of reasonable alternatives. The analysis of alternatives is the "heart" of an EIS.[118] An agency must "[r]igorously explore and objectively evaluate all reasonable alternatives" to a proposed action.[119] Consistent with NEPA's basic policy objective to protect the environment, this includes more environmentally protective alternatives.[120] It also includes reasonable alternatives submitted by the public at scoping.[121] "The existence of a viable but unexamined alternative renders an [EIS] inadequate."[122] The "touchstone" of the inquiry is "whether an EIS's selection and discussion of alternatives fosters informed decision-making and informed public participation."[123]

The draft EIS's range of alternatives is inadequate for multiple reasons. The draft EIS fails to meaningfully consider the No Action alternative, as required by NEPA. Further, BLM failed to consider reasonable action alternatives that would mitigate GHG emissions, delay the project pending a plan to manage the Reserve consistently with meeting climate targets to avoid exceeding 1.5 degrees C, eliminate the use of modules for transporting project infrastructure, avoid impacts in Special Areas, avoid additional airstrips, or utilize seasonal roadless drilling to decrease impacts to important surface resources. Importantly, the new and revised alternatives that will be necessary to remedy these 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."[124] 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.[125] The required hard

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[117] *See* 40 C.F.R. § 1502.9(a).
[118] *Id*. § 1502.14.
[119] *Id*. § 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").
[120] 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).
[121] *See* 40 C.F.R. §§ 1501.7, 1502.1.
[122] *Mont. Wilderness Ass'n v. Connell*, 725 F.3d 988, 1004 (9th Cir. 2013) (quotations and citation omitted).
[123] *Id.* at 1005 (quotations and citation omitted).
[124] Forty Most Asked Questions Concerning CEQ's NEPA Regulations, 46 Fed. Reg. 18,026, 1,035 (Mar. 17, 1981).
[125] *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 348 (1989); 42 U.S.C.

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."[126] The numerous and significant gaps in information, analysis, and alternatives renders the draft EIS impacts analysis invalid. 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."[127] 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.[128]

B. BLM Must 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.[129]

If information essential to a reasoned choice is unavailable or if the costs of obtaining it are exorbitant (excessive or beyond reason), BLM must make a statement to this effect in the EIS. BLM must discuss what effect the missing information may have on the agency's ability to predict impacts to the particular resource. If the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known, the agency must include within the EIS:

1. a statement that such information is incomplete or unavailable;
2. a statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment;
3. a summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment; and
4. the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community.[130]

For the purposes of this section, "reasonably foreseeable" includes impacts which have catastrophic consequences, even if their probability of occurrence is low, provided that the

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§ 4332(2)(C); 40 C.F.R. §§ 1502.16, 1508.7, 1508.8.

[126] 40 C.F.R. § 1508.8.

[127] *Half Moon Bay Fisherman's Marketing Ass'n v Carlucci*, 857 F.2d 505, 510 (9th Cir. 1988).

[128] 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.

[129] 40 C.F.R. § 1502.22(a); *see also* 43 C.F.R. § 46.125.

[130] 40 C.F.R. § 1502.22; *see also* 50 Fed. Reg. 32,234 (Aug. 9, 1985).

analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason.[131] In other words, an agency is required to forecast potentially catastrophic consequences of its actions when there is credible scientific support to "suggest that the impact could occur as a result of the proposed action."[132] This includes disclosure and use of credible, available models or studies to forecast foreseeable impacts,[133] including evidence of "minority views" within the scientific community or those views which are opposed to the views of the agency.[134]

The purpose of transparency around how the agency approaches missing or incomplete information helps "insure the professional integrity, including scientific integrity, of the discussions and analyses" in an EIS.[135] 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."[136] "[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."[137] Accordingly, NEPA's missing information regulation "clearly contemplates original research if necessary."[138]

Importantly, information required in an EIS, to fulfill section 1502.22 of CEQ's NEPA regulations, is part of the Environmental Consequences section of the EIS.[139] Section 1502.22

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[131] 40 C.F.R. § 1502.22(b); s*ee also Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 355 (1989) ("The amended regulation thus 'retains the duty to describe the consequences of a remote, but potentially severe impact, but grounds the duty in evaluation of scientific opinion rather than in the framework of a conjectural "worst case analysis."'") (quoting 50 Fed. Reg. 32,237).

[132] National Environmental Policy Act Regulations, 50 Fed. Reg. 32,234, 32,236 (Aug. 9, 1985).

[133] *See, e.g., Ctr. for Biological Diversity v. Bernhardt*, 982 F.3d 723, 738–40 (9th Cir. 2020) (rejecting agency's argument that estimating or summarizing foreign oil emissions was not possible when studies existed that provided the means to readily estimate foreign oil consumption); *Mid States Coalition for Progress v. Surface Transportation Board*, 345 F.3d 520, 549–50 (8th Cir. 2003) (discussing comments that identified available computer models that were widely used by utilities to forecast the effects of the rail project on coal consumption); *Environmental Protection Information Center v. Blackwell*, 389 F. Supp. 2d 1174, 1189 (N.D. Cal. 2004) (concluding the agency failed to apply available information about past timber sales to take a hard look at cumulative impacts from future sales in conjunction with the timber sale at issue).

[134] 50 Fed. Reg. at 32,237.

[135] 40 C.F.R. § 1502.24.

[136] *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)).

[137] *Found. for N. Am. Wild Sheep v. U.S. Dep't of Agric*., 681 F.2d 1172, 1179 (9th Cir. 1982).

[138] *Save Our Ecosystems v. Clark*, 747 F.2d 1240, 1249 (9th Cir. 1984).

[139] National Environmental Policy Act Regulations; Incomplete or Unavailable Information, 51 Fed. Reg. 15,618, 15,621 (Apr. 25, 1986) (citing 40 C.F.R. § 1502.16).

must be read in context of NEPA's other requirements to rigorously evaluate direct, indirect, and cumulative impacts of proposed agency action, and to evaluate alternatives to the proposed action and potential mitigation measures.[140] Thus, the regulation reinforces the agency's requirements to take a hard look at potential environmental impacts of agency action.

Further, section 1502.22's requirement that agencies evaluate impacts based on credible scientific evidence requires agencies to consider "a spectrum or range of impacts."[141] Thus, the agency is not only obligated to identify and disclose missing information but is also required to define the scope of its impacts' analysis in consideration of incomplete or unavailable information.[142]

If the *extent* of an impact is not measurable because of missing information, agencies are still required to assess the *nature* of the impact to the extent feasible.[143] And where there are information gaps or uncertainty in available studies, models, or analyses relevant to the agency's analysis of impacts and reasonable alternatives, the agency is obligated to affirmatively disclose this information.[144] This is part of the agency's obligation to disclose and analyze missing

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[140] 50 Fed. Reg. at 32,237; *see Ctr. for Biological Diversity*, 982 F.3d at 739–40 (citing the same proposition from the 1985 Federal Register notice and explaining how section 1502.22 contributes to defining the scope of impacts agencies are required to assess).

[141] 51 Fed. Reg. at 15,624; *see also San Luis Obispo Mothers for Peace v. Nuclear Regulatory Com'n*, 449 F.3d 1016, 1034 (9th Cir. 2006) (concluding section 1502.22 does not require agencies to consider worst-case scenario but does require them to consider full range of potential environmental impacts).

[142] *San Luis Obispo Mothers for Peace*, 449 F.3d at 1031–33; *see also Beverly Hills Unified School District v. Federal Transit Administration*, Case No. CV 12-9861-GW(SSx), 2016 WL 4650428 at *62–63, *70 (C.D. Cal., Feb. 1, 2016).

[143] *Mid States Coalition for Progress*, 345 F.3d at 532 (reasoning that "when the *nature* of the effect is reasonably foreseeable but its *extent* is not, . . . the agency may not simply ignore the effect"); *see also Ctr. for Biological Diversity*, 982 F.3d at 738 ("Even if the extent of emissions resulting from increased foreign consumption is not foreseeable, the nature of the effect is," which "is sufficient to require estimation or explanation under NEPA.") (citing *Mid States Coalition*, 345 F.3d at 459); *High Country Conservation Advocates v. United States Forest Service*, 52 F. Supp. 3d 1174, 1198 (D. Col. 2014) (concluding reasonably foreseeable effects "must be analyzed, even if the precise extent of the effect is less certain") (citing *Mid State Coalition*, 345 F.3d at 459–50).

[144] *See Lands Council v. Powell*, 395 F.3d 1019, 1031–32 (9th Cir. 2005) (holding the agency violated section 1502.22 when it relied heavily on a water impact model but failed to disclose how the model did not account for key variables related to the project's impacts on water flow and related systems); *Cabinet Resource Group v. U.S. Fish and Wildlife Service*, 465 F. Supp. 2d 1067, 1100 (D. Mont. 2006) (finding agency violated section 1502.22 when it relied on a grizzly bear habitat study and failed to "disclose and compensate" for information about inconsistencies with an earlier habitat study).

information.[145] And once the agency has disclosed that information is missing or incomplete, it remains obligated to determine the relevance of that information.[146]

In informal scoping comments, we explained that BLM needed to obtain appropriate baseline data for the project area, which was missing from the previous EIS.[147] That remains the case. BLM still has not obtained and analyzed adequate site-specific baseline information necessary to evaluate impacts of the project. BLM has also failed to engage in reasonable forecasting of impacts based on available or obtainable information and tools. As explained in further detail below, BLM should obtain, among other things, missing information before completing its analysis of the Willow Project. Such missing information includes but is not limited to baseline data about water resources in the project area, an assessment of wetland functions, background air quality data, information about the specific design of the Willow project, and reliable information regarding future development that would rely on Willow as a hub.

C. BLM's Purpose and Need Statement Fails to Account for the Agency's Statutory Obligations or Administrative Policy and is Unreasonably Narrow.

BLM issued a purpose and need statement for Willow that is almost identical to the statement that guided the agency in its failed analysis of alternatives in the 2020 EIS and ROD. The only substantive difference between BLM's prior statement in the 2020 EIS and the one in the DSEIS is that the agency appropriately acknowledges that it is not "required" to conduct oil and gas leasing and development in the Reserve.[148] Yet, despite this acknowledgment, the agency has again provided an unreasonably narrow statement of purpose and need for this federal action, which in turn has improperly limited the scope of the alternatives BLM has considered in the DSEIS.[149]

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[145] *See, e.g., Ctr. for Biological Diversity v. Bureau of Land Management*, 422 F. Supp. 2d 1115, 1165–66 (N.D. Cal. 2006) (faulting the agency for failing to include in the EIS "*any* statement that there is incomplete or unavailable information" to explain the agency's failure to identify endemic species in the management area).

[146] 40 C.F.R. § 1502.22(a); *National Mining Association v. Zinke*, 877 F.3d 845, 876 n.31 (9th Cir. 2017); *Montana Wilderness Ass'n v. McAllister*, 666 F.3d 549, 560–61 (9th Cir. 2011); *see also Native Village of Point Hope v. Salazar*, 730 F. Supp. 2d 1009, 1018 (D. Alaska 2010) (affirming it is the agency's burden to determine that missing information is relevant and essential) *rev'd in part sub nom Native Village of Point Hope v. Jewell*, 740 F.3d 489, 498 (9th Cir. 2014) (concluding the agency had "reasonably concluded that the missing information from the FEIS and SEIS [wa]s not 'essential' to informed decisionmaking at the lease sale stage.");

[147] *See* Alaska Wilderness League, *et al.* Comments, Re: Willow Master Development Plan Supplemental Environmental Impact Statement at 26–27 (Feb. 2, 2021) [hereinafter 2022 Informal Willow DSEIS Scoping Comments].

[148] *Compare* 1 DSEIS at ES-1 *with* 1 Bureau of Land Mgmt., Draft Environmental Impact Statement for the Willow Master Development Plan at 2 (2019) [hereinafter 2019 Willow Draft EIS].

[149] The EIS also still contains a statement that "BLM is required to conduct oil and gas leasing and development in the NPR-A" in its screening criteria appendix, 5 DSEIS, App. D.1 at 6, as

As it did in the 2020 EIS, BLM failed to characterize the purpose of its federal action according to its own legal mandates, including its broad authority and obligation to condition, restrict, and prohibit oil and gas activities as necessary to protect other resources. Instead, BLM again deferred to the project applicant's purpose and stated a purpose for the project that unreasonably narrows the range of alternatives that it must consider.[150] Similarly, BLM failed to consider the need for the federal action in light of its authority and obligations, the impending climate crisis and predicted reduced long-term demand for fossil fuels, and the commitments and policies of the administration directing its agencies to use the full capacity of the government to reduce emissions to avoid the most catastrophic impacts of climate change.[151] Additionally, the agency states that "BLM's purpose and need for the Willow EIS, [] is to evaluate the full development of the Willow reservoir,"[152] and as a result improperly conflates its own purpose and need with ConocoPhillips'.

NEPA's implementing regulations provide that an environmental document must "specify the underlying purpose and need to which the agency is responding in proposing the alternative including the proposed action."[153] This purpose and need inquiry is crucial for a sufficient environmental analysis because "[t]he stated goal of a project necessarily dictates the range of 'reasonable' alternatives."[154] An agency cannot define its objectives in unreasonably narrow terms without violating NEPA.[155] An agency also cannot rely on private interests of the project applicant to draft a narrow purpose statement that restricts the consideration of alternatives.[156] NEPA prevents federal agencies from effectively reducing the discussion of environmentally sound alternatives to a binary choice between granting and denying an application.[157] According to BLM's NEPA Handbook:

The applicant's purpose and need may provide useful background information,

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well as several other statements wrongly suggesting that BLM must authorize some version of the Willow project, *e.g.* 1 DSEIS at 7 ("BLM must allow access to at least some of the subsurface resource under all of CPAI's leases with a demonstrated development potential."); 5 DSEIS App. D.1 at 23 (screening criteria allowing the applicant to "'fully develop' the targeted oil and gas field.").

[150] *See Sovereign Iñupiat for a Living Arctic, et al. v. Bureau of Land Management*, 555 F. Supp. 3d 739, 768–69 (D. Alaska 2021) (rejecting assumption underlying BLM's purpose and need statement—that ConocoPhillips's leases grant it "the unfettered right to drill wherever it chooses [and] categorically preclude BLM from considering alternative development scenarios").

[151] *See* Executive Order 14008, Tackling the Climate Crisis at Home and Abroad, 86 Fed. Reg. 7619, 7622 (Jan. 27, 2021).

[152] 5 DSEIS, App. D.1 at 35.

[153] 40 C.F.R. § 1502.13.

[154] *Carmel-By-The-Sea v. U.S. Dep't of Transp.*, 123 F.3d 1142, 1155 (9th Cir. 1997).

[155] Id.

[156] *Nat'l Parks & Conservation Ass'n*, 606 F.3d 1058, 1072 (9th Cir. 2010).

[157] See, e.g., *Save Our Cumberland Mountains v. Kempthorne*, 453 F. 3d 334, 345 (6th Cir. 2006).

> but this description must not be confused with the BLM purpose and need for action. The BLM action triggers the NEPA analysis. It is the BLM purpose and need for action that will dictate the range of alternatives and provide a basis for the rationale for eventual selection of an alternative in a decision.[158]

In addition, the agency, in fashioning the purpose and need for a project, must consider the statutory context of the proposed action.[159] Agencies "should always consider the views of Congress, expressed, to the extent the agency can determine them, in the agency's statutory authorization to act."[160] Here, there are two statutes informing the project's purpose and need, the NPRPA and FLPMA.[161] Together, these statutes direct the agency to, among other things:

- Include "conditions, restrictions, and prohibitions" to "mitigate reasonably foreseeable and significantly adverse effects on surface resources"[162];
- Ensure "maximum protection" within Special Areas[163];
- Protect public land values including air and atmospheric, water resource, ecological, environmental, and scenic values, and to preserve and protect "certain public lands in their natural condition," and "food and habitat for fish and wildlife"[164];
- Account for "the long-term needs of future generations"[165];
- Prevent "permanent impairment of the productivity of the land and quality of the environment"[166]; and
- "[T]ake any action necessary to prevent unnecessary or undue degradation of the lands."[167]

Further, the agency should consider the purpose and need of a project in the context of objectives directed by executive authority.[168] Executive Order 14008, makes it the policy of the

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[158] BUREAU OF LAND MGMT., NATIONAL ENVIRONMENTAL POLICY ACT HANDBOOK H-1790-1, at 35 (2008), https://www.ntc.blm.gov/krc/uploads/366/NEPAHandbook_H-1790_508.pdf.
[159] *See Alaska Survival v. Surface Transp. Bd.*, 705 F.3d 1073, 1085 (9th Cir. 2013); *Nat'l Parks & Conservation Ass'n*, 606 F.3d at 1070.
[160] *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 196 (D. D.C. 1991).
[161] *See* DSEIS, Vol. I at ES-1; *see also infra* Legal/Policy V.A, E. (explaining BLM's FLPMA and NPRPA obligations relative to Willow).
[162] 42 U.S.C § 6506a(b).
[163] *Id.* § 6504(a); 43 C.F.R. § 3130.0-5(f).
[164] 43 U.S.C. §1701(a)(8).
[165] *Id.* § 1702(c).
[166] *Id.*
[167] *Id.* § 1732(b).
[168] *See, e.g., Backcountry Against Dumps v. Chu*, 215 F. Supp. 3d 966, 978 (S.D. Cal. 2015) (reasoning that NEPA and applicable executive order informed the broader considerations to be

government to reduce climate pollution in every sector of the economy, to work towards achieving net-zero emissions by 2050, and to make climate considerations an essential element of the Administration's national security planning.[169] This policy includes the United States rejoining the Paris Agreement, which commits parties to endeavoring to limit the increase in global average temperature to 1.5°C above pre-industrial levels.[170] These policies, along with the national and global reality of climate change, are also creating a declining need for fossil fuels to power our transportation needs and economy.[171]

In its purpose and need statement for the DSEIS, BLM entirely fails to include any recognition or application of its statutory mandates to restrict oil and gas activity as it determines necessary to protect other resources and to mitigate adverse environmental effects, making the same error it made in approving Willow the first time.[172] BLM appears to have ignored its statutory duty to protect surface resources or to mitigate against potentially permanent and catastrophic consequences. For example, BLM's purpose and need statement in no way reflects the urgency of the climate and biodiversity crises, which are particularly observable in Alaska's Arctic. BLM instead drafted a purpose and need statement that emphasizes only part of the statutory context giving BLM its authority, overlooking the agency's statutory mandates to weigh the impacts of development against the need to protect surface and other natural resources.

As commenters previously pointed out to the agency, the commitments made in Executive Order 14008, and elsewhere in the Administration's climate and energy policy, demonstrate a significant change in national climate policy, commitments that had not been made when Willow was approved under the prior Administration.[173] These policy commitments should be reflected in BLM's purpose and need statement for Willow, but they are not. Nor does

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included in the agency's development of the project's purpose and need); *Protect our Communities Foundation v. Jewell*, Case No. 13CV575 JLS (JMA), 2014 WL 1364453 at *3–*5 (S.D. Cal., March 25, 2014) (upholding purpose and need statement that reflected "statutory, executive, and administrative directives regarding the promotion of renewable energy on federal lands"); *Protect our Communities v. Salazar*, Case. No. 12cv2211-GPC(PCL), 2013 WL 5947137 at *4 (S.D. Cal. 2013); *see also* 1 DSEIS I at 4 (acknowledging the agency's obligation to consider applicable federal laws and executive orders); *id.* I at 43–44 (applying Executive Order 13990); *but see Morongo Band of Mission Indians v. F.A.A.*, 161 F.3d 569 (9th Cir. 1998) (rejecting argument that agency violated executive orders by failing to consider alternatives, because both executive orders at issue included provision stating they did not create a right to judicial review).

[169] 86 Fed. Reg. at 7,619, 7,622.

[170] *Id.* at 7,619.

[171] *See* Defenders of Wildlife, Willow SEIS Scoping Comment at 3–4 (March 9, 2022) (Defenders of Wildlife Scoping Comment).

[172] *See Sovereign Iñupiat for a Living Arctic, et al.*, 555 F. Supp. at 768–69 (concluding the agency's interpretation of its authority was "inconsistent with its own statutory responsibility to mitigate adverse effects on the surface resources").

[173] *See* Defenders of Wildlife Scoping Comment at 2–3.

BLM include an analysis of the need for Willow against the backdrop of the climate crisis and the diminishing need for new fossil fuel development projects.

By recognizing that it has only the authority, and is not required, to conduct oil and gas leasing and development in the Reserve, BLM has implicitly agreed with commenters' prior analysis — that BLM has clear, statutory obligations to condition or restrict oil and gas activity as it determines necessary to protect other resources and to mitigate adverse environmental effects.[174] Yet, rather than consider and apply that authority in its purpose and need statement, BLM has again uncritically deferred to ConocoPhillips' private interest in developing its purpose and need statement, and thereby, once again, unreasonably narrowed the range of alternatives that were considered in the EIS.

D. BLM's Range of Alternatives is Inadequate.

The draft SEIS fails BLM's legal obligation — and NEPA's core mandate — to study in depth and disclose the environmental consequences of reasonable alternatives to the proposed action.[175] The analysis of alternatives is the "heart" of an EIS.[176] An agency must "[r]igorously explore and objectively evaluate all reasonable alternatives" to a proposed action.[177] The purpose of the alternatives requirement is to analyze a variety of impacts and present a range of choices to the decision maker.[178] The "touchstone" of the inquiry is "whether an EIS's selection and discussion of alternatives fosters informed decision making and informed public participation."[179] Accordingly, the EIS must include an evaluation of "all reasonable alternatives," and provide the decision maker with a "range of alternatives" from which to select.[180] Consistent with NEPA's basic policy objective to protect the environment, this includes environmentally protective alternatives.[181] It also includes reasonable alternatives submitted by the public at scoping.[182] "The existence of a viable but unexamined alternative renders an [EIS] inadequate."[183] 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

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174 *See* 2022 Willow DSEIS Informal Scoping Comments at 17–18.
175 *See* 42 U.S.C. § 4332(2)(C)(iii); 40 C.F.R. § 1508.1(z) (CEQ revision to the definition of "reasonable alternatives").
176 40 C.F.R. § 1502.14.
177 *Id*. § 1502.14(a).
178 *Id.* §§ 1502.14, 1505.1(e).
179 *State of Cal. v. Block*, 690 F.2d 753 (9th Cir. 1982) (citation omitted).
180 40 C.F.R. §§ 1502.14(a), 1505.1(e).
181 *Id.* § 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).
182 *See* 40 C.F.R. §§ 1501.7, 1502.1.
183 *Mont. Wilderness Ass'n v. Connell*, 725 F.3d 988, 1004 (9th Cir. 2013) (quotations and citation omitted).

alternative that is outside the legal jurisdiction of the lead agency must still be analyzed in the EIS if it is reasonable."[184]

Here, BLM should design and analyze alternatives so that they inform its decision whether to approve ConocoPhillips's current proposal. Consistent with NEPA regulations, the alternatives should sharply define the significant impacts of ConocoPhillips' proposed development plan.[185] To do this, the alternatives should vary the development components that cause significant effects. For example, BLM could develop alternatives that assess roadless development, winter-only operations, and delaying or staging production until introducing more oil into the market would be consistent with climate goals. These alternatives would sharply define the impacts of the current proposal's roads, year-round operations, and greenhouse gas emissions. So designed, alternatives would highlight and bring into sharp definition the proposal's unacceptable impacts and alternative ways of developing oil that could reduce those effects.

Instead, BLM failed to design and assess alternatives that fulfil this core NEPA requirement. Rather, BLM assessed only a narrow range of action alternatives that are modest variations of ConocoPhillips' preferred development design. All of the action alternatives involve essentially the same pad size and placement, the same road and/or pipeline alignments (where an infield road is proposed), the same amount of infrastructure at the new Willow processing facility, the use of modules delivered via barge, a new airport west of Nuiqsut, two gravel mines inside the Ublutuoch (Tiŋmiaqsiuġvik) River 0.5-mile setback; infrastructure within the Colville River Special Area; and infrastructure inside of the Teshekpuk Lake Special Area. BLM unreasonably limited its range of alternatives such that all of the action alternatives are predicted to have similar impacts as ConocoPhillips' proposed action.

Rather than meaningfully assess differences among action alternatives that BLM did consider, BLM appears to merely parrot a conclusory statement throughout its DSEIS when describing alternative E's potential to reduce impacts to a wide range of resources:

> If BT5 construction is deferred beyond Year 7, the anticipated impacts related to BT5 would be delayed, resulting in extended temporal impacts, although the severity or intensity of the impacts would be lessened due to there being less overall Project activity (i.e., other construction activity) occurring simultaneously.[186]

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[184] 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).

[185] 40 C.F.R. § 1502.14 (explaining agencies 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").

[186] 1 DSEIS at 10, 49, 81, 90, 121, 138, 157, 208, 232, 246, 256, 290, 305, 319.

Such conclusory statements do not constitute a meaningful analysis of differences among alternatives.

Given the opportunity to reassess ConocoPhillips' proposal anew, BLM instead has largely adopted the alternatives analysis of the prior EIS, adding a single new alternative, and summarily rejecting newly proposed alternatives on similar, flawed bases as the prior EIS. It is not sufficient for BLM to simply add a single new alternative to the SEIS— the agency should have started from scratch to fully consider reasonable alternatives that would mitigate and protect the Reserve's resources and values. This is particularly concerning since the new alternative still appears to leave the door open for functionally the same level of development as was previously proposed and authorized. The new alternative provides no guarantee that ConocoPhillips would not ultimately come back and ask to develop BT4 or the equivalent, and the deferral for the BT5 pad merely creates uncertainty about the scope and timing of that piece of the development — rather than being a mitigation measure that meaningfully reduces the impacts of ConocoPhillips' overall proposal.

Moreover, BLM failed to identify a preferred alternative in the draft SEIS despite the agency having identified Alternative E as its preferred alternative. "Unless another law prohibits the expression of a preference, the draft environmental impact statement should identify the bureau's preferred alternative or alternatives, if one or more exists."[187] An initial version of the draft SEIS posted to BLM's ePlanning website expressly identified Alternative E as BLM's preferred alternative; this version was abruptly switched the same day with no explanation. More formally, BLM identified Alternative E in its biological assessment to FWS, seeking to consult on it as the agency's preferred alternative.[188] Because BLM identified a preferred alternative, it was obligated under NEPA to make that preference clear in the draft SEIS. Its failure to do so violates NEPA.

To be clear, we believe a robust analysis will demonstrate that the only alternative that is consistent with the need to address the climate emergency and its impacts to the Reserve, protect biodiversity, and otherwise best serve the needs of the public is the no action alternative. Given the administration's commitments to address these issues, BLM must thoroughly consider, and should select, the no action alternative. The no action alternative would also avoid significant, permanent harm to the community of Nuiqsut, avoiding the myriad environmental justice, public health, sociocultural, and subsistence impacts from Willow. As the District Court and Ninth Circuit found, the harms to Nuiqsut subsistence users from even a single season of winter construction activities would have been significant and irreparable.[189] As discussed below, BLM has the authority to adopt the no action alternative for Willow.

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[187] 43 C.F.R. § 46.425.

[188] Bureau of Land Mgmt., Biological Assessment for the Willow Master Development Plan Submitted to the U.S. Fish and Wildlife Service at 1, 3 (June 2022) ("This BA describes the BLM's preferred alternative and preferred module delivery option… this BA reflects the following changes to the proposed action…[description of alternative E].").

[189] *Sovereign Iñupiat for a Living Arctic v. Bureau of Land Mgmt*., 555 F. Supp. 3d 739, 753–54 (D. Alaska 2021); *Sovereign Inupiat for a Living Arctic v. BLM*, Nos. 21-35085, 21-35095, 2021

1. BLM improperly dismisses the no action alternative.

NEPA and Council on Environmental Quality (CEQ) regulations mandate that the agency consider a no-action alternative in all environmental reviews.[190] The no-action alternative provides a baseline against which the effects of the action alternatives may be measured.[191] Groups advised BLM during scoping that BLM should closely analyze and consider a no-action alternative in the draft SEIS, and not merely pay it lip service.[192]

While BLM removed language asserting that it cannot choose the no action alternative, it still fails to treat the alternative as a viable option. For example, the only purpose it identifies for the alternative is "for baseline comparison."[193] BLM also plainly states that "[a]lternative A is included in the analysis for baseline comparison, but BLM does not have the authority to select this alternative because CPAI's leases are valid and provide the right to develop the oil and gas resources therein."[194] BLM's repeated statements that it must allow development of economically viable oil on each lease also belie its view that selecting the no action alternative is not a serious option. The agency's initial release of a draft DSEIS that retained additional statements that it could not choose the no action alternative underscores the problem further, as does the agency's statements regarding its limited authority to delay or restrict development found in appendices to the EIS. BLM states that it could not delay permitting Willow because "BLM is required by the NPRPA to administer an 'expeditious' program of oil and gas leasing (42 USC 6506a(a)) and may not deny development."[195] BLM further asserts that restrictions on development are inconsistent with the company's leases and "BLM may not categorically prohibit development of other leases as a condition of the developing the Willow reservoir."[196] Such statements are unsupported by the language in applicable law and regulations, and ConocoPhillips' leases.

BLM is interpreting its authority too narrowly when it comes to protecting the Reserve's environment and people in its analysis of the Willow project. BLM has broad authority under the

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U.S. App. LEXIS 28468, at *6 (9th Cir. Feb. 13, 2021); *Sovereign Iñupiat for a Living Arctic v. BLM*, No. 3:20-cv-00290-SLG, 2021 U.S. Dist. LEXIS 22809, at *6–*9 (D. Alaska Feb. 6, 2021).

[190] 42 U.S.C. § 4332(2); 40 C.F.R. § 1502.14(d).

[191] *See Ctr. for Biological Diversity v. U.S. Dep't of Interior*, 623 F.3d 633, 642 (9th Cir. 2010) (explaining that the no-action alternative is meant to be a baseline against which the agency evaluates the action alternative, and rejecting a conclusion by BLM that the environmental consequences of an action and no action alternative would be the same).

[192] 2022 Informal Willow DSEIS Scoping Comments at 14.

[193] 1 DSEIS at 8.

[194] 8 DSEIS, App. G at 4.

[195] 5 DSEIS at 38. To be clear, BLM's obligation to "hold an expeditious program of competitive leasing" is not determinative of the question presently before the agency — whether BLM should permit the Willow Project — because the relevant legal mandates concerning the present question are the agency's authority to condition, restrict, or reject a development proposal.

[196] *Id*.

Reserve's statutory and regulatory authorities to condition, restrict, or altogether prohibit activities and is obligated to protect the Reserve's surface values.[197] ConocoPhillips' rights under their leases are still subject to and cabined by BLM's authority to restrict or prohibit activities.[198] ConocoPhillips' rights as a lessee cannot and do not limit BLM's own statutory and regulatory obligation to protect the Reserve's surface resources, and ConocoPhillips has fair warning of BLM's authority to limit their activities on Willow, which is clear in the applicable regulations and reiterated in the company's leases.

The Alaska District Court made this point clear in its Willow decision. There, the court found that BLM improperly deferred to ConocoPhillips and concluded — contrary to what BLM argued — the agency can restrict ConocoPhillips' Willow proposal. The Court specifically rejected BLM's assumption in the prior Willow EIS that ConocoPhillips' leases grant it "the unfettered right to drill wherever it chooses" and that BLM's interpretation of its authority was "inconsistent with its own statutory responsibility to mitigate adverse effects on the surface resources."[199] BLM should not repeat this mistake in its new decision. BLM has the authority to adopt the no action alternative and an obligation to condition, restrict, and prohibit oil and gas activity as necessary to protect other resources.[200]

Moreover, as explained further below, BLM did not conduct a site-specific analysis when issuing ConocoPhillips' leases under the 2013 IAP EIS.[201] The 2013 IAP EIS is programmatic, not site-specific, meaning BLM could not make an irretrievable commitment of resources when issuing those leases. Thus, BLM cannot be precluded from selecting the no action alternative at this site-specific stage of its NEPA analysis.

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[197] BLM must include or provide conditions and restrictions on oil and gas activities, and may even prohibit activities within the Reserve, to protect the Reserve's surface resources. 42 U.S.C. § 6506a(b). This includes activities on existing leases. 42 U.S.C. § 6506a(k)(2). *See also* 43 C.F.R. § 2361.1(a), (e)(1); *see id.* § 3162.3-1(h)(2).

[198] BLM's regulations provide for suspension of and gas activities on leases to mitigate reasonably foreseeable and significantly adverse effects on the Reserve's surface values. 43 C.F.R. § 3135.2(a)(1), (3). BLM can deny or delay approval for an application for permit to drill 43 C.F.R. § 3162.3-1(h)(2), (3).

[199] *Sovereign Iñupiat for a Living Arctic v. Bureau of Land Mgmt*., 555 F. Supp. 3d 739, 769 (D. Alaska 2021) (citing 42 U.S.C. § 6506a(b)). BLM's mandates to protect resources overcome any lease rights ConocoPhillips may to develop, as ConocoPhillips took its leases subject to BLM's statutory and regulatory duties.

[200] *See, e.g.*, *Agdaagux Tribe of King Cove v. Jewell*, 128 F. Supp. 3d 1176, 1194 (D. Alaska 2015) (holding that an agency may choose the no-action alternative and that the "agency's decision may be based on any relevant considerations of law or policy . . . as long as [those considerations] are explained in the decision document"); *see also N. Alaska Evtl. Ctr. v. Kempthorne*, 457 F.3d 969 (9th Cir. 2006) (noting applications for exploration by lessees will be subject to a period of review before being accepted, rejected or modified by the Secretary); *see also* 43 C.F.R. § 3162.3-1(c).

[201] *Infra* Scope Deficiencies IV.C.

The draft EIS must be supplemented and re-released for public comment after BLM has included meaningful consideration of the No Action alternative.

2. BLM still improperly constrains its consideration of alternatives.

BLM improperly restricted the alternatives it considers in the DSEIS in a number of ways, contrary to its statutory obligations and the District Court's decision. First, although it removed statements improperly alleging that it must allow ConocoPhillips to develop all the oil and gas on its leases, it has adopted a functionally indistinguishable position — that "BLM may not permit a development proposal that would strand an economically viable quantity of oil; however, this does not require 100% resource extraction."[202] BLM seems to be saying that it needs to let ConocoPhillips develop all the oil ConocoPhillips thinks is profitable to develop. As described above, this assertion is incorrect. BLM relied on this incorrect assertion to constrain the alternatives it considered. For example, BLM rejects a reduced-pad alternative on the basis that it would "not allow [ConocoPhillips] to exercise their rights under their leases to develop the oil and gas within the leased areas."[203] BLM summarily rejects several other alternatives based on this same flawed understanding of its authority.[204] By relying on a flawed conclusion that ConocoPhillips has a right to develop economically viable oil on all its leases to reject reasonable alternatives, BLM's alternatives analysis suffers from the same type of flaw as the original EIS.[205]

Second, BLM misapplied screening criteria that it used to determine whether to fully evaluate proposed alternatives.[206] One of the screening criteria is whether the alternative meets the purpose and need.[207] As described in more detail above, BLM persisted in mis-defining its purpose and need for the EIS by conflating ConocoPhillips' purpose for the project with BLM's purpose.[208] A project's purpose cannot be defined in a manner that "unduly restrict[s] a reasonable search for potential practicable alternatives."[209] Because the purpose and need statement is too narrow, the range of alternatives unduly restricts inclusion of other potential reasonable and practicable alternatives. BLM must remedy this flaw and reassess its range of alternatives in light of a corrected purpose and need.

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[202] 1 DSEIS, vol. 1 at 8.
[203] *Id*. at 20.
[204] 5 DSEIS, App. D.1 at 27–30 (rows 43, 44, 46, 53, 54).
[205] *Sovereign Iñupiat for a Living Arctic*, 555 F. Supp. 3d at 769 (noting "[t]o the extent BLM relied on [the flawed assertion that CPAI has a right to develop all oil on its leases] to not examine other alternatives, its alternatives analysis was inadequate"). *See also Western Organization of Resource Councils, et al. v BLM*, 4:20-cv-00076-GF-BMM (D. Mont. Aug. 3, 2022) (rejecting BLM resource management plan EIS that failed to consider alternatives reducing the amount of coal available for lease).
[206] 5 DSEIS App. D.1 at 6.
[207] *Id*.
[208] *Supra* Legal/Policy IV.C. (explaining DSEIS has flawed purpose and need).
[209] *See Sierra Club v. Flowers*, 423 F. Supp. 2d 1273, 1353 (S.D. Fla. 2006).

Third, another of the screening criteria is whether an alternative is "feasible . . . from a technological or economic standpoint."[210] BLM mis-applied this criterion in several ways. In some instances, BLM relied substantially on ConocoPhillips' self-interested representations of what it thinks is feasible without conducting and explaining its own analysis. A clear example of this improper approach is BLM's decision to omit consideration of a roadless development plan.[211] Its explanation for why it rejected this alternative without further consideration is that "[ConocoPhillips] conducted internal examinations of" this concept and they "were not further evaluated by the BLM or cooperating agencies as they had been sufficiently described and dismissed based on [ConocoPhillips'] initial evaluation."[212] This level of deference to the project proponent does not satisfy NEPA.[213] More generally, BLM failed to describe the factors it considers in determining independently whether a proposed alternative is economically and technologically feasible.[214] Without a description of the parameters BLM uses for making its independent judgment about feasibility, it is impossible for the public or decision-maker to assess the rationality of BLM's conclusions. The Ninth Circuit highlights that "an applicant cannot define a project in order to preclude the existence of any alternative sites and thus make what is practicable appear impracticable."[215] This also violates basic Administrative Procedure Act principles and is unlawful.

Fourth, BLM screened alternatives based on whether they "have the potential to support reasonably foreseeable future development."[216] It is not at all clear why this is a factor or what the parameters of "reasonably foreseeable future development" actually encompass. The factor seems to be another example of BLM catering to the applicant rather than proceeding consistent with its own policies and legal mandates because this approach violates NEPA. BLM is evaluating a proposal for a single (albeit expansive) development project. If the proponent foresees additional development, the proponent should include the development in this proposal and be clear about the scope of the development it is attempting to accommodate via this infrastructure. BLM also should evaluate the impacts of that additional development potential, which it hasn't done here — particularly where BLM solely considers alternatives that would cater to such additional development. BLM cannot have it both ways under NEPA: they cannot reject alternatives that would not support future production but at the same time not require information from ConocoPhillips to conduct an analysis of impacts from such future production.

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[210] 5 DSEIS App. D.1 at 6
[211] *Id*. at 55.
[212] *Id*.
[213] *Simmons v. U.S. Army Corps of Engineers*, 120 F.3d 664, 669 (7th Cir. 1997) ("An agency cannot restrict its analysis to those 'alternative means by which a particular applicant can reach his goals'. . .. The Corps has the 'duty under NEPA to exercise a degree of skepticism in dealing with self-serving statements from a prime beneficiary of the project.'").
[214] *See* 40 C.F.R. § 1508.1(z) ("Reasonable alternatives means a reasonable range of alternatives that are technically and economically feasible, and meet the purpose and need for the proposed action.").
[215] *Sylvester v. U.S. Army Corps of Engineers*, 882 F.2d 407, 409 (9th Cir. 1989).
[216] 5 DSEIS App. D.1 at 6.

Further, BLM must be transparent in identifying what reasonably foreseeable future development the agency is considering when constraining its range of alternatives. It is not clear what reasonably foreseeable future development BLM is referring to, as Figure 3.19.1 only shows the Willow Project itself along with pads for Greater Willow 1 and 2, but does not show any further development west of Willow.[217] It is unclear whether BLM solely considered Greater Willow 1 and 2 for purposes of screening out alternatives, or whether the agency is seeking to enable further expansion by ConocoPhillips' or other companies. As discussed later in these comments, various project elements indicate ConocoPhillips' infrastructure is intended to accommodate development beyond just those two additional pads and its current proposal. It is unreasonable for BLM to screen out alternatives that may have environmental benefits simply because they do not grease the skids for ConocoPhillips' or other companies to expand westward into the Reserve. Additionally, this screening criterion is no way tied to the federal purpose and need. Instead, it appears to be in direct conflict with BLM's obligations under NEPA to consider a reasonable range of alternatives, BLM's NPRPA obligations to provide maximum protections for surface values, BLM's obligations under FLPMA to cause no unnecessary or undue degradation of public lands, and the Corps' obligations under the CWA.

Fifth, another criterion — relative environmental effects — raises serious questions about how the BLM evaluated the environmental impacts of potential alternatives outside of the NEPA process. We reiterate that differences in resource impacts among alternatives are meant to be considered in the NEPA analysis itself, not discussed behind closed doors by BLM in close coordination with the project applicant as a means to eliminate alternatives from consideration. There is no discussion as to how BLM quantified any of the differences for the alternatives it is still refusing to consider in the supplemental draft EIS, or why the BT2N alternative is the only new alternative component up for consideration. Section 3.1.5 of Appendix D describes Alternatives Screening Criteria used by BLM and the cooperating agencies in developing the draft EIS, where BLM attempts to explain why the agency did not consider a reasonable range of alternatives that are meaningfully different from ConocoPhillips' proposed action.[218] The draft SEIS states that BLM considered whether potential alternatives would achieve the following before considering them further:

- Reduce the overall Project footprint (i.e., direct impacts from facilities)
- Reduce potential human health impacts (especially those relating to air quality and subsistence)
- Reduce impacts to wildlife, subsistence resources (especially caribou), and subsistence use areas
- Reduce risks related to spills or other accidental releases
- Reduce impacts to water resources and floodplains, including marine habitat[219]

There is no discussion as to how BLM quantified any of these differences, which is particularly relevant for issues related to the project footprint, air quality, and impacts to wetlands. Table D.3.2 in the draft SEIS appears to be the agency's attempt to address some of

[217] 3 DSEIS at Fig. 3.19.1.
[218] 5 DSEIS App. D.1 at 7.
[219] *Id*. at 7.

these criteria; however, it only provides a few brief sentences that do not explain all of these bullet points. Nor is it clear where any of this information originated and there are no citations for the assertions. In short, the public cannot evaluate BLM's decisions about which alternatives to consider and which to not carry forward.

Finally, BLM largely retained the prior EIS's alternatives and framework for assessing alternatives. The problem with BLM relying on the prior EIS for purposes of alternatives development is plain: the agency improperly limited its consideration of reasonable alternatives at the outset of the prior NEPA process. In the prior EIS process, BLM improperly dismissed alternatives before the NEPA process had even begun, based on ConocoPhillips' "initial evaluation."[220] As a result, BLM should have started from scratch in developing new alternatives rather than use the prior EIS as a starting point.

For example, the prior draft EIS characterized ConocoPhillips' proposal to barge modules to Oliktok Dock for transport over the Colville River via ice routes and existing infrastructure "unfeasible" and stated that it "could not be implemented."[221] But that is what is now proposed. The prior supplemental EIS and the current DSEIS offer no explanation as to how the safety concerns, allegedly egregious environmental consequences, and lack of economic feasibility outlined in the 2019 draft EIS are no longer at issue or have been mitigated to such an extent as to warrant inclusion of this alternative in the DSEIS. It is therefore deeply troubling that BLM did not take the time to parse through a new range of reasonable alternatives to independently determine which ones might be feasible and capable of implementation, rather than continuing to defer to ConocoPhillips' assertions.

In the prior process, BLM also improperly weighed ConocoPhillips' economic considerations in screening out alternatives, and it appears the agency has committed this error again by limiting its consideration of new alternatives to a single drill pad in the TLSA. A draft EIS must give "full and meaningful consideration to all reasonable alternatives" to the action.[222] The alternatives considered may not be entirely driven by a private applicant's preferences.[223] In particular, it is not clear where BLM drew the line for economic practicability. Indeed, there is no clarification as to which alternatives were eliminated due to cost considerations. The prior draft EIS expressly mentioned economic practicability in discarding alternatives which would require construction of a bridge over the Colville River,[224] which is now ConocoPhillips' preferred approach, and use of medium-sized modules for barging.[225] BLM should explain what those differences in costs are that led the agency to conclude such a version of the project would be impracticable. If other alternatives were eliminated due to cost projections, the DSEIS must

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[220] 4 2019 Willow Draft EIS App. D at Section 3.1.5.
[221] *Id*. at 14.
[222] 42 U.S.C. § 4332(2)(E); 40 C.F.R. § 1508.9(b).
[223] *See* Forty Most Asked Questions Concerning Council on Environmental Quality's NEPA Regulations, 48 Fed. Reg. 18,026 (March 16, 1981) ("[T]he emphasis is on what is 'reasonable' rather than on whether the proponent or applicant likes or is itself capable of carrying out the particular alternative.").
[224] 3 2019 Willow Draft EIS App. D at 11.
[225] *Id.* at 14.

identify those in a transparent manner. Moreover, it is hard to see why the transportation of modules over the Colville River via ice bridge is a component in every action alternative given its environmental impacts and the shortening of the ice road season due to the climate change, if not for insistence by the project applicant.

As a result, carrying over this improper dismissal of alternatives based on ConocoPhillips' preferences during the prior EIS process has infected the alternatives development process in the current EIS.

We encourage BLM to revisit its screening criteria and overall approach to alternatives and revise its EIS to include a range of alternatives that are meaningfully different from ConocoPhillips' application and reflect the agencies' legal obligations under the NPRPA, NEPA, and other statutes.

3. BLM provided arbitrary reasons for rejecting reasonable alternatives.

BLM also rejected new alternatives proposed during the prior EIS process and informal scoping process for its DSEIS.[226] Many of the rationales it provides for not considering alternatives further are flawed.

For example, BLM rejects the elimination of drill sites BT4 and BT5 on the basis that the alternative does not meet the project's purpose and need, would be inconsistent with ConocoPhillips' lease rights, and would strand oil.[227] It rejects an alternative that would eliminate infrastructure from the Teshekpuk Lake Special Area and place BT2 south of Fish Creek on the basis that these alternatives would not allow enough access to economically viable resources on ConocoPhillips' leases. These rationales are flawed for a number of reasons that highlight significant and fundamental problems with BLM's approach to its alternatives development: BLM has mis-defined its purpose and need; ConocoPhillips' leases subject its rights to develop oil to BLM regulations, and those regulations provide BLM the authority to limit activities on leases; and neither the NPRPA, nor BLM's regulations, nor the leases obligate BLM to permit ConocoPhillips' to develop all economically viable oil on its leases.

Fundamentally, the DSEIS alternatives analysis is utterly lacking because it only presents ConocoPhillips' proposed action with minor variations in the presence or absence or road connections and modest drill site variations, and the no action alternative. The only substantive difference between any of the action alternatives is the presence or absence of one of two drilling pads in the Teshekpuk Lake Special Area. This does not satisfy NEPA's requirements for a reasonable range of alternatives.[228] A reasonable range of alternatives must include more than just a few variations on where relatively short infield roads may be placed.

A reasonable range of alternatives should have evaluated, at a minimum:

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[226] 5 DSEIS App. D.1 at at 11–14.
[227] *Id.* at 28 (table row 43).
[228] *Muckleshoot Indian Tribe v. U.S. Forest Serv.*, 177 F.3d 800, 814 (9th Cir. 1999) (finding that the review of two virtually identical action alternatives and a no action alternative was not sufficient under NEPA).

- An alternative where only existing roads, as well as ice roads, are used for construction and operation of the Willow project;
- An alternative considering seasonal (i.e., winter-only) drilling;
- An alternative eliminating infrastructure from within the Teshekpuk Lake Special Area and Colville River Special Area;
- An alternative considering a different gravel mine location;
- Any alternative configurations for the layout, size or location of project's drilling pads or the Willow Central Processing Facility;
- Any alternative considering a substantially reduced footprint and reduced total oil production;
- Any alternative using an existing airstrip rather than construction of at least one new airstrip for the Willow project;
- Use natural gas and renewable energy for Project purposes with minimal backup diesel, rather than relying on diesel for facility operations, eliminating the need for diesel pipelines; and
- Delayed production consistent with climate policy.

Several of the above-listed options were improperly eliminated by BLM during the aforementioned screening process for the prior DEIS but were never subjected to an actual NEPA analysis by BLM. Other options were screened out during the current DSEIS process with minimal justification for avoiding their analysis and without out any support for doing so. This screening process, which purported to assess varying impacts from project changes absent input from the public, affected communities, and experts, does not fulfill NEPA's requirement that BLM actually consider and evaluate alternatives. Evaluating proposed alternatives based on differing impacts is precisely the sort of analysis that is meant to be carried out during the NEPA process. BLM is not limited to the project descriptions described by ConocoPhillips and is legally obligated to explore and evaluate reasonable alternatives in its EIS beyond those identified by the project proponent. BLM has failed to do this.

Table D.3.6 in the draft SEIS and the text boxes that follow summarize BLM's rationale for eliminating a host of alternatives without full consideration. In this table, BLM disposes of 16 "alternative components," in addition to other alternatives dismissed during the prior EIS process,[229] with merely a few sentences each. An agency must "[r]igorously explore and objectively evaluate all reasonable alternatives" to a proposed action.[230] Though an agency must briefly discuss the reasons for eliminating alternatives,[231] here BLM dismisses many alternatives that should have been subject to a NEPA review to determine their potential environmental tradeoffs, and to allow for public comment and input on the potential benefit of these alternatives over ConocoPhillips' proposed action. An additional problem with BLM's truncated responses for not carrying alternatives forward is the fact that there is no record basis for its conclusions. For BLM to reject alternatives, its basis must be explained and supported by the record.

[229] 5 DSEIS, App. D.1 at Table D.3.3.
[230] 40 C.F.R. § 1502.14(a).
[231] *Id*.

Seasonal Drilling: As groups pointed out during scoping,[232] BLM should have considered a roadless alternative that provides for winter season-only drilling, similar to what takes place at Colville Delta 3 (CD-3). Development that avoids drilling during the snow-free months would mitigate industrial disturbance impacts on nesting birds, caribou fall migration, and summer/fall subsistence activities during these critical times. It also would reduce well blowout risks to open water in wetlands and floodplains. In dismissing this alternative without analysis, BLM recognized that a well blowout has never occurred outside of active drilling.[233] Moreover, automatic shut-off valve requirements for pipelines, as well as effective and redundant leak detection, would greatly reduce the need for a road to address potential pipeline spills. Year-round drilling activity is likely to involve additional infrastructure, increased impacts from flights, more noise and pollution, and other impacts that would not necessarily be present for a seasonal roadless alternative.

Drill rigs for a seasonal drilling alternative potentially can be shared in the non-drilling months with ConocoPhillips at other pads, or with another operator (e.g., Oil Search on state lands) to greatly reduce operator costs (similar to what was done when constructing the roadless drillpad, CD-3). Seasonal drilling should have been considered as an alternative, particularly given the vast amount of gravel resources contemplated for this project. Such an operation would likely have the fewest impacts on aquatic ecosystems, which is relevant for the Corps' permitting requirements to identify and select the least environmentally damaging practicable alternative.

The sole justification offered by BLM for refusing to consider a seasonal roadless alternative is purported concerns regarding worker safety due to a lack of water access between project infrastructure. But it is not clear how BLM projected the possibility of such risks occurring during the summer months when drilling is not occurring and activity on various pads would presumably be low. Nor does BLM explain why other fairly standard medical evacuation procedures, such as helicopters, could not be used should a spill or other harmful event occur on one of Willow's gravel pads. It is also unclear why a reasonable alternative raised by the public during scoping was disregarded by the agency in this manner, especially where BLM has considered such alternatives in prior NEPA processes for development projects, such as GMT-1.[234] Notably, BLM did not assert that such an alternative would be impracticable from an economic standpoint; the agency's basis for ultimately rejecting such an alternative in the GMT-1 decision. BLM should revise its draft EIS and reissue it so that the public has a chance to weigh in on a seasonal drilling alternative and understand the potential costs and benefits.

Avoiding Infrastructure in Special Areas: BLM failed to analyze any alternative which would eliminate drill sites in the Teshekpuk Lake Special Area or road and pipeline routing

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[232] Willow DSEIS Informal Scoping Comments at 19–20.
[233] 5 DSEIS, App. D.1. at 34.
[234] 1 GMT-1 Final SEIS at 76 ("Alternative D2 was not analyzed in the Draft SEIS, but has been included in the Final SEIS as a result of public comments to include a seasonal drilling alternative. Alternative D2 is very similar to Alternative D1, except that Alternative D2 allows only seasonal drilling (February – April) when an ice road is available between GMT1 and CD5. Operation (i.e., production) (after first oil) would be year-round, as in Alternative D1.").

through the Colville River Special Area. This is inconsistent with BLM's obligations under both NEPA and NPRPA.

BLM's justification for refusing to consider an alternative which removes infrastructure in the Teshekpuk Lake Special Area are grounded in concerns for ConocoPhillips' ability to recover oil and gas resources from its leases. As explained above, this screening criteria is at odds with one of the reasons the District Court rejected BLM's prior EIS.[235] By relying on a flawed conclusion that ConocoPhillips' has a right to develop economically viable oil on all its leases to reject reasonable alternatives, BLM's alternatives analysis suffers from the same type of flaw as the original EIS.

BLM also appears to reject this potential alternative because it would not allow for future development: "This concept would completely eliminate access to oil and gas resources in several BTU leases located in the TLSA [and] substantially reduce access to such resources in additional BTU leases located in the TLSA."[236] It is unclear whether BLM is rejecting this alternative because it would preclude the company from accessing oil and gas resources associated with Willow's pads, or whether this it out of concern for ConocoPhillips' ability to engage in further expansion of development from Willow. At a minimum, BLM should clarify this point. Regardless, rejecting consideration of this alternative for either reason would be a violation of NEPA and contrary to the NPRPA. Limiting ConocoPhillips' ability to place infrastructure in that area because of the potential for serious impacts is fully consistent with BLM's authority under the NPRPA and ConocoPhillips' lease terms.

As described herein, both of these Special Areas have very important wildlife, subsistence, and scenic values. As EPA recognized in its scoping comments, technology is improving such that additional areas can be accessed by directional drilling, allowing wells to be placed further from potential oil and gas resources.[237] BLM should have considered the environmental benefits to caribou, birds, and other wildlife from avoiding the placement of ConocoPhillips' massive infrastructure pads within an area BLM has identified as deserving the maximum protection of surface values. A failure to consider such an alternative is a clear shortcoming of this draft SEIS, which must be revised.

Elimination of Modules: BLM fails to consider any alternative that does not involve construction of an ice bridge over the Colville River to transport massive modules. The DSEIS considers making upgrades to the Oliktok Dock so that it can serve as a module transfer island. The draft SEIS does not sufficiently explain why Willow could not be constructed on-site and using existing infrastructure (meaning not constructing an annual ice bridge), but only points to what appears to be a preference by ConocoPhillips to use modules to transport already-assembled components to the project area. The DSEIS asserts that ConocoPhillips cannot construct Willow without use of modules because this would require significantly larger gravel pads if construction of the CPF occurs in summer, and that such work cannot occur in winter

[235] *Supra* Legal/Policy IV.D.2. (describing improper screening criteria).
[236] 5 DSEIS, App D.1 at 35.
[237] U.S. Environmental Protection Agency, Ltr. to Bureau of Land Management (March 9, 2022).

because workers would be outside in cold temperatures.[238] But BLM does not explain why such winter weather conditions would preclude construction of the CPF but are otherwise acceptable for nearly all other construction activities associated with Willow, including but not limited to gravel mining and construction of the project's roads, pads, airstrip(s), and bridges.

As explained further below, barging of modules, changes to the Oliktok Dock, and the plan to conduct extensive screeding of the sea floor to accommodate the barges will create significant impacts to marine life. Hauling massive modules through the Teshekpuk Lake Special Area will also create significant impacts to this important habitat area. BLM cannot dismiss alternatives simply because the company wishes to construct its mega-facility offsite to preserve its bottom line. BLM is obligated under NEPA to consider reasonable alternatives to ConocoPhillips' proposal. Evaluating the environmental tradeoffs of ConocoPhillips using the infrastructure on the North Slope that already exists and that ConocoPhillips used to construct Alpine, including GMT 1 and 2, is eminently reasonable.

Indeed, BLM should not have dismissed this alternative without considering important questions regarding environmental tradeoffs. Could concerns regarding the need for workers to stay warm during winter be addressed through similar means as all other winter construction? Additionally, what about the benefits to Alaska in terms of jobs if small or no modules were used, negating the need for an ice bridge, and then the project components could be connected and constructed onsite at Willow? What about the offsets to impacts to marine mammals, which will be negatively impacted by the barging and transport of modules? What are the environmental benefits of avoiding the need for an unproven ice bridge over the Colville River? Statements about resource impacts appear to be woven in as afterthoughts, which largely addresses issues such as "technical and economic feasibility" with language that seems to have originated from ConocoPhillips', the project applicant. In sum, BLM cannot disregard alternatives in this manner, without taking a hard look at the environmental tradeoffs in a NEPA document.

Alternative Layout, Designs, and Size: BLM has an obligation to consider a range of alternatives that locating infrastructure to avoid the most sensitive areas and that reduce the total footprint and production capacity of the development to reduce impacts to surface resources in the Reserve. BLM should also have considered different designs and configurations, such as whether pipelines should be buried at water crossings instead of crossing either below the bridge decks or on vertical support members downstream from the bridge. It is not clear why horizontal directional drilling for burying a pipeline is only being considered at the Colville River crossings for seawater and diesel pipelines.

Additionally, BLM should have considered less environmentally-damaging alternatives to the project design such as eliminating the operations center airstrip for Alternatives B, C, and E and eliminating all diesel pipelines and using natural gas and renewable energy sources such as wind for fuel with minimal amounts of diesel employed as backup. Neither of these options would prevent ConocoPhillips from accessing oil resources.

[238] 5 DSEIS, App D.1 at 28, 35.

Notably, it is unclear why Alternatives B, C, and E include an operations center airstrip at all since access to the project is possible via road, and flying to the project via fixed-wing aircraft would have a number of negative impacts including to subsistence. Alternative D understandably requires an airstrip for year-round operations as it is disconnected from existing infrastructure.

BLM should have fully evaluated the positive and negative trade-offs of the different alternatives such as road disturbances compared to aircraft disturbances, including mitigating aviation impacts to the maximum extent possible. However, the proposed flight patterns in the draft EIS indicate that there will be significant impacts at a Willow airstrip, as flights to Willow will originate from Alpine and Deadhorse.[239] It is absurd that ConocoPhillips would fly such a short distance between Alpine to Willow, which would involve flights at low altitudes that will disturb wildlife and the community of Nuiqsut. It also further begs the question as to why air traffic could not simply be routed through Alpine, since flights to a Willow airstrip will not in fact be protective of the Colville River Delta. We also encourage BLM to incorporate minimal aircraft operations into all alternatives, including the use of low-impact drones where possible instead of helicopters and fixed-wing aircraft, e.g., for pipeline and methane emission inspections and aerial studies. The draft EIS fails to analyze these options as potential alternatives or mitigation measures.

Regarding the option to use natural gas produced onsite along with renewable/wind energy throughout the Project with minimal diesel backup, we note that the Willow Processing Facility will be utilizing natural gas for its operations.[240] Diesel fuel, either transported by truck or pipeline, has the potential to damage the environment through spills, and thus its use should be minimized by serving only as a backup fuel supply.

BLM has also failed to consider alternatives which would minimize the amount of gravel needed for the project. such as requiring seasonal drilling or reconfiguring any pad layouts or locations. BLM should also consider alternatives that would reduce the amount of staff housed at Willow, along with their related housing and other support infrastructure. Such changes would decrease the gravel footprint of the project, making alternative mining sites more feasible. BLM should also consider if there are other alternative mining sites that do not involve siting such an impactful project component in an important subsistence area so close into the community. BLM's foreclosure of meaningful alternatives has thus had a cascading effect, by limiting its consideration of alternative gravel sites.

Alternatives that would mitigate GHG emissions impacts of climate change: BLM identifies climate change as a factor in its consideration of alternatives, but it fails to propose an alternative the reduces GHG emissions. Consistent with an emissions management framework,[241] BLM should consider alternatives that would mitigate both direct and indirect GHG emissions impacts and the cumulative effects of climate change.

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[239] 1 DSEIS at 28, 30 (explaining flights described in table above "are additional flights required beyond projected travel to/from non-Project airports (e.g., Anchorage, Fairbanks, Deadhorse)").
[240] *Id*. at 16.
[241] *See infra* Scope Deficiencies II.

In our informal scoping letter, we described that BLM should consider an alternative that would delay production until the adoption of a plan to manage the Reserve consistently with addressing the climate crisis.[242] For example, such a reasonable alternative could, as a mitigation measure, delay permitting approval until the agency has adopted an emissions management framework[243] for the Reserve that would calculate, track, and publicly disclose lifecycle emissions of development and production (and potential development and production), which BLM could then use to guide its land management and fossil fuel-related decisions on the Reserve in order to mitigate climate disruptive impacts to the Reserve's resources. An emissions management framework to manage GHG emissions and adverse climate impacts from fossil fuel development and production on the Reserve is consistent with FLPMA's multiple use mandate, requiring BLM to manage resources "without permanent impairment of the productivity of the land and quality of the environment."[244] Such a framework is also important for ensuring no "unnecessary or undue degradation of the" Reserve occurs.[245]

BLM summarily rejects further consideration of such an alternative.[246] The BLM mischaracterizes the alternative as a proposal to delay production "indefinitely." It then offers broad statements for rejecting the proposal, including that it cannot "deny development for an arbitrary length of time and must process permits for development as they are received."[247] As described in our scoping letter, BLM should design an alternative that would assess whether and when ConocoPhillips' may develop it leases consistently with this administration's commitments to address the climate crisis. If it decides not to, it must provide a rationale that addresses the actual alternative we proposed in our scoping letter. BLM also fails to explain its insistence that it must "expeditiously" process ConocoPhillips's permits in light of the fact that the company has not, at this time, submitted any permits to develop Willow.[248] Moreover, the fact that BLM is considering deferring BT5 conflicts with this statement, and shows that BLM understands that the agency has the authority to defer development.

V. THE WILLOW APPROVAL PROCESS FAILS TO COMPLY WITH OTHER APPLICABLE LEGAL MANDATES.

Our organizations are deeply concerned about the direct, indirect, and cumulative effects of the proposed project. ConocoPhillips' proposal will cause a large, undeveloped area to become industrialized and will disturb wildlife, destroy wetlands, and permanently alter rural lifestyles dependent on traditional food resources like fish and caribou. BLM has failed to consider the potentially significant negative environmental impacts of this project, and has not included a sufficient range of mitigation measures. As the lead agency, BLM must ensure this process complies with not only NEPA, but a number of other statutory and regulatory mandates

[242] 2022 Informal Willow DSEIS Scoping Comments 20, 38–39.
[243] *See, e.g.*, Gnarly Tree Sustainability Institute, Framework Report: Managing Greenhouse Gas Emissions via Federal Land Use Planning and Other Actions (Dec. 13, 2021).
[244] 43 U.S.C. § 1702(c).
[245] *Id.* § 1732(b).
[246] 5 DSEIS, App. D.1. at 30, 38.
[247] *Id*.
[248] *Id*. at 38.

under FLPMA, ESA, MMPA the NPRPA, and the legal and permitting requirements of its cooperating agencies, particularly the Army Corps of Engineers. Its actions to date fail to satisfy its legal requirements.

A. BLM Fails to Explain How Approving Willow Would Comply with FLPMA.

BLM must adhere to the requirements of its organic act, FLPMA, which governs its issuance of right-of-way permits, as part of its NEPA analysis and decision-making process. The draft SEIS only mentions FLPMA in passing as a statute the agency is required to comply with, but contains no discussion of its procedural and substantive requirements.[249]

The DSEIS fails to reflect in its analysis the strict public interest and environmental protections of FLPMA. Given that no information is contained in the draft EIS addressing BLM's obligations under FLPMA to grant rights-of-way, this draft EIS is insufficient to inform final approvals for any rights-of-way. As discussed below, BLM must require ConocoPhillips to submit its right-of-way and other special use permit authorizations and adhere to all mandates of FLPMA Title V and its implementing regulations.[250]

1. BLM cannot proceed with permitting this project until ConocoPhillips submits a complete right-of-way application.

It appears that ConocoPhillips has yet to actually submit an application for a right-of-way for the Willow MDP. A right-of-way that "may have significant impact on the environment" requires submission of a plan of construction, operation, and rehabilitation of the right-of-way.[251] There is no question that this right-of-way will have significant impacts, so BLM must require ConocoPhillips provide a complete plan of construction, operation, and rehabilitation. That has yet to occur, making BLM's proposed approval of this project and its NEPA analysis premature and contrary to FLPMA's right-of-way requirements.

BLM's regulations at 43 C.F.R. § 2804.12(a) provides that a complete right-of-way application must include a wide range of information, including but not limited to the following: a "description of the project and the scope of the facilities;" an "estimated schedule for constructing, operating, maintaining, and terminating the project;" information on the "estimated life of the project and the proposed construction and reclamation techniques;" a "statement of [the company's] financial and technical capability to construct, operate, maintain, and terminate the project"; and a "schedule for the submission of a plan of development (POD)."

It is completely unclear how BLM anticipates proceeding with the review of this project when it has yet to receive complete right-of-way and other permit applications. The draft SEIS discusses rights-of-way generally, but only makes unclear statements about when and how the agency would actually permit the right-of-way for Willow. For instance, the DSEIS states that BLM will decide in its ROD whether to approve the Willow MDP and associated permits and

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[249] *See, e.g.*, 1 DSEIS at 3.
[250] *See* 43 C.F.R. pt. 2800 (BLM FLPMA grant regulations).
[251] 43 U.S.C. § 1764(d) (1996).

rights-of-way for the project based on the analysis in the SEIS, but the ROD will not constitute the final approval for actions such as the approval for individual applications for permits to drill and rights-of-way.[252] BLM indicates the SEIS is instead intended to provide the agency with "information and NEPA analysis that could be used to inform final approvals for individual Project components, such as specific permits to drill and rights-of-way."[253] It is unclear how BLM can adequately analyze this project for NEPA or FLPMA purposes when it has yet to receive the actual permit applications BLM purports to be analyzing.

As described by Groups during scoping and in these comments, there is also still missing information and sparse details about the scope of the Willow MDP, the areas that will be impacted, and how impacts will be mitigated. There is a substantial amount of information missing that must be gathered before BLM can meaningfully evaluate and the public can fully understand the potential impacts from the project. The DSEIS provides only high-level statements about important facts like the locations of infrastructure, timing of development, and traffic impacts. As a result, the DSEIS is still deficient in its description of the project facilities, ConocoPhillips' schedule moving forward, and reclamation plans. BLM must require more information to determine the scope of the project and its facilities, as required by FLPMA. Further, ConocoPhillips must provide site-specific specific information about the project elements and the environmental conditions in those areas. For example, for the proposed Willow Central Processing Facility, BLM needs additional information on its exact location, equipment needs, power generation, processing activities, and infrastructure needs. BLM needs this information not only to adequately evaluate ConocoPhillips' right-of-way request, but also to evaluate potential alternatives to that proposal and environmental impacts as required by NEPA.

Additionally, there is still little information on the site-specific conditions or locations of the individual road segments. As described in more detail below, gravel infrastructure has major impacts on hydrology, vegetation, and permafrost conditions. Any new roads will increase habitat fragmentation in this sensitive area, and further encircle the community of Nuiqsut. The length of the roads will dictate the amount of gravel needed for construction, and the locations of roads and drillsites will affect the necessary maintenance of roads. ConocoPhillips must provide specific information in order for BLM to properly evaluate the environmental and social impacts of this gravel infrastructure and to ensure protective measures are adequate to mitigate impacts. BLM's analysis of the likely aquatic impacts from this project and related project elements, including the gravel mines, is still so high-level and vague as to be essentially meaningless.

There is also still a lack of detail on the proposed bridges and water crossings. Judy Creek, Fish Creek, Willow Creek 4, and the Kalikpik River would appear to all require massive bridges with piers located in the riverbeds. The DSEIS does not adequately describe how these will be constructed. The DSEIS states, in a table summary, that up to 18 crossings would be needed, depending on the selected alternative — with 6–7 bridges and 9–11 culvert batteries.[254] The specific crossings are not identified in the EIS, however, simply the number. This is unacceptably vague, and it is not clear how BLM can issue a right-of-way under FLPMA without

[252] 1 DSEIS at 3.
[253] 1 DSEIS at 3.
[254] 1 DSEIS at ES-9.

sufficient information regarding which waterbodies will be crossed, how the bridges will be constructed, and what the site-specific conditions of each crossing will require to minimize aquatic impacts.

Information is also sparse regarding ConocoPhillips' timing for this massive development and how it plans to implement what appears to be a phased development approach, even though that information is also required by FLPMA.[255] The DSEIS is vague in its description of timing of construction and operation and how various windows might overlap. The DSEIS indicates that gravel associated with the initial construction of the access road, BT1, BT2, BT3, connecting roads, the Processing Facility, the Operations Center, and the airstrips would be mined and placed during the first 4 to 5 years of construction.[256] Once gravel pads are completed, the DSEIS indicates ConocoPhillips would build the on-pad facilities and would have modules delivered for the processing facility, BT1, BT2, and BT3 in Year 4 or 5.[257] The DSEIS further states that modules for BT4 and BT5 would be delivered 2 years later, even though BT5 is supposed to be deferred under Alternative E. This high-level summary of ConocoPhillips' plan is too vague for the public to fully understand how ConocoPhillips' phased construction will actually move forward on the ground. The reference to BT5's modules being delivered two years after the initial module delivery is also inconsistent with the apparent commitment to defer the construction of that pad. ConocoPhillips must clearly define its development plans to ensure BLM can adequately evaluate the impacts of the project in light of the pace of development. Only providing the number of winter seasons which will be needed for construction of the full project is insufficient to evaluate how the scale of construction and different phases might cause different impacts. Significantly more information is needed for purpose of evaluating the impacts of the right-of-way and project.

Additionally, reclamation, including infrastructure and road removal, are barely discussed, despite being critical to both BLM's NEPA analysis and right-of-way permit obligations under FLPMA.[258] The draft SEIS essentially state that infrastructure may or may not be simply left in place or removed.[259] Reclamation is necessary for the Willow Plan, and BLM should ensure that all steps are taken to reclaim the area to its natural state, which is unlikely to be attainable. 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.[260] Studies have indicated that natural recovery of

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[255] 43 C.F.R. § 2804.12(a)(2) (requiring the "estimated schedule for constructing, operating, maintaining, and terminating the project").
[256] 1 DSEIS at 21.
[257] *Id.* at 22.
[258] 43 C.F.R. § 2804.12(a)(3) (requiring information on the "estimated life of the project and the proposed construction and reclamation techniques").
[259] 1 DSEIS at 21 ("Abandonment and reclamation may involve removal of gravel pads and roads or leaving these in place for use by a different entity.").
[260] *See, e.g.*, Nat'l 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).

tundra vegetation may occur on a timeframe that could take millennia or may never occur.[261] There is not a single tundra rehabilitation site that has returned to its original state in thirty-plus years of tundra rehabilitation. Even with intensive rehabilitation efforts, the recovery process takes decades.[262] Clear parameters are necessary at this stage to ensure a reclamation plan is in place to ensure reclamation takes place. While reclamation activities may necessitate more equipment and disturbance, simply abandoning infrastructure in place will cause additional permanent damage to the landscape. BLM must analyze the impacts of this ongoing disturbance if facilities and roads are left in place longer than 30 years, particularly if ConocoPhillips intends to use Willow as a hub of future development, and the impacts from eventual road removal and reclamation efforts. The gravel mine sites will also impact a massive area. As discussed in more detail below, a more in-depth reclamation plan is also required for the gravel mine sites and BLM's plan to simply allow those areas to turn to lakes over the course of a decade is unacceptable. Additionally, while some of this massive new infrastructure may be considered "temporary" (e.g., the ice roads and the gravel island) that does not mean the temporary infrastructure will not have significant impacts to wildlife and subsistence from their construction and use. Those impacts need to be analyzed and mitigation measures need to be incorporated into the DSEIS.

In sum, the lack of a complete right-of-way application raises serious questions about ConocoPhillips' ability to move forward with this massive project in an environmentally responsible manner. The lack of this information means that BLM cannot meet its FLMPA obligations and severely limits the public's ability to analyze the potential impacts of this proposal. BLM needs all of the information required by FLPMA in order to fully assess the site-specific impacts of this project and to issue a right-of-way consistent with the agency's legal obligations under the law.

2. Any future right-of-way grant would not comply with FLPMA's substantive requirements.

Important substantive requirements flow from FLPMA's right-of-way provisions. BLM must honor the requirement that the right-of-way grant "do no unnecessary damage to the environment."[263] As noted above, a right-of-way that "may have significant impact on the environment" requires submission of a plan of construction, operation, and rehabilitation of the right-of-way.[264] The right-of-way permit "shall contain terms and conditions which will … minimize damage to scenic and esthetic values and fish and wildlife habitat and otherwise protect the environment."[265] Additionally, BLM must "protect the interests of individuals living in the general area traversed by the right-of-way who rely on the fish, wildlife, and other biotic resources of the area for subsistence purposes" and incorporate terms and conditions or mitigation measures to adhere to this requirement.[266]

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[261] Benjamin Sullender, Audubon Alaska, Ecological Impacts of Road and Aircraft-Based Access to Oil Infrastructure 16–17 (2017).
[262] *Id.* at 17.
[263] 43 U.S.C. § 1764(a).
[264] *Id*. § 1764(d).
[265] *Id*. § 1765(a)(ii).
[266] *Id.* § 1765(b)(iv).

In addition, the right-of-way can only be issued if activities resulting from the right-of-way:

> (i) protect Federal property and economic interests; (ii) manage efficiently the lands which are subject to the right-of-way or adjacent thereto and protect the other lawful users of the lands adjacent to or traversed by such right-of-way; (iii) protect lives and property; (iv) protect the interests of individuals living in the general area traversed by the right-of-way who rely on the fish, wildlife, and other biotic resources of the area for subsistence purposes; (v) require location of the right-of-way along a route that will cause least damage to the environment, taking into consideration feasibility and other relevant factors; and (vi) otherwise protect the public interest in the lands traversed by the right-of-way or adjacent thereto.[267]

Multiple important potential substantive requirements flow from FLPMA's right-of-way provisions. First, BLM has a mandatory duty to impose conditions that "*will* minimize damage to scenic and esthetic values and fish and wildlife habitat and otherwise protect the environment."[268] The terms of this section do not limit "damage" specifically to the land within the right-of-way corridor. Rather, the expansive term "the environment" indicates that BLM must evaluate the overall effects of the right-of-way on wildlife, environmental, scenic, and aesthetic values and protect those resources. In addition, the obligation to impose terms and conditions that "protect Federal property and economic interests"[269] requires that BLM impose conditions that protect not only the land crossed by the right-of-way, but all federal lands affected by the approval of the right-of-way. As discussed in detail in these comments, BLM failed to evaluate all aspects and ramifications of issuing the right-of-way for the Willow MDP by unreasonably limiting the scope of its analysis. In particular, the DSEIS failed to consider important missing baseline information, future oil and gas activity and infrastructure made possible by the right-of-way, the additional and cumulative impacts the project will have on subsistence resources and uses, the climate implications of producing and burning this much fossil fuel, and the extensive significant impacts to aquatic resources from the project.

Second, FLPMA mandates a BLM determination as to what conditions are "necessary" to protect federal property and economic interests, as well as "otherwise protect the public interest in the lands traversed by the right-of-way or adjacent thereto."[270] This means that the agency can only approve the right-of-way if it "protect[s] the public interest in the lands" not only in the immediate footprint of the road and right-of-way, but also with regard to lands and resources adjacent to and associated with the right-of-way.[271] The right-of-way contemplated here would have significant impacts on subsistence, air quality, and water quality in and around the community of Nuiqsut. It could also significantly impact resources in Harrison Bay. As part of its obligations, BLM is also required to ensure the protection of other users in the area of the right-of-way. None of the action alternatives meet this standard. For example, the gravel mining

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[267] *Id.* § 1765(b).
[268] *Id.* § 1765(a) (emphasis added).
[269] *Id.* § 1765(b).
[270] *Id*.
[271] *Id*.

area alone will have significant impacts on Nuiqsut by disrupting access to and use of this important subsistence area. There are likely to be significant downstream changes and impacts from the mines that have not been adequately considered or addressed to ensure the protection of subsistence and other users in the area. Placing gravel mines of the scale proposed by ConocoPhillips so close into Nuiqsut is likely to not only restrict use and access to that area, but is also likely to cause significant emotional and other distress in the community by further exacerbating the amount of industrial activity and noise occurring nearby. This is in addition to the major impacts from the rights-of-way to access the oil and gas resources surrounding the community. The proposed use of the lands surrounding by and served by the right-of-way would not "protect the public interest."

Third, FLPMA requires that the right-of-way grant "do no unnecessary damage to the environment" and be "consistent with … any other applicable laws."[272] This means that the right-of-way grant must satisfy all applicable laws, regulations and policies, including the Clean Air Act, ESA, Clean Water Act, ANILCA section 810, and all state and local laws and regulations. As described in these comments, it is not clear that this right-of-way authorization can comply with these important environmental laws. BLM cannot issue a right-of-way that fails to "protect the environment" as required by FLPMA, including the environmental resource values in and not within the right-of-way corridor.

FLPMA does not authorize BLM to consider the private interests of ConocoPhillips weighed against environmental interests, such as protection of fish and wildlife habitat. "[A]s BLM has held, it is not private interests but the public interest that must be served by the issuance of a right-of-way."[273] Here, BLM does not acknowledge the failure of this right-of-way to protect the public interest or discuss this important requirement of FLPMA. As reflected by BLM's characterization of the purpose and need for the project, as well as its analysis, the intent of this process and any future right-of-way grant is to aid ConocoPhillips in its westward expansion into the Reserve as quickly as possible; this is inappropriate and inconsistent with BLM's obligations under FLPMA.

Additionally, FLPMA expressly requires that all land-use authorizations contain terms and conditions to protect resources and the environment.[274] As described in these comments, the draft EIS fails to consider an adequate range of enforceable and meaningful mitigation measures, in violation of both NEPA and FLPMA.

DOI, in interpreting FLPMA and its right-of-way regulations, has held that "[a] right-of-way application may be denied … if the authorized officer determines that the grant of the proposed right-of-way would be inconsistent with the purpose for which the public lands are managed or if the grant of the proposed right-of-way would not be in the public interest or would be inconsistent with applicable laws."[275] Here, to prevent the degradation of the important lands

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[272] *Id*. §§ 1764(a)–(c).
[273] *King's Meadow Ranches*, 126 IBLA 339, 342 (June 17, 1993).
[274] *Colorado Trout Unlimited v. U.S. Dept. of Agriculture*, 320 F. Supp. 2d 1090, 1108 (D. Colo. 2004).
[275] *Clifford Bryden*, 139 IBLA 387, 389–90 (1997) 1997 WL 558400 at *3.

and resources of the Reserve and protect the public interest, BLM should not issue the right-of-way authorization to ConocoPhillips for the Willow Project. At a minimum, BLM must consider such requirements in a revised or supplemental EIS.

B. BLM Fails to Explain How Willow Will Comply with the Endangered Species Act.

The draft EIS fails to explain how BLM will comply with its substantive and procedural obligations under the ESA. This issue is particularly important given the District Court's finding that BLM and FWS violated the ESA in its prior process to approve Willow.

The District Court found that FWS's consultation and approvals for Willow violated the ESA in several important respects that must be rectified. In consulting on impacts to polar bears, FWS improperly relied on future mitigation measures enacted under the Marine Mammal Protection Act (MMPA) in making its no-jeopardy and no-adverse-habitat modification determinations;[276] FWS arbitrarily quantified non-lethal take of bears from disturbance to be zero, despite finding that disturbance could result in "biologically significant" impacts;[277] the incidental take statement for the project failed to authorize take by hazing that was reasonably certain to occur, and FWS impermissibly conflated Willow's ESA take authorization with the MMPA process.[278] Interior, acting through BLM and FWS, must address how it will complete consultation for polar bears in a manner that complies with the ESA for Willow.

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."[279] Several species protected under the ESA[280] inhabit the Willow project area, including polar bears, bowhead whales, ringed seals, bearded seals, spectacled eiders, and Steller's eiders.[281] 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.[282] Groups also explained that BLM must ensure that consultation considers not only the impacts to ESA-listed species and their federally designated habitat from noise, traffic, oil spills, hazing, and other local impacts associated with the construction and operation of the Willow project, but also the impacts of the GHG emissions

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[276] *Sovereign Iñupiat for a Living Arctic v. Bureau of Land Mgmt*., 555 F. Supp. 3d 739, 800–01 (D. Alaska 2021).
[277] *Id*. at 802.
[278] *Id.* at 803.
[279] 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).
[280] 16 U.S.C. §§ 1531 *et seq*.
[281] *See* 2013 IAP Final EIS, vol. 1, 316, 318–28 338–50; *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 (bearded seal listing); 73 Fed. Reg. 28212 (May 15, 2008) (polar bear listing); 58 Fed. Reg. 27474 (May 10, 1993) (spectacled eider listing).
[282] 2022 Informal Willow DSEIS Scoping Comments at 12.

caused by the project on species threatened by climate change.[283] As described below in sections addressing individual species, the EIS's analysis of these impacts fall short.

Congress enacted the ESA to conserve endangered and threatened species and the habitats and ecosystems upon which they depend.[284] As the Supreme Court observed, the ESA is "the most comprehensive legislation for the preservation of endangered species ever enacted by any nation."[285] 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.[286]

"The heart of the ESA is section 7(a)(2)."[287] 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.[288]

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 without a valid permit.[289] "Take" includes habitat modification or degradation that results in actual injury.[290] 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.[291] The U.S. Fish and Wildlife Service and the National Marine Fisheries Service (generically, "Service") administer the ESA and have promulgated regulations governing the consultation process.[292]

The Section 7 process begins when the action agency determines whether its action "may affect" listed species in the "action area".[293] The threshold for triggering consultation is low: if

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[283] *Id*.
[284] *Id*.
[285] *Tenn. Valley Authority v. Hill*, 437 U.S. 153, 180 (1978).
[286] *Id.* at 184–85; *see also id.* at 173–74.
[287] *W. Watersheds Project v. Kraayenbrink*, 632 F.3d 472, 495 (9th Cir. 2011).
[288] 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.
[289] 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.
[290] 16 U.S.C. § 1532(19); 50 C.F.R. § 17.3.
[291] *Id*. § 1536(b)(4)(iv), (o)(2).
[292] 50 C.F.R. Part 402.
[293] 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

its action *may* affect any listed species or critical habitat, the action agency *must* engage in formal or informal consultation with the Service.[294] "Any possible effect, whether beneficial, benign, adverse, or of an undetermined character, triggers the formal consultation requirement."[295] 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)."[296] Only where the action agency determines its actions will have *no* effect on listed species or critical habitat may it forego consultation.[297]

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.[298] 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."[299]

If the action may adversely affect listed species or critical habitat, including via potential incidental take, the action agency must request formal consultation.[300] 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.[301] It must also include a cumulative effects analysis.[302] 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.[303]

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in the action." 50 C.F.R. § 402.02.

[294] 50 C.F.R. §§ 402.13(a), 402.14(a).

[295] Final Rule; Interagency Cooperation Endangered Species Act of 1973, as Amended, 51 Fed. Reg. 19,926, 19,949 (June 3, 1986).

[296] *Id*.

[297] 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).

[298] 50 C.F.R. §§ 402.13(a), 402.14(b).

[299] 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.

[300] 50 C.F.R. § 402.14(a).

[301] *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[.]" *Id.*. § 402.02.

[302] *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[.]" *Id*. § 402.02.

[303] *Id.* § 404.14(d).

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.[304] 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.[305] "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."[306]

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."[307]

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.[308] RPMs and the associated terms and conditions are conservation measures intended to mitigate or remove any adverse effects on endangered or threatened species.[309] These recommendations are based upon the statutory responsibility of agencies to carry out programs for the conservation of endangered species.[310] 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.[311] 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.[312]

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

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304 16 U.S.C. § 1536(a)(2).
305 50 C.F.R. §§ 402.14(g)(1)–(4).
306 *Id.* § 402.02.
307 16 U.S.C. § 1536(b)(3)(A); 50 C.F.R. §§ 402.02, 402.14(h)(3).
308 16 U.S.C. § 1536(b)(4)(C); 50 C.F.R. § 402.14(i).
309 *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)).
310 16 U.S.C. § 1536(a)(1)).
311 50 C.F.R. § 402.14(i)(5); *see Or. Natural Resources Council v. Allen*, 476 F.3d 1031, 1039–40 (9th Cir. 2007).
312 50 C.F.R. §§ 402.14(i)(4), 402.16(a).

opinion; or (d) If a new species is listed or critical habitat designated that may be affected by the identified action."[313]

Section 7's procedural and substantive duties cannot be separated. Courts require stringent procedural compliance to ensure substantive compliance.[314] 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.[315] 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."[316] Section 7 thus embodies the "institutionalization of . . . caution" that Congress intended in enacting the ESA.[317]

Here, BLM's draft EIS fails to acknowledge these important mandates or explain how BLM will comply with the ESA's substantive and procedural requirements when authorizing Willow. Procedurally, BLM broadly asserts that "[c]onsultation was previously completed for this project with both the U.S. Fish and Wildlife Service (USFWS) and NMFS under Section 7 of the Endangered Species Act (ESA). Consultation with USFWS and NMFS will be reinitiated as part of developing this Supplemental EIS to address Project changes, including mitigation measures and updates to the range of alternatives."[318] This statement does not satisfy BLM's duty to show how it will comply with the ESA. In particular, this statement does not acknowledge that the prior biological opinion was deemed unlawful let alone explain how BLM and FWS will address the significant legal failings identified with the prior biological opinion.

Given Willow's potential impacts on protected species and the agencies' prior failures to comply with the ESA, we request BLM to promptly provide BLM's final biological assessments — both for FWS and NMFS —for public review on its ePlanning website. On August 19, 2022, Groups obtained the biological assessment transmitted to FWS via a Freedom of Information Act request and are still reviewing.

Moreover, BLM does not divulge on which species it will consult aside from marine mammals.[319] This exclusion of spectacled and Steller's eiders, which historically nested in the Willow area, is unwarranted.[320] BLM is obligated to satisfy its consultation obligations on any

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[313] *Id.* § 402.16(b)–(d).
[314] *Conner v. Burford*, 848 F.2d 1441, 1458 (9th Cir. 1988); *Thomas v. Peterson*, 753 F.2d 754, 764 (9th Cir. 1985).
[315] 16 U.S.C. § 1532(5)(A).
[316] *NRDC v. Houston*, 146 F.3d 1118, 1128–29 (9th Cir. 1998).
[317] *Tenn. Valley Authority*, 437 U.S. at 178.
[318] DSEIS vol. 1 at 4.
[319] DSEIS vol. 1 at 214–15.
[320] *See infra* Resource Impacts IX (birds). Because the purpose of the Endangered Species Act is to protect and recover imperiled species and the ecosystems upon which they depend, any development action that would further impede the ability of the Steller's Eider to recolonize

action that *may* affect any listed species or its critical habitat.[321] 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.[322] 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.

It is also not clear how BLM's preferred alternative will meet the ESA's substantive mandate to avoid jeopardizing the continued existence of certain listed species and destroying or adversely modifying their habitat. For example, as described below, BLM's assessment of impacts to polar bears greatly underestimates potential impacts to denning bears and does not address or attempt to avoid these potential significant impacts through less harmful alternatives. We note that the biological assessment for alternative E demonstrates that Willow's proposed infrastructure, including ice roads, gravel roads, and its mine sites, are within and adjacent to critical habitat and potential terrestrial denning habitat.[323] The biological assessment also demonstrates that a number of acres of foraging habitat would be lost — nearly 900 acres.[324]

The precarious status of the Southern Beaufort Sea (SBS) population of polar bears and the foreseeable significant cumulative effects from oil exploration and development in other parts of Arctic Alaska[325] must be considered in FWS's jeopardy determination under the ESA. BLM must factor the ESA's mandates into its NEPA analysis and formulate alternatives that attempt to comply with the ESA.

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.[326] BLM cannot lawfully authorize an oil and gas development project 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

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previously used habitat is incongruous with its ESA designation. Moreover, BLM consulted on effects to spectacles eiders in the prior Willow EIS process, making exclusion in this process arbitrary.

[321] 50 C.F.R. § 402.14.

[322] *See* Interagency Cooperation—Endangered Species Act of 1973, as Amended; Final Rule, 51 Fed. Reg. 19949 (June 3, 1986)

[323] Bureau of Land Mgmt., Biological Assessment for the Willow Master Development Plan Submitted to the U.S. Fish and Wildlife Service at 59 (June 2022).

[324] *Id*. at 85.

[325] *See infra* Resource Impacts XI (polar bears).

[326] 16 U.S.C. § 1362(3).

these important substantive and procedural legal requirements, in violation of NEPA's implementing regulations.[327] 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 alternatives and its ultimate choice of alternatives, as reflected in the ROD, will or will not achieve the requirements of the ESA.

C. BLM Fails to Analyze How Willow 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).[328] Similar to the ESA, jurisdiction of the MMPA is shared by NMFS and the FWS (generically, "the Service"). For marine mammal resources relevant to Willow, FWS has jurisdiction over polar bears and walruses 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[.]"[329] 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."[330] To carry out its protective and conservation purposes, the MMPA imposes a moratorium on the taking of marine mammals.[331] 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."[332] 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).[333] Prohibited harassment includes any act that may disrupt behavioral patterns such as migration, breeding, and feeding.[334]

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.[335] 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

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[327] 40 C.F.R. § 1502.2(d).
[328] 16 U.S.C. §§ 1361–1389.
[329] *Id*. § 1361(6).
[330] *Id*.
[331] *Id*. § 1371(a).
[332] *Id*. § 1362(13).
[333] *Id*. § 1362(18)(A).
[334] *Id*.
[335] *Id*. § 1371(a)(5).

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.[336]

The Service may allow incidental take through an Incidental Take Regulation (ITR) or an Incidental Harassment Authorization (IHA). Relevant here, 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.[337] We understand that Willow would rely on the 2021–2026 Beaufort Sea ITR for purposes of authorizing take of polar bears for construction and operation of the project. Groups are concerned that this ITR failed to consider key factors in reaching its determinations that these oil and gas activities will be limited to negligible impacts on polar bears and that take will be of "small numbers." Even with the proposed restrictions and mitigation described in the ITR, there is a substantial probability that these activities could result in the death or serious injury of polar bears and cubs, which will have more than a negligible impact on the SBS stock.[338]

Just as the impacts to polar bears discussed below may jeopardize the continued existence of the polar bear in violation of the ESA,[339] they may also constitute unlawful take under the MMPA. Likewise, the impacts to whales and other marine mammals from offshore activities described herein may also result in unlawful MMPA take.[340] BLM has not shown how it will ensure compliance with the MMPA. The DSEIS lists species of marine mammals may be encountered by Willow, but the EIS limits it consideration of impacts to marine mammals to those that occur from marine or onshore construction or operations.[341] The DSEIS gives short shrift to impacts along the proposed barging route, stating that "[v]essel traffic along the barge transit route would have limited effects on marine mammals and occur for a limited duration (3 months during the summer for 4 years)."[342] But the DSEIS does not explain why barging in the summer means that effects would be limited; presumably the majority of marine mammals would be present in project area during the summer open water season and thus vulnerable to MMPA-prohibited take. Such a cursory statement cannot satisfy BLM's requirement under

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[336] 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).

[337] 50 C.F.R. § 18.27(f)(1).

[338] The ITR is the subject of pending litigation. *Alaska Wildlife Alliance v. U.S. Fish and Wildlife Service*, Case No. 3:21-cv-00209-SLG (D. Alaska).

[339] *Supra* Legal/Policy V.B (ESA); *infra* Resource Impacts XI (polar bears).

[340] *Infra* Resource Impacts XII (marine mammals).

[341] 1 DSEIS at 214.

[342] *Id.*

NEPA or explain how BLM foresees ensuring that Willow would comply with all applicable legal mandates, including the MMPA.

D. The DSEIS Does Not Provide an Adequate Basis for the Corps to Meet Its Clean Water Act or NEPA Obligations.

1. Section 404 permit review requirements

Congress enacted the CWA in 1972 to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[343] The Act sets several goals, including attainment and preservation of "water quality which provides for the protection and propagation of fish, shellfish, and wildlife . . . ."[344] To further its goals, the Act prohibits "discharge of any pollutant" into navigable waters except in accordance with the CWA terms.[345]

The Corps issues permits for the discharge of dredged or fill material pursuant to section 404 and subject to the Corps' and the Environmental Protection Agency's (EPA) 404(b)(1) Guidelines (Guidelines).[346] Corps regulations governing the issuance of Section 404 permits declare that "[m]ost wetlands constitute a productive and valuable public resource, the unnecessary alteration or destruction of which should be discouraged as contrary to the public interest."[347] The Corps' and EPA's 404(b)(1) Guidelines impose important limitations on the Corps' ability to issue a Section 404 permit.[348] The Corps must ensure compliance with the 404(b)(1) Guidelines before issuing a permit. The Guidelines impose important limitations on when a Section 404 permit may be issued.[349] The Guidelines prohibit the permitting of any discharge of dredged or fill material: 1) if there is a practicable alternative to the proposed discharge, 2) if the discharge causes or contributes to violations of applicable state water quality standards, 3) if the discharge will cause or contribute to significant degradation of the environment, or 4) unless all appropriate steps have been taken to minimize potential adverse impacts.[350] The 404(b)(1) Guidelines provide that significant adverse effects on human health or welfare; aquatic life and other water dependent wildlife; aquatic ecosystem diversity, productivity, and stability; or recreational, aesthetic, and economic values are effects

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[343] 33 U.S.C. § 1251(a).
[344] *Id*. § 1251(a)(2).
[345] *Id*. § 1311(a). The term "pollutant" encompasses not only chemical and biological materials but also, rock and sand. *Id*. § 1362(6). Pollutants are known as "fill material" when their discharge either replaces any portion of a water of the United States with dry land or changes the bottom elevation of a water body. *See* 33 C.F.R. § 323.2(e)(1); 40 C.F.R. § 232.2. The term "dredged material" means "material that is excavated or dredged from waters of the United States." 33 C.F.R. § 323.2(c); 40 C.F.R. § 232.2.
[346] 33 U.S.C. § 1344; 40 C.F.R. pt. 230.
[347] 33 C.F.R. § 320.4(b)(1); *see also id.* § 320.4(b)(2) (identifying eight types of wetland functions important to the public interest).
[348] 40 C.F.R. pt. 230.
[349] *Id*.
[350] 40 C.F.R. § 230.10.

contributing to significant degradation.[351] These factors both individually and cumulatively must be considered when evaluating the specific details of the Willow proposal.

The Corps cannot authorize a discharge without "sufficient information to make a reasonable judgment as to whether the proposed discharge will comply with [the Section 404(b)(1)] Guidelines."[352] EPA notes that:

> the record must contain sufficient information to demonstrate that the proposed discharge complies with the requirements of Section 230.10(a) of the Guidelines. The amount of information needed to make such a determination and the level of scrutiny required by the Guidelines is commensurate with the severity of the environmental impact (as determined by the functions of the aquatic resource and the nature of the proposed activity) and the scope/cost of the project.[353]

Pursuant to the Guidelines, no discharge of dredged or fill material shall be permitted if, among other things, a practicable alternative to the proposed discharge would have less adverse impact on the aquatic ecosystem.[354] The Corps also cannot authorize any discharge of dredged or fill material that will cause or contribute to significant degradation of the waters of the United States.[355] The "degradation or destruction of special aquatic sites, such as filling operations in wetlands, is considered to be among the most severe environmental impacts covered by the[] Guidelines."[356]

The Corps has distinct, substantive obligations under the Clean Water Act, which in turn extend out into its obligations under NEPA. When a project is not "water dependent," as in the case of the Willow Project, and the project would fill "special aquatic sites," including wetlands, the Corps' regulations create a rebuttable presumption that there are practicable and environmentally preferable alternatives, and such alternatives are presumed to have less adverse impact unless "clearly demonstrated" otherwise.[357] This substantive requirement mandates the Corps to select the least environmentally damaging practicable alternative (LEDPA). An alternative is practicable "if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes."[358] Practicable alternatives include "activities which do not involve a discharge of dredged or fill material," as well as "discharges of dredged or fill material at other locations" where such

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[351] *Id.* § 230.10(c)(1)–(4).
[352] *Id.* § 230.12(a)(3)(iv); *see* 33 C.F.R. §§ 320.2(f) and 320.4(a)(1).
[353] *See* Environmental Protection Agency, Memorandum: Appropriate Level of Analysis Required for Evaluating Compliance with the Section 404(b)(1) Guidelines Alternatives Requirements, https://www.epa.gov/cwa-404/memorandum-appropriate-level-analysis-required-evaluating-compliance-section-404b1.
[354] 40 C.F.R. § 230.10.
[355] *Id.* § 230.10(c).
[356] *Id.* § 230.10(d).
[357] *Id.* § 230.10(a)(3); *Sierra Club v. Flowers*, 423 F. Supp. 2d 1273, 1352 (S.D. Fla. 2006).
[358] 40 C.F.R. § 230.10(a)(2).

discharges would result in fewer impacts to the aquatic environment.[359] The applicant has the burden of demonstrating that no feasible alternative exists, and the Corps must engage in a reasoned analysis of this issue.[360] The Corps cannot blindly and uncritically accept an applicant's study of alternatives and its assertions that no practicable alternative exists.[361] Under the regulations, any "practicable" alternative to achieve the basic and overall project purposes must be determined to be cost-effective, when viewed from the perspective of the industry as a whole.[362] But the LEDPA need not be the least-costly, nor the most profitable.[363] Appendix D.1, which lists alternatives screening criteria, appears to focus disproportionately on the need to only consider alternatives that the applicant would deem feasible and practicable from a cost and logistics perspective.[364] However, the Corps' regulations presume that less environmentally damaging alternatives are available to the applicant and practicable, unless the applicant clearly demonstrates otherwise. In the absence of such a clear showing, the Corps is required to deny the permit application.[365]

2. BLM and the Corps cannot proceed with permitting this project or preparing this NEPA analysis in the absence of a valid section 404 permit application.

The Corps' Section 404 permit is a core component of this project and review of the 404 permit should not be segmented out from BLM's NEPA analysis in the draft SEIS. NEPA is designed to inform agency decisions prior to the agency making any irretrievable commitments; there are substantial questions about how the agencies can engage in a meaningful analysis when ConocoPhillips has yet to re-apply for one of the major permits for this project. This is a massive hole in the draft EIS and review of this proposal that needs to be addressed before the agencies act any further. BLM and the Corps should suspend further activities on the draft EIS until ConocoPhillips resubmits its 404 application and the agencies revise this draft EIS to account for the full range of findings and other information necessary for the Corps to comply with the 404 Guidelines.

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[359] *Id.* § 230.10(a)(1).
[360] *Flowers*, 423 F. Supp. 2d at 1356–57.
[361] *Friends of the Earth v. Hintz*, 800 F.2d 822, 835–36 (9th Cir. 1986).
[362] The financial circumstances of a particular applicant are not considered relevant if an alternative could be achieved practicably by a "typical" applicant. The preamble to the 404(b)(1) regulations states: "Our intent is to consider those alternatives which are reasonable in terms of the overall scope/cost of the proposed project. The term economic might be construed to include consideration of the applicant's financial standing, or investment, or market share, a cumbersome inquiry which is not necessarily material to the objectives of the Guidelines. We consider it implicit that, to be practicable, an alternative must be capable of achieving the basic purpose of the proposed activity." 45 Fed. Reg. 85,339 (Dec. 24, 1980).
[363] *Louisiana Wildlife Federation, Inc. v. York*, 761 F.2d 1044, 1048 (5th Cir. 1985) (noting that the Corps had properly chosen "alternatives that reduced both the applicants' profit and the economic efficiency of their proposed operations in order to preserve other environmental values").
[364] 5 DSEIS, App. D.1. at 6–7.
[365] *See* 40 C.F.R. § 230.12(a)(3)(i), (iv).

We are deeply concerned about the lack of transparency and meaningful review of impacts to aquatic resources as part of the process for the Willow Plan. We understand that the Corps is a cooperating agency on BLM's NEPA process for the Willow Plan.[366] Separating out the EIS and 404 processes limits the agencies' and the public's opportunity to review the full scope of impacts from ConocoPhillips' proposed Willow project. It also raises serious questions about the Corps' abilities to fulfill its statutory mandates under both the Clean Water Act and NEPA.

Though the District Court did not vacate the 404 permit which the Corps previously issued in 2020, BLM and its cooperating agencies are considering new alternatives and other changes to the project design and footprint which have significant implications for the Corps' 404 permitting obligations, including its consideration of what constitutes the LEDPA. The Corps and ConocoPhillips cannot just rely on the prior authorization for this project; the Corps needs to rescind its prior decision, require ConocoPhillips to submit a new permit application that reflects the current state of the project, and engage in a new analysis consistent with the Corps' CWA and NEPA obligations. Amending the existing decision would not be appropriate because that decision was based on a legally deficient EIS. The Corps needs to redo its analysis and public process to ensure that both the NEPA analysis and its decision are based on complete information about the project and its design, alternatives, and potential mitigation measures, and that the public has the opportunity to meaningfully weigh in on that decision.

The Corps has not provided any clarity for the public to date about how it is engaging in this process or meeting its legal obligations. In response to an inquiry in July — roughly one month before the scheduled end of BLM's public comment period, the Corps informed Groups that the agency had "not received an application from [ConocoPhillips] and do not anticipate receiving another permit application relative to the suspended permit at this time."[367] As such, it is entirely unclear how the Corps would move forward in assessing whether any new alternative or other project changes proposed in the DSEIS would or would not be considered the LEDPA. The Corps would need to receive a new application, provide public notice, receive public comments, and conduct its own technical review in order to comply with the Clean Water Act's requirements. Without a new application and public review opportunity, the Corps would appear poised to simply rubber-stamp its existing permit, which authorizes more gravel fill in wetlands than even ConocoPhillips is currently proposing.

Because the Corps does not yet have a new permit application for this project, there are serious concerns about the Corps' ability to meaningfully evaluate what would constitute the LEDPA for this project and to consider appropriate alternatives that could constitute the LEDPA. BLM and the Corps cannot move forward with this EIS at this time, without a revised 404 permit application, since this process could constrict the Corps' ability to select the LEDPA and meet its 404 obligations. As currently written, the EIS is missing the information and analysis necessary for the Corps to conduct its evaluation, to make the necessary findings under its Clean Water Act

[366] 1 DSEIS at 3.
[367] Email communication, Ryan Winn, U.S. Army Corps of Engineers to Bridget Psarianos, Trustees for Alaska (July 25, 2022).

mandate, or to meet its own obligations under NEPA. One area of particular concern is the lack of appropriate consideration of mitigation measures in the EIS. Another concern is that this process denies the public or other federal, state, local and tribal agencies the opportunity to comment on ConocoPhillips' mitigation proposal and its adequacy to compensate for unavoidable impacts resulting from project implementation, construction, and operation. BLM and the Corps should not proceed with reviewing and authorizing this project without a complete 404 permit application that reflects ConocoPhillips' current proposal.[368]

BLM and the Corps' decision to move ahead with the NEPA process prior to ConocoPhillips re-submitting its application to the Corps for the 404 process is contrary to both NEPA and the Clean Water Act. The Corps and BLM should suspend the NEPA process for the Willow Plan until ConocoPhillips submits its application for a 404 permit. If and when the Corps receives ConocoPhillips' completed application, the agencies will need to revise and reissue the EIS to fully incorporate the information and findings necessary to support the 404 decision-making process.

3. The draft EIS is insufficient to support the Corps' obligations under NEPA and the CWA.

Because ConocoPhillips has yet to submit a 404 permit application to the Corps, there are numerous components that BLM and the Corps are missing that are essential to the review of this project. For example, under the 404(b)(1) guidelines, the Corps is required to consider the following effects, individually and collectively, that contribute to significant degradation:

> (1) Significantly adverse effects of the discharge of pollutants on human health or welfare, including but not limited to effects on municipal water supplies, plankton, fish, shellfish, wildlife, and special aquatic sites.
>
> (2) Significantly adverse effects of the discharge of pollutants on life stages of aquatic life and other wildlife dependent on aquatic ecosystems, including the transfer, concentration, and spread of pollutants or their byproducts outside of the disposal site through biological, physical, and chemical processes;
>
> (3) Significantly adverse effects of the discharge of pollutants on aquatic ecosystem diversity, productivity, and stability. Such effects may include, but are not limited to, loss of fish and wildlife habitat or loss of the capacity of a wetland to assimilate nutrients, purify water, or reduce wave energy; or
>
> (4) Significantly adverse effects of discharge of pollutants on recreational, aesthetic, and economic values.[369]

The Corps is required to base this determination on factual determinations, evaluations, and tests required under the guidelines, and to focus in particular on the persistence and

[368] 40 C.F.R. § 1506.1.
[369] *Id.* § 230.10(c).

permanence of the effects.[370] The Guidelines require the Corps to make certain factual determinations addressing the potential short-term or long-term effects of a proposed discharge of dredged or fill material on the physical, chemical, and biological components of the aquatic environment.[371] This includes determinations on (a) physical substrate; (b) water circulation, fluctuation, and salinity determinations; (c) suspended particulate/turbidity determinations; (d) contaminant determinations; (e) aquatic ecosystem and organism determinations; (f) proposed disposal site determinations; (g) determinations of cumulative effects on the aquatic ecosystem; and (h) determinations of secondary effects on the aquatic ecosystem.[372] The Corps cannot authorize a discharge without "sufficient information to make a reasonable judgment as to whether the proposed discharge will comply with [the Section 404(b)(1)] Guidelines."[373]

The Corps is lacking this key information necessary to inform its analysis under the 404 Guidelines. This project will have substantial wetland and stream impacts. ConocoPhillips' proposed Alterative B would include the loss of 604.8 acres of wetlands due to gravel fill, "temporary" impacts to approximately 30 acres of wetlands from ice pads that could extend out over multiple years in a single location, and the permanent alteration of approximately 150 acres of wetlands from gravel mining.[374] Another 4,557.3 acres of wetland vegetation could occur from ice infrastructure, and 3,277 acres of wetlands could be indirectly impacted by dust shadow, resulting in likely vegetation mortality.[375] The impacts to streams and rivers will be significant, given that the project could involve 7 bridges, 11 culvert batteries, and 195 cross-drainage culverts.[376] The impacts from the module delivery are also extensive and in themselves would involve additional acres of gravel fill from road widening, 666.6 acres of onshore ice roads and pads, and over 12 acres of screeding.[377]

There are numerous gaps in the analysis in the draft EIS with regard to the analysis of impacts to wetlands, hydrology, permafrost, waterway, and other impacts. As discussed in more detail in the attached expert report by Siobhan Fennessy, filling and degrading sensitive tundra wetlands is likely to have a wide range of negative impacts on a range of resources and functions over the short and long term, including wetlands, water quantity and quality, fisheries, and permafrost.[378]

The draft EIS fails to do a sufficient analysis of these impacts, both for purposes of NEPA and the Corps' CWA obligations. The Corps does not have sufficient information to make the necessary findings under the 404 Guidelines.

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[370] *Id*.
[371] *Id.* § 230.11.
[372] *Id.* § 230.11(a)–(h).
[373] *Id.* § 230.12(a)(3)(iv); *see* 33 C.F.R. §§ 320.2(f), 320.4(a)(1).
[374] 1 DSEIS at 135; 5 DSEIS, App. D.2. at 2.
[375] 1 DSEIS at 136–37.
[376] *Id*. at 122–23.
[377] *Id*.
[378] *See generally* Siobhan Fennessy, Ph.D., PWS, Comments on the Willow Draft Supp. Envtl. Impact Statement (Aug. 2022) [hereinafter Fennessy Comments].

These substantial gaps are reflected in the lack of adequate analysis in the EIS, which provides an insufficient basis to meet the Corps' NEPA obligations. For example, as discussed in Dr. Fennessy's report and later in these comments, the draft EIS mentions in a high level, generalized way — but does not attempt to quantify — the potential direct impacts from numerous activities and secondary impacts that will result to aquatic resources from construction and implementation of the proposed project, including from the following:

- Impacts from gravel infrastructure, bridges and culverts, which could alter surface flows and result in impoundment.[379] There are numerous related effects that have not been adequately analyzed and quantified, including potential delays in plant growth from altered flows; conversion of vegetated tundra to lakes; increased surface water depths upgradient of gravel fills, which could transform tundra types; the potential for drainage patterns and vegetation communities to be interrupted downgradient from any infrastructure; and the potential for permafrost degradation and thermal regime changes from infrastructure;
- Impacts from water withdrawals;
- Damage to wetlands, waterways, and permafrost from gravel mining and infrastructure;[380]
- Impacts from gravel infrastructure that would be permanently placed in the 50- and 100-year floodplain for Fish (Uvlutuuq) Creek, Judy (Kayyaaq) Creek, Judy (Iqalliqpik) Creek, Willow Creek 2, Willow Creek 4, Willow Creek 4A, and Willow Creek 8;[381] and
- Impacts to riffle complexes, which are a special aquatic site.[382]

Because the Corps does not have a permit application and the necessary information to analyze this project, the draft EIS also does not contain appropriate mitigation measures for this project. The 404(b)(1) Guidelines provide that "no discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem."[383] Pursuant to the Corps' permitting regulations, compensatory mitigation may be required to ensure that a permit complies with the 404(b)(1) Guidelines. The 2008 Mitigation Rule sets out how mitigation requirements are determined and provides the Corps with the authority to deny a permit if there is a "lack of appropriate and practicable compensatory mitigation."[384] The 2008 Mitigation Rule also contains substantive provisions regarding the size and location of compensatory mitigation that are directly pertinent to the Corps' decision whether to permit this project. The 2008 Mitigation Rule

[379] 1 DSEIS at 136.
[380] Fennessy Comments at 4–5, 7–9.
[381] *Id*. at 5–6.
[382] 1 DSEIS at 151 ("[I]t is anticipated that effects would be localized to the immediate area (from the boat ramp to a riffle immediately downstream of the existing bridge over the river on the GMT road; Figure 3.10.1."); *see also* Fennessy Comments at 10.
[383] 40 C.F.R. § 230.10(d).
[384] 33 C.F.R. § 332.1(c)(3).

requires that "the amount of required compensatory mitigation *must be, to the extent practicable, sufficient to replace lost aquatic resource functions.*"[385] The district engineer "must use a watershed approach to establish compensatory mitigation requirements . . . to the extent appropriate and practicable."[386] "The ultimate goal of a watershed approach is to maintain and improve the quality and quantity within watersheds through strategic selection of compensatory mitigation sites."[387] Importantly, the Corps' regulations and various guidance documents do not limit the Corps' consideration of mitigation to impacts that are only significant on a watershed scale.[388]

The Corps does not have sufficient information on the distribution and functions of the wetlands across the project area to determine appropriate mitigation measures or to adequately assess the proposed project. Given the prevalence of jurisdictional wetlands throughout the project area, the Corps needs to ensure that impacts are mitigated appropriately. "Districts should use a functional assessment by qualified professionals to determine impacts and compensatory mitigation requirements."[389] Conducting a functional assessment is critical to determining what functions particular wetlands perform, and their capacity to perform those functions. In the prior EIS and 404 process, the Corps lacked finer scale mapping and other detailed information about the wetlands in the vicinity of the proposed project footprint that is necessary for its 404 analysis. An aquatic site assessment analyzing wetland functions was not completed for the entire Willow project; ConocoPhillips only assessed a fraction of the project area. Without analyzing all of Willow's direct and secondary effects, the Corps cannot not make a reasonable determination regarding significant degradation. EPA pointed out a number of these gaps during scoping, as well as during the prior EIS process that have not been addressed.[390] These include information about the expected change in the function and condition of the resources; identification and description of all wetlands and surface waters, including ephemeral and intermittent streams, that could be affected by oil and gas activities; acreages, channel lengths, habitat types, values and functions of the waters; and information on the types of activities that would require mitigation measures during construction, operation, and closure phases of the project.[391] The Corps is also

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[385] *Id*.§ 332.3(f) (emphasis added).
[386] *Id*.§ 332.3(c)(1).
[387] *Id*.
[388] *See e.g. Pac. Coast Fed'n of Fishermen's Ass'ns v. Nat'l Marine Fisheries Serv.*, 265 F.3d 1028, 1035–37 (9th Cir. 2001) (holding that environmental impacts of an activity cannot be minimized by adopting a scale of analysis so broad that it marginalizes the site-level impact of the activity).
[389] U.S. Army Corps of Eng'rs, Regulatory Guidance Letter No. 02-02, Guidance on Compensatory Mitigation Projects for Aquatic Resource Impacts Under the Corps Regulatory Program Pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899, Dec. 24, 2002.
[390] U.S. Environmental Protection Agency, Ltr. to Bureau of Land Management (March 9, 2022) ("We continue to recommend that the SEIS include analysis of the impacts to aquatic resource functions and values at the site-specific scale, which will help to inform decisions regarding appropriate mitigation.").
[391] U.S. Environmental Protection Agency, Ltr. to Bureau of Land Management (Sept. 9, 2020.)

missing a wide range of data about the timing and magnitude of peak flows in multiple waterbodies that will be essential to the Corps' 404 permit.

The draft EIS does not contain any provisions addressing compensatory mitigation for this project, despite the fact that there will be substantial direct, indirect, and cumulative impacts. Instead, the draft EIS states that mitigation measures required by the Corps will be described in the Corps' record of decision for this project.[392] In the Corps' prior approval of Willow, the agency failed to ensure adequate compensatory mitigation. In particular, the Corps failed to consider whether all appropriate and practicable steps were taken to minimize secondary effects, such as from flood design exceedances or requiring adequate dust control measures. ConocoPhillips' prior mitigation plan was also deficient in identifying how Willow's impacts would actually be offset, only requiring compensatory mitigation for Willow's permanent impacts within 500 feet of anadromous waterways, and within the Teshekpuk Lake and Colville River Special Areas. The Corps did not explain how it determined that impacts to these wetlands (a total of 237.8 acres) should be offset, while the impacts from fill in other wetlands (totaling 3,730.9 acres) should not. To the extent the Corps downplayed Willow's impacts by considering them on a watershed scale, this was inappropriate.[393]

Moreover, as discussed in the attached expert report from the prior Willow draft EIS process, the prior process —which is seemingly being repeated — is an "unacceptable and inadequate process for proposing compensatory mitigation" for numerous reasons:

> There is no opportunity for the public or agencies to comment on a compensatory mitigation proposal and its adequacy to compensate for unavoidable impacts resulting from project implementation, construction and operation. There is no transparency inherent in this type of process. If the Corps waits until the ROD to require, discuss and incorporate a compensatory mitigation plan into their ROD and Section 404/10 permit required for this project, then there would be no opportunity for comments from the public, agencies, and tribal entities.[394]

The Corps cannot wait until the point of issuing a record of decision to analyze the mitigation measures for this project and present that analysis to the public. That is contrary to NEPA. The Corps is required to analyze those measures and their effectiveness in a NEPA analysis. The draft SEIS does not contain this analysis and cannot serve as a basis for the Corps to meet its NEPA obligations. As discussed below, the draft SEIS does not demonstrate that the proposed best management practices, lease stipulations, or reclamation are adequate to mitigate the impacts of this project or that compensatory mitigation should not be required.[395] Because of

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[392] 1 DSEIS at 134.

[393] *See* U.S. Environmental Protection Agency, Technical Review of A Threshold-Based Approach for Determining Significant Degradation in Alaska (July 5, 2018).

[394] Memo prepared by Gail Terzi, Consultant, ConocoPhillips Alaska, Inc. (ConocoPhillips) Willow Project, Bureau of Land Management (BLM) Draft Environmental Impact Statement (DEIS) Review and Comments at 11, 20–24 (Oct. 17, 2019) [hereinafter 2019 Terzi Report]; *see also* 33 C.F.R. Part 332.3(a)(3) and 40 C.F.R. Part 230.93(a)(3).

[395] *Infra* Resource Impacts II (water quality), III (wetlands), VIII (fisheries), IV (soils and

the lack of mitigation presented or analyzed in the draft SEIS, there is a serious risk of significant degradation from the proposed project that the Corps has failed to adequately address. "The amount of required compensatory mitigation must be, to the extent practicable, sufficient to replace lost aquatic resource functions."[396] As such, the Corps must require restoration or preservation to compensate for impacts from all lost functions, not merely a fraction of Willow's impacts.[397]

All of this information is critical to the Corps' ability to properly analyze this project and develop appropriate mitigation measures. Despite that, this information is wholly missing because Conoco has yet to submit a complete, updated 404 application. The Corps and BLM cannot move forward with analyzing this project in the draft EIS without having all of this information, which is necessary for the Corps to meet its obligations under the 404 Guidelines and NEPA.

E. The DSEIS Fails to Comply with the National Petroleum Reserve Production Act's Protective Mandates.

1. The DSEIS fails to consider adequate protective measures or alternatives consistent with the NPRPA.

The NPRPA sets out independent legal requirements for the Reserve.[398] While the NPRPA allows for the exploration and development of oil and gas resources, it also mandates the protection of the Reserve's extraordinary subsistence, recreational, fish, wildlife, historical, and scenic values. The provisions related to competitive leasing of oil and gas make it clear that the Secretary has broad authority to mitigate impacts from oil and gas to the ecological resources in the Reserve: "Activities undertaken pursuant to this Act shall 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 of the [Reserve]."[399]

The NPRPA also gives the Secretary the ability to designate Special Areas within the Reserve and directs the Secretary to provide "maximum protection[s]" for those areas. The NPRPA specifically states that "[a]ny exploration within the Utukok River, the Teshekpuk Lake areas, and other areas designated by the Secretary of the Interior containing any significant subsistence, recreational, fish and wildlife, or historical or scenic value, shall be conducted in a manner which will assure the maximum protection of such surface values of the extent consistent with the requirements of this Act for the exploration of the Reserve."[400] Any oil and gas production and exploration must be consistent with that protective provision.[401]

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permafrost).

[396] 40 C.F.R. § 230.93(f)(1).

[397] "Preservation" must eliminate a demonstrated threat. 33 C.F.R. § 332.3(h)(1)(iv).

[398] 42 U.S.C. § 6501, *et seq*.

[399] *Id.* § 6506a(b).

[400] *Id.* § 6504(a).

[401] *Id.* § 6506a(n)(2).

BLM's regulations further expand on the procedures for protecting the environmental, fish and wildlife, historical, and scenic values in the Reserve.[402] The regulations require BLM to take actions, including monitoring, "deem[ed] necessary to mitigate or avoid unnecessary surface damage and to minimize ecological disturbance throughout the reserve to the extent consistent with the requirements of the Act for the exploration of the reserve."[403] The regulations also specify that "[m]aximum protection measures shall be taken on all actions within the [Utukok] River Uplands, Colville River, and Teshekpuk Lake special areas, and any other areas identified by the Secretary as having significant subsistence, recreational, fish and wildlife, or historical or scenic value."[404] The regulations indicate these maximum protections include, but are not limited to, requirements for when and where activities take place, restrictions on the types of vehicles and loadings, limits on the types and use of aircraft, and provisions related to fuel handling.[405] BLM is also able to "limit, restrict, or prohibit use of and access to lands within the Reserve, including special areas."[406] These measures can be taken to "protect fish and wildlife breeding, nesting, spawning, lambing of calving activity, major migrations of fish and wildlife, and other environmental, scenic, or historic values."[407] BLM's oil and gas regulations similarly reflect BLM's obligations to prevent adverse impacts to surface resources. BLM is required to "develop measures to mitigate adverse impacts, including lease stipulations and information to lessees."[408] BLM can impose additional stipulations to protect surface resources and special areas when approving a lessee's surface use plan and permit to drill.[409]

As detailed throughout these comments, BLM has failed to fulfill its mandate and broad authority to protect the Reserve's environment and people in the DSEIS. Many of the same problems with its previous analysis of the Willow project have been carried forward in the DSEIS in the agency's consideration of alternatives and more broadly with the lack of mitigation measures incorporated into the alternatives. As the District Court explained, BLM's assertion that it lacked authority to limit ConocoPhillips' activities was "inconsistent with [the agency's] statutory responsibility to mitigate adverse effects."[410] The NPRPA provides that BLM "*shall* include or provide for such conditions, restrictions, and prohibitions" on activities within the Reserve as it determines necessary to protect the Reserve's surface resources.[411] The statute places no limitation or conditions on this authority. Indeed, BLM has considerable discretion to suspend all operations on existing leases or units.[412] Under the NPRPA, BLM may suspend

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[402] 43 C.F.R. §§ 2361.0-1 to 2361.3.
[403] *Id.* § 2361.1(a).
[404] *Id.* § 2361.1(c).
[405] *Id*.
[406] *Id.* § 2361.1(e)(1).
[407] *Id*.
[408] *Id.* § 3131.2(b).
[409] *Id.* § 3131.3.
[410] *Sovereign Iñupiat for a Living Arctic v. Bureau of Land Mgmt*., 555 F. Supp. 3d 739, 769 (D. Alaska 2021).
[411] 42 U.S.C. § 6506a(b) (emphasis added).
[412] *Id*. § 6506a(k)(2) ("The Secretary may direct or assent to the suspension of operations and

operations and production "in the interest of conservation of natural resources" or to mitigate "reasonably foreseeable and significantly adverse effects on surface resources."[413] BLM also has authority to deny or delay an application for permit to drill (APD),[414] and ConocoPhillips' leases reflect BLM's authority to condition, restrict, or prohibit activities.[415]

There is no indication the agency has taken steps to ensure it is meeting the protective mandates under the NPRPA in its consideration of alternatives. Despite its broad authority to limit and restrict ConocoPhillips' proposal, BLM has still approached its review of the Willow Project and alternatives too narrowly in the DSEIS. As discussed in more detail above in the alternatives section, BLM has failed to consider an adequate range of alternatives that reflects this broad protective authority. BLM's addition of one new alternative does not rectify the problems identified by the District Court. This is particularly true because that alternative appears to be targeted at ConocoPhillips's own "optimizations" for the project and a narrow reading of the NPRPA's mandates regarding Special Areas, not on BLM's obligations to protect areas from the harmful impacts of this project. That alternative also leaves the door wide open for Conoco Phillips to continue expanding the footprint of Willow in the future — making any promises to defer or limit development in a meaningful way hollow.

BLM's screening process for considering different alternatives and project elements to minimize impacts also still reflects the agency is taking too narrow of a view of its authority, contrary to the NPRPA. BLM's screening criteria for the alternatives indicates the agency is still focused on any options being "consistent with CPAI's lease rights" and still needing to allow ConocoPhillips to "fully develop" the oil and gas field.[416] While the DSEIS clarifies "fully develop" does not require 100% extraction, BLM assumes it cannot permit a development proposal that would strand an economically viable quantity of oil.[417] This still flies in the face of BLM's obligations under the NPRPA and the District Court's decision since it indicates the agency is limiting the scope of its consideration to options that would allow for nearly full field development, despite the serious impacts and its obligations under the NPRPA.[418] These

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production on any lease or unit.").

[413] 43 C.F.R. § 3135.2(a)(1), (3).

[414] *Id*. § 3162.3-1(h)(2) (BLM has authority to "[r]eturn the application and advise the applicant for the reasons for disapproval"); *id.* § 3162.3-1(h)(3) (stating that BLM can respond to an APD by advising the applicant of the reasons why final action will be delayed along with the date such final action can be expected); *see also N. Alaska Evt'l Ctr. v. Kempthorne*, 457 F.3d 969, 976 (9th Cir. 2006) (assuming government could deny a specific application altogether if adequate mitigation measures are not available).

[415] *See* U.S. Department of the Interior, Offer to Lease and Lease for Oil and Gas, Form 3100-11 (Oct. 2008) § 6 (BLM can require additional reasonable mitigation measures as conditions of approval to "minimize[] adverse impacts to the land, air, and water, to cultural biological, visual, and other resources, and to other land uses or users"); *id*. § 4 ("Lessor reserves the right to specify rates of development and production in the public interest.").

[416] 1 DSEIS at 7.

[417] *Id*. at 8.

[418] *Sovereign Iñupiat for a Living Arctic*, 555 F. Supp. 3d at 768–69.

screening criteria, which do not reflect the full scope of BLM's authority under the NPRPA, severely curtailed the agency's ability to look more broadly at ways to address the impacts of this project. Similar to the last EIS, BLM's screening criteria and purported restrictions on its authority are "inconsistent with its own statutory responsibility to mitigate adverse effects on the surface resources" of the Reserve.[419] BLM needs to revise and rerelease the SEIS with alternatives and other mitigation measures that reflect the full scope of the agency's authority under the NPRPA, that do not rule out options based on these inappropriate screening criteria and unduly narrow interpretations of its statutory obligations.

2. Special area values and impacts are inadequately analyzed and insufficiently protected.

While the DSEIS purports to add a new alternative that "provide for the 'maximum protection' of surface values within the [Teshekpuk Lake Special Area] and [Colville River Special Area],"[420] the DSEIS still falls short of analyzing the impact of the Willow Project on Special Areas or ensuring that these Areas are provided the "maximum protection" as required by the NPRPA. Groups explained in their scoping comments that BLM's review of Willow must reflect the heightened protections warranted to Special Areas and the values and resources they protect. But the DSEIS still fails to do so.

We note at the outset that BLM cannot select Conoco's Preferred Alternative, i.e., alternative B with two drilling pads in the Teshekpuk Lake Special Area, because BLM must ensure that maximum protection of Special Areas.[421] These Special Areas were designated because of the importance of multiple biological resources and process at a landscape level, and are intended to protect the healthy functioning of resources, habitat, and wildlife populations.[422] The agency can only select an alternative — or a component of an alternative — that it determines provides the maximum protection for Special Areas, consistent with the NPRPA.[423] By identifying an alternative that it seems both more protective and feasible,[424] BLM has disqualified ConocoPhillips' preferred alternative from selection.[425]

Teshekpuk Lake and its surrounding area have been protected from oil and gas development for the past 40 years. Multiple Secretaries of the Interior have prohibited oil and gas leasing in this valuable ecosystem, recognizing its outstanding ecological values. The 2013 IAP ROD expanded the Teshekpuk Lake Special Area from 1.75 million acres to 3.65 million acres to protect caribou calving, foraging and insect-relief areas, as well as waterbird and shorebird

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[419] *Id.* at 769.
[420] 1 DSEIS at 7; *see also* 1 DSEIS at ES-1, 1; 5 DSEIS, App.D at 1.
[421] 42 U.S.C. 6504(a); 43 C.F.R. 2361.0-5(f).
[422] 2020 IAP Final EIS at 22.
[423] *Sovereign Iñupiat for a Living Arctic*, 555 F. Supp. 3d at 767–70.
[424] 1 DSEIS at 7–8; 5 DSEIS, App. D.1 at 6–7, 23 (alternatives screening criteria).
[425] To be sure, Commenters do not believe that Alternative E provides maximum protection for the Special Areas; Comments suggest multiple other alternatives or components of alternatives that are more protective. *See supra* Legal/Policy IV.D.

breeding, molting, staging, and migration habitats,[426] and made approximately 3.1 million acres unavailable for oil and gas leasing to protect birds and caribou, and the subsistence resources they provide.[427] The 2013 IAP expanded the purpose of the Teshekpuk Lake Special Area to include the protection of important caribou and shorebird habitat while continuing to protect waterbird habitat, which was the original purpose for the Special Area.[428] The 2013 IAP also provided specific stipulations and BMPs for the Teshekpuk Lake Special Area, such as BMP K-5, Teshekpuk Lake Caribou Habitat Area. In the 2020 IAP, BLM reduced the size of the Teshekpuk Lake Special Area, shifted the boundaries from the south to the west, and opened the entire Special Area to leasing.[429] BLM, however, recently reconsidered the 2020 IAP and adopted the no action alternative, realigning the boundary and management of this Special Area with the 2013 IAP.[430]

The Colville River Special Area was designated by the Secretary of the Interior in 1977 to assure maximum protection of its subsistence, wildlife, recreational, and other identified values, such as the unique bluff and riparian habitats associated with the Colville River and its tributaries. In particular, its purpose was to protect the arctic peregrine falcon, which at that time was an endangered species.[431] The Colville River Delta is the largest and most productive river delta in northern Alaska, and the river has been designated an Aquatic Resource of National Importance.[432] The Colville River Special Area lies along that river and two of its larger tributaries, the Kogosukruk and Kikiakrorak rivers, and encompasses 2.44 million acres.[433] The cliffs along the Colville River provide critical nesting sites and adjacent hunting areas for peregrine falcons, gyrfalcons, golden eagles and rough-legged hawks. In recognition of the importance of this area, the 2013 IAP ROD expanded the purposes of this Special Area to include protection for all raptors and increasing protections by prohibiting permanent oil and gas facilities, including gravel pads, roads, airstrips, and pipelines within two miles of the Colville, Kikiakrorak, and Kogosukruk Rivers.[434] While the 2020 IAP ROD completely eliminated this Special Area,[435] the BLM's recent adoption of the no-action alternative restored the Special Area, consistent with the 2013 IAP.[436]

The Willow Project presents a substantial threat to the ecology of these important areas. ConocoPhillips' proposal would result in significant industrial activity within and adjacent to the

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[426] 2013 IAP ROD at iv, 4.
[427] *Id*. at iv.
[428] *Id*. at 4. The notice designating the Teshekpuk Lake Special Area noted "a large number of ducks, geese, and swans" and the importance of the area for these and other waterbirds. 42 Fed. Reg. 28,723 (June 3, 1977).
[429] 2021 IAP ROD at 1–2.
[430] 2022 IAP ROD at 5, 11.
[431] 1 2013 IAP Final EIS at 17.
[432] *Id*.
[433] *Id*.
[434] 2013 IAP ROD at 73–74, Lease Stipulation/Best Management Practice K-1(a), (d).
[435] 2020 IAP ROD at 1–2.
[436] 2022 IAP ROD at 5.

Teshekpuk Lake and Colville River Special Areas. The DSEIS purports to include a new alternative to lessen the impacts to the Special Areas, but the design and analysis fall short of what is required by the NPRPA to protect them and by NEPA to analyze the impacts of the Willow Project on the Special Areas resources, values, and purposes.[437] As EPA highlighted in their scoping comments on the DSEIS, BLM should have evaluated alternatives precluding any drill sites within the Teshekpuk Lake Special Area given current extended reach drilling technology.[438]

Instead, all project alternatives involve the placement of infrastructure (temporary and permanent) in the Special Areas.[439] But, as the affected environment and environmental consequences are presently set out, it is unclear how the impacts of the proposed project may impact the Special Areas, including their purposes and their ability to maintain ecological functions to meet those purposes. Despite Groups call for an analysis of the impacts of the project on the Special Areas, there is still no focused analysis of the impacts to the Special Areas. Such an analysis is required to ensure that the purposes for the Special Areas can be met, and to determine whether additional lease stipulations or best management practices/required operating procedures/mitigation measures may be necessary to protect the Special Area values and functions.

Relatedly, BLM should provide much better maps of the Willow Project and the Special Areas and relevant restrictions on surface use, lease stipulations, and ROPs. It is incredibly challenging to understand what components of Willow occur in areas that have designations, restrictions, or limitations. For example, the maps comparing alternatives do not show the Special Area boundaries or restricted areas.[440] We strongly encourage BLM to include much more detailed and comprehensive maps in its final SEIS.

Without actually analyzing the impact of the Willow Project on the Special Areas themselves, regardless of BLM's individual analysis on the impacts to separate resources, BLM cannot ensure that it is meeting the maximum protection standard. BLM must include this analysis in a revised DEIS. BLM's failure to include a specific evaluation of the impacts of each alternative on Special Areas and to provide useful maps to understand the differences and potential impacts to Special Area may be a carryover from the last administration's flippant treatment of Special Areas, describing them as simply an "administrative boundary."[441] As the District Court made clear, they are not simply administrative areas; they are given substantive protections under the NPRPA.[442] BLM should revise its analysis to specifically consider the impacts of each alternative on Special Areas, and ensure that maps comparing the alternatives clearly identify the Areas and restrictions on activities or infrastructure within the Areas. Without

[437] 1 DSEIS at 10.
[438] U.S. Environmental Protection Agency, Ltr. to Bureau of Land Management (March 9, 2022).
[439] 1 DSEIS at22.
[440] 5 DSEIS App. D.2 at figs. 2.5.3, 2.7.1A, 2.7.1B.
[441] 4 Willow Final EIS, App. B.2 at 121.
[442] *Sovereign Iñupiat for a Living Arctic*, 555 F. Supp. 3d at 769.

such information, BLM is unable to ensure compliance with the maximum protection standard for Special Areas.

F. BLM Should Not Approve Sales of Mineral Materials to Support Willow.

Regarding BLM's consideration of the gravel mines to support Willow, any approval must be conducted under BLM mineral material sales regulations, which contain strict limits to protect the public interest. In 1947, Congress passed the Materials Act,[443] authorizing the disposition of sand, stone, and gravel. Eight years later, Congress passed the Multiple Use Mining Act of 1955, also known as the Surface Resources Act or Common Varieties Act,[444] which declared that no deposit of common varieties of, sand, stone, or gravel would be considered "a valuable mineral deposit within the meaning of the mining laws of the United States so as to give effective validity to any mining claim hereafter located under such mining laws." Thus, Congress removed common varieties of those materials from the purview of the mining law and made them subject to the provisions of the Materials Act.[445]

These gravel mines and material sales contracts are governed by 43 C.F.R. Part 3600. Under these Mineral Material Disposal regulations, no disposal is authorized by the statute where it would be "detrimental to the public interest."[446] In addition, the regulations preclude BLM from disposing of mineral materials if it determines "that the aggregate damage to public lands and resources would exceed the public benefits that BLM expects from the proposed disposition."[447] These Part 3600 rules, unlike the Part 3809 rules governing locatable/hardrock minerals, preclude BLM from authorizing any activity/sale without meeting the "public interest" standard at 43 C.F.R. § 3601.

Authorization of these gravel mines would be detrimental to the public interest and should not be allowed. Even the limited information available regarding these proposed gravel mines demonstrates that mining these sites would fail the public interest test. Indeed, the U.S. District Court in Alaska and the Ninth Circuit Court of Appeals found that the likelihood of irreparable impacts to subsistence users resulting from a single winter season of gravel mining area warranted a preliminary injunction stopping Willow's construction.[448]

As described above, BLM did not consider any potential alternative sites for gravel mines for this project, nor did BLM consider an alternative which would reduce the gravel footprint for

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[443] 30 U.S.C. §§ 601–604.
[444] *Id*. § 611.
[445] *United States v. Pitkin Iron Corp*., 170 IBLA 352, 354 (2006); *United States v. Multiple Use, Inc*., 120 IBLA 63, 76A (1991).
[446] 30 U.S.C. § 601 (2000); 43 C.F.R. 3601.6(a).
[447] 43 C.F.R. 3601.11; *see also Ronald W. Byrd*, 171 IBLA 202, 208, 2007 WL1761028 **WL4.
[448] *Sovereign Iñupiat for a Living Arctic v. Bureau of Land Mgmt*., 555 F. Supp. 3d 739, 753–54 (D. Alaska 2021); *Sovereign Inupiat for a Living Arctic v. BLM*, Nos. 21-35085, 21-35095, 2021 U.S. App. LEXIS 28468, at *6 (9th Cir. Feb. 13, 2021); *Sovereign Iñupiat for a Living Arctic v. BLM*, No. 3:20-cv-00290-SLG, 2021 U.S. Dist. LEXIS 22809, at *6–*9 (D. Alaska Feb. 6, 2021).

the Willow project. BLM did not even consider an option where the gravel mine would be outside of the Ublutuoch (Tiŋmiaqsiuġvik) River 0.5-mile setback.[449] The DSEIS simply states that mine development is "allowed in the setback area" but the cited lease stipulation states that such development may be "authorized on a case-by-case basis."[450] Yet, BLM does not articulate why these particular gravel mines should be authorized on a case-by-case basis. BLM also failed to explain how these particular mines would be consistent with its objectives for protecting this waterway under Lease Stipulation/Best Management Practice K-1. In other words, while BLM's K-1 stipulation does not prohibit authorization of these mines, it does not follow that BLM should simply approve them without further analysis or consideration. Instead, BLM has to base its waiver of the stipulation on some justification. That explanation is wholly absent in the draft SEIS.

It is also troubling that BLM did not consider alternatives that would reduce the size of, or relocate, the proposed gravel mines. The potentially significant impact to water quality, wildlife habitat, and subsistence users within the setback area is essential to BLM's alternatives review, as impacting water quality in a high-use subsistence area is a highly relevant factor BLM must consider in exercising its discretion to choose the no-action alternative in order to meet the FLPMA and Part 3600 public interest mandates. As described in more detail below, these gravel mines are detrimental to the public interest due to their short- and long-term damage to the environment.[451] As noted herein, BLM must undertake a full review of the impacts from these mines under FLPMA and NEPA, and include such an analysis in a revised or supplemental EIS.

The draft SEIS provides that two gravel mines sites within the Tiŋmiaqsiuġvik area would be used by ConocoPhillips for the potential to supply some or all of the gravel required to construct the Willow Project.[452] Depending upon the alternative, the gravel mines would either have an excavation footprint of up to 119.4 acres (Alternatives B and E) or 189.8 acres (Alternatives C and D).[453] The scale of these mines is massive, and the DSEIS does little to provide the reader with perspective regarding their size. For context, 118 acres is equal to the size of 89 football fields with endzones.

The draft EIS does not explain why Alternative B and E would result in the same excavation footprint, given the fact that Alternative E purports to have a smaller gravel footprint than Alternative B.[454] Logically, a reduction in the gravel footprint of the project should have a corresponding reduction in the amount of gravel needed and thus reduce the size of the mines. BLM must assess the specific gravel needs of each alternative to ensure it is accurately representing the necessary size of the gravel mine and should not approve a larger than mine site than is necessary.

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[449] 1 DSEIS at 19.
[450] 2022 IAP ROD at A-6.
[451] *See Echo Bay Resort*, 151 IBLA 277, 284, 1999 WL1454845, *7 (denial of mineral material sale upheld due to threats to local springs, wildlife and habitat, recreation, and scenery).
[452] 1 DSEIS at 19.
[453] *Id*.
[454] *See* 1 DSEIS at 24.

Moreover, the draft SEIS is suspiciously vague in its description of these mines, referring to them as though they are a single "mine site" rather than characterizing them as two mines, on either side of an important waterway, with each requiring their own perimeter berms. The result is a complete disregard for the significant impacts to this important subsistence area that would result from having two massive gravel mines on either side of a river. The DSEIS also does little to account for the visual and other impacts from ConocoPhillips' proposal to build massive berms around the perimeter of the gravel mines. The DSEIS states that "[o]verburden material would be used to create a berm (approximately 5 feet tall and 15 feet wide at the top) around the entire perimeter of Mine Site Areas 1 and 2," and states such berms would prevent surface water flow into the mine site, maintain thermal stability and stability of the mine walls, and prevent the public from accessing the mine site. But this does not explain why such walls would need to be so massive in height and width. Nor does the DSEIS appear to account for the added footprint of allowing 15-foot wide walls around the perimeter of these already enormous mines. BLM must explain how permitting two mine sites, with enormous perimeter berms surrounding each, so close to Nuiqsut and in the heart of an important subsistence area and waterway, complies with its obligations under the strict public interest standards at 43 C.F.R. Part 3600.

Gravel mining will directly cause additional ground disturbance and habitat destruction above and beyond what will be associated with the Willow project footprint and needs to be considered as a connected action in this EIS, not downplayed across resource analyses. Gravel extraction is generally done in large, open pit mines. 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.[455] 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.[456] Indirect effects such as these have led some researchers to approximate that a one acre gravel pit may affect as much as 25 acres surrounding the site.[457] As discussed below and in the attached expert report from Dr. Siobhan Fennessy, these gravel mines would irreversibly alter permafrost and it is clear the impacts will likely exceed the acres of direct impact depicted in the DEIS.[458] The impacts will likely exceed the 119–189.8 acres of direct impact depicted in the DEIS, which only focuses on surface disturbance and fails to consider long-term impacts from changes to the thermal regime and the potential indirect and secondary impacts from the gravel mines.[459] ConocoPhillips also proposes to include extensive ice infrastructure to support the mine — approximately 196 acres of ice pads in addition to the footprint of the mine itself.[460] BLM's analysis also fails to account for downstream impacts of the mines and how they could impact fish populations and subsistence use well beyond the footprint of the mines with sediment and

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[455] BENJAMIN SULLENDER, AUDUBON ALASKA, ECOLOGICAL IMPACTS OF ROAD- AND AIRCRAFT-BASED ACCESS TO OIL INFRASTRUCTURE 19 (July 2017), *available at* http://ak.audubon.org/sites/g/files/amh551/f/road_aircraft_access_report_final_0.pdf.
[456] *Id*. (internal citations omitted).
[457] *Id*. (internal citations omitted).
[458] Fennessy Comments at 4–5; *see also infra* Resource Impacts IV (soils and permafrost).
[459] Fennessy Comments at 4–5, 11.
[460] 5 DSEIS, App. D.2 at 2.

other runoff. BLM failed to fully consider all of these impacts in the context of the mines' sizes, which would be substantial.

Moreover, the proposed mine sites would be approximately seven miles from the community of Nuiqsut,[461] even closer to the community than the existing CD-5 pad or the nearly completed GMT-1 pad. The existing Arctic Slope Regional Corporation gravel mine is approximately 4.5 miles northeast of Nuiqsut[462] and the noise impacts from blasting reverberate throughout the community regularly and cause severe emotional and other distress for community members. This proposed gravel mine site will further exacerbate the air quality and noise impacts to the community of Nuiqsut, irreparably harming the community.

BLM also failed to consider a full suite of mitigation measures to avoid and minimize impacts from the extensive gravel mining proposed as part of the Willow Project. The DSEIS acknowledges that gravel mining would disturb frozen soils at the mine site and change thermal conditions in the area, affecting groundwater, creating ponds and lakes, and exposing pit walls to surface temperatures. The mine reclamation plan provided in the DSEIS is vague at best; the DSEIS states that the site would be allowed to fill with surface water after areas of overburden are placed in the pit, which would be subject to permafrost thaw and settlement.[463] Damage to permafrost from gravel mining would be permanent and the reclamation plan simply proposes to allow the mine sites to fill with water that would be up to 70 feet deep.[464] The DSEIS states that this would "provide potential waterfowl and shorebird habitats similar to existing habitats in the surrounding area." But there is no indication elsewhere in the DSEIS that other habitat in the surrounding area feature lakes which are disconnected to other waterways and potentially 70 feet in depth. BLM cannot assume without any scientific basis that the reclaimed mine sites would provide for bird or wildlife habitat.

Further, as discussed in the attached expert report by Gail Terzi prepared for BLM's first draft EIS for Willow, BLM must closely consider the need for mitigation to minimize and avoid impacts to wetlands and waterways from Willow's proposed gravel mines.

> Permafrost wetlands are considered difficult-to-replace resources and the degradation and loss of permafrost wetlands can have significant impacts on the environment. The application of BMPs and LSs are the main focus of curtailing potential impacts to permafrost, but do not adequately address the permanent and irreversible impacts for this impact. The only mitigation measure for impacts to permafrost would be total avoidance because once impacts occur, there is no way to rectify the impact through rehabilitation or restoration. And the BMPs and LSs are not specific enough (and how they would be monitored and enforced is a big gap that BLM must address) to ascertain whether any of the measures would be

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461 1 DSEIS at 33.
462 U.S. Army Corps of Engineers, Public Notice of Application for Permit, *available at* http://www.poa.usace.army.mil/Portals/34/docs/regulatory/publicnotices/POA-1996-869-M4.pdf?ver=2012-06-14-152059-647.
463 5 DSEIS, App. D.2 at 10.
464 *Id*.

effective at minimizing direct and indirect impacts to permafrost wetlands.[465]

In sum, BLM failed to consider the significant adverse impacts of gravel mining from the proposed Willow Plan and therefore failed to assess whether BLM can lawfully permit material sales under its own regulations. Authorization of these gravel mines would be contrary to the public interest. The draft EIS should be revised and reissued with an evaluation of alternatives that would require gravel to come from other locations and should analyze the full scope of the impacts from the gravel mines, a full reclamation plan, and mitigation to avoid, minimize, and compensate for unavoidable adverse impacts.

BLM FAILED TO CONSIDER THE FULL SCOPE OF THE WILLOW PROJECT AND ITS IMPACTS.[466]

The DSEIS fails to adequately disclose and analyze the full scope of Willow's direct, indirect, and cumulative effects as required by NEPA.[467] NEPA requires analysis of ecological, aesthetic, historical, cultural, economic, social, and health impacts.[468] Because BLM improperly narrowed the scope of its review and failed to consider Willow's cumulative impacts, in particular from future project expansion, failed to consider the significant climate impacts of the project, and failed to provide or obtain sufficient information about the project itself, the agency could not meaningfully analyze the project's impacts to specific resources or measures to reduce such impacts.

I. THE DRAFT SEIS DOES NOT FULLY DISCLOSE OR ANALYZE THE INDIRECT AND CUMULATIVE IMPACTS FROM WILLOW, OTHER REASONABLY FORESEEABLE OIL AND GAS ACTIVITIES, AND OTHER ACTIVITIES.

BLM is required to consider Willow's cumulative impacts "together with past, present and reasonably foreseeable future actions."[469] NEPA's mandate to consider cumulative impacts 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."[470] Simply cataloguing "relevant past projects in the area" is insufficient.[471] BLM must provide enough detail to assist "the decisionmaker in

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[465] 2019 Terzi Report.
[466] Hereinafter "Scope Deficiencies."
[467] 40 C.F.R. §§ 1502.16, 1508.1(g). 1508.25(c).
[468] *Id.* at § 1508.8.
[469] *Native Ecosystems Council v. Dombeck*, 304 F.3d 886, 895 (9th Cir. 2002) (quoting 40 C.F.R. § 1508.7).
[470] *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).
[471] *Churchill Cnty. 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)).

deciding whether, or how, to alter the program to lessen cumulative impacts."[472] A "hard look" at cumulative effects requires "a sufficiently detailed catalogue of past, present, and future projects, and . . . adequate analysis about how these projects, and differences between the projects, are thought to have impacted the environment."[473]

BLM cannot defer cumulative effects analysis if meaningful analysis can be conducted now.[474] "Effects are reasonably foreseeable if they are sufficiently likely to occur that a person of ordinary prudence would take [them] into account in reaching a decision."[475] As noted in an EPA NEPA guidance document:

> [P]rojects need not be finalized before they are reasonably foreseeable. "NEPA requires that an EIS engage in reasonable forecasting. Because speculation is . . . implicit in NEPA, [] we must reject any attempt by agencies to shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as crystal ball inquiry." *Selkirk Conservation Alliance v. Forsgren*, 336 F.3d 944 (9th Cir. 2003).[476]

Overall, and as explained in greater detail below for specific resources, the BLM's direct, indirect, and cumulative impacts analysis fails to provide the "quantified or detailed information" required.[477] The DSEIS fails to adequately consider the full range of past, present, and reasonably foreseeable future actions (RFFA) that could, in combination with Willow, cumulatively effect the communities and resources that depend on the Reserve. One prominent analytical deficiency is BLM's failure to address ConocoPhillips' plans for future industrial expansion in and around Willow.[478] For those projects that were considered in BLM's cumulative impacts analysis, the DSEIS provides limited descriptions without the level of specificity needed for meaningful analysis. For many of the resources reviewed in the DSEIS, BLM draws overly general conclusions regarding Willow's cumulative effects without actually analyzing impacts from identified projects or providing necessary context regarding the scope of impacts.[479]

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[472] *Id*.
[473] *Te-Moak Tribe of W. Shoshone v. Dep't of Interior*, 608 F.3d 592, 603 (9th Cir. 2010) (rejecting NEPA review for mineral exploration operation that failed to included detailed analysis of impacts from nearby proposed mining operations).
[474] *See Neighbors of Cuddy Mountain v. U.S. Forest Serv*., 137 F.3d 1372, 1380 (9th Cir. 1998); *City of Tenakee Springs v. Clough*, 915 F.2d 1308, 1312–13 (9th Cir. 1990).
[475] *EarthReports Inc. v. Federal Energy Regulatory Commission*, 828 F.3d 949, 955 (D.C. Cir. 2016).
[476] Environmental Protection Agency, *Consideration of Cumulative Impact Analysis in EPA Review of NEPA Documents*, Office of Federal Activities, May 1999, at 12–13, https://www.epa.gov/sites/production/files/2014-08/documents/cumulative.pdf.
[477] *Neighbors of Cuddy Mountain v. U.S. Forest Serv*., 137 F.3d 1372, 1379–80 (9th Cir. 1998).
[478] *See infra* Scope Deficiencies IV. B (explaining DSEIS does not account for Willow's future scope).
[479] 1 DSEIS at 320–39.

The DSEIS fails to identify and fully consider Willow's cumulative impacts. BLM's cumulative impact analysis includes a cursory and incomplete list of projects that could interact with Willow. The DSEIS purports to consider past and present actions relevant to Willow's cumulative impacts by referencing Section 3.1.1, Past and Present Actions.[480] But Section 3.1.1 is too broad to be informative. For example, the DSEIS notes relevant past and present actions west of the Colville River "include existing oil and gas infrastructure (e.g., gravel and ice roads, pipelines, processing facilities)."[481] This description, which gives no indication of the extent or location of existing infrastructure, is insufficient to support meaningful analysis. This failing is compounded by BLM's failure to provide even a qualitative description of the extent of impact from past and present actions for most resources.[482] A more detailed analysis of existing stressors on the northeastern Reserve's resources is necessary in order to fully understand how those resources will be impacted by Willow's construction, infrastructure and ongoing activities.

The DSEIS also fails to identify and fully consider RFFAs that may flow from Willow's development as well as unconnected actions that may act cumulatively with the impacts of Willow. Reasonably foreseeable ongoing and future actions that are not included in the DSEIS include, but are not limited to:

- Development and production at ConocoPhillips' other Reserve projects, including Colville Delta 5 (CD-5), GMT-1, and GMT-2;
- Winter exploration drilling and associated activities in the Willow area and adjacent parts of the Reserve;
- Exploration, development, and production of recent oil and gas discoveries near the Reserve, including Caelus's Smith Bay, and Oil Search's Pikka-Horseshoe which is expected to move into production by 2026;[483] and
- Oil and gas activities in Outer Continental Shelf areas of the Beaufort Sea, as well as the potential for additional leasing and oil and gas activities and infrastructure in those areas and additional support infrastructure and activities within or adjacent to the Reserve.

Despite listing future development that may flow from Willow as reasonably foreseeable, the DSEIS fails to fully address ConocoPhillips' plans for future expansion flowing from Willow's infrastructure including its potential central processing facility and associated roads. Regarding Greater Willow 1 and 2, the DSEIS provides only a short description of these projects and largely fails to mention the planned expansion in its cumulative impacts analysis.[484] In addition, ConocoPhillips recently informed investors that the company has already "identified up to 3 billion [barrels of oil equivalent]" nearby that represent a "significant long-term upside"

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[480] *Id*. at 321.
[481] *Id*. at 33.
[482] *See e.g.*, *id*. at 330 (noting existing infrastructure and activities "contribute" impacts to fish).
[483] Alex DeMarban, *Oil companies say they'll move ahead to develop giant Pikka oil project on Alaska's North Slope*, ANCHORAGE DAILY NEWS (Aug. 16, 2022).
[484] *Id*. at 322.

to Willow because such prospects "could leverage the Willow infrastructure."[485] Despite the scale of these discoveries, their proximity to Willow, and their dependence on Willow's infrastructure, the DSEIS does not acknowledge or analyze ConocoPhillips' larger development strategy. BLM cannot simply disregard future development resulting directly from Willow as speculative in light of such statements and should request additional information from ConocoPhillips to support a thorough and defensible cumulative effects analysis.

For the RFFAs that are considered, the DSEIS includes only single sentence descriptions and largely fails to address cumulative impacts that may result from Willow in combination with specific RFFAs.[486] BLM's limited descriptions for RFFAs masks the specific relevance of particular RFFAs and their component parts. For example, the RFFA "Alpine Infrastructure Upgrades" includes a short list of expansion plans including a "potential new gravel pad (CD-8), additional gravel pads for staging, and other routine operational projects with small footprints."[487] This description fails to indicate that ConocoPhillips' proposed CD-8 well site is immediately adjacent to Nuiqsut[488] which is already "effectively surround[ed] by industrial infrastructure.[489] CD-8's proximity to the community is therefore likely to intensify the community's sensation of living in a "human corral" with decreased access to traditional lands.[490] Despite the potential significance of CD-8, the project is not mentioned in BLM's cumulative effects analysis beyond being listed as a potential source of air quality cumulative impacts.[491] Rather than addressing how specific RFFAs will act cumulatively with Willow to impact the northeastern Reserve's resources, the DSEIS often instead refers to all RFFAs generally. For example, in addressing potential cumulative impacts to water, the DSEIS does not address any individual RFFAs or even address categories of RFFAs before broadly concluding Willow "would contribute to the cumulative effects of past and present actions and RFFAs."[492] This is insufficient information to determine "whether, or how, to alter the program to lessen cumulative impacts."[493]

The DSEIS also fails to disclose and analyze the cumulative impacts of roaded development in the Reserve. As explained in earlier comments, an analysis of the true impacts of roaded development in the Reserve is essential and long-overdue. The Reserve is the largest tract of roadless land in the United States. When the federal government decided to allow oil

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[485] Edited Transcript of ConocoPhillips 2021 Market Update, June 30, 2021, available at: https://static.conocophillips.com/files/resources/2021-jun-30-cop-n-139276042438-transcript.pdf [hereinafter ConocoPhillips Market Update].
[486] *Id.* at 322–32.
[487] *Id*. at 322.
[488] Kay Cashman, *Colville POD Approved*, PETROLEUM NEWS, June, 19, 2022, at 1, 6.
[489] 1 DSEIS at 336.
[490] *Id*. at 336 ("Nuiqsut residents have reported feeling surrounded by infrastructure (as one resident put it, living in a "human corral"), and the Project, when combined with the RFFAs, would contribute to these concerns by further surrounding the community with infrastructure.").
[491] *Id*. at 327.
[492] *Id*. at 328.
[493] *Churchill Cnty.*, 276 F.3d at 1080.

development there, it determined that any development must be without roads, in order to protect the rich biological resources in the Reserve.[494] According to former Interior Secretary Bruce Babbitt, "[t]he problem with roads is that roads beget more roads beget more roads. A road becomes a network, becomes a spider-web of landscape fragmentation and destruction, with little use for wildlife."[495] When BLM abandoned this plan for protecting the roadless character of the Reserve, it did so without taking full account of the impact of roads. BLM cannot avoid the full impacts of a roaded development scenario for Willow by ignoring the foreseeable impacts of development beyond Willow that will almost certainly follow the project's newly built roads.

BLM's incomplete and overbroad analysis minimizes the considerable cumulative impacts caused by oil and gas activities in the Arctic. In 2003, the National Academy of Sciences published a report on the cumulative impacts of the environmental effects of oil and gas activities on the North Slope.[496] In that report, the National Academy recognized that there was an essential trade-off with industrialization and the intact physical environment: "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."[497] The National Academy also noted that the effects on the physical environment from oil and gas activities and infrastructure extend well beyond the footprint, and accumulate and persist even after the activity may cease.[498]

By failing to fully identify and analyze relevant RFFAs in the DSEIS, particularly expansion of Willow to enable further oil and gas drilling activities, BLM has continued its historical pattern of underestimating the cumulative effects of oil and gas development on the Reserve. In the EIS for the GMT-1 development project, BLM acknowledged that "the intensity of [development] impacts and the overall degree of impacts may be higher than previously anticipated" in earlier EISs assessing development in the Reserve.[499] The original Alpine field — specifically promoted as a "roadless development" when initially proposed — had three miles of roads when it began pumping crude in 2000, but now has many more miles of roads and other infrastructure built since then.[500] New discoveries in the Western Arctic on state and federal

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[494] Alec MacGillis, *How Obama Let Big Oil Drill in the Pristine Alaska Wilderness*, POLITICO, Dec. 24, 2015, available at: https://www.politico.com/magazine/story/2015/12/alaska-oil-drilling-lobbying-obama-213442/.
[495] *Id*.
[496] 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 (2003) [hereinafter NRC Report].
[497] *Id.* at 10.
[498] *Id.* at 156.
[499] 1 GMT-1 Final SEIS at 423.
[500] Alaska Wilderness League, Broken Promises: The Reality of Oil Development in America's Arctic (2009), at 2–6, available at: https://www.yumpu.com/en/document/read/46203802/broken-promises-alaska-wilderness-league [hereinafter Broken Promises].

lands have been dubbed a "string of pearls" and are resulting in new processing facilities and increased industrial activity significantly farther west than Alpine.[501]

BLM should revise its analysis and maintain a broad scope to avoid — once again — underestimating the true effects of a proposed oil and gas project on the North Slope.[502] Getting the analysis right for Willow is essential given the enormity of the project[503] and the profound and unpredictable impacts of climate change globally and specific to the project area. As BLM acknowledges "climate change will introduce substantial uncertainty in predicting demographic trends of species in the area and will make the predicted impacts of development more difficult to accurately assess."[504]

In revising its analysis, BLM must also account for impacts beyond individual project footprints. According to the National Research Council, the effects of industrial activities like Willow "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."[505] Thus, "[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 of this to wildland values. All of these effects result in the erosion of wildland and other values over an area far exceeding the area directly affected."[506]

II. BLM FAILED TO ADEQUATELY ANALYZE GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE.

The draft SEIS falls short of obligations under NEPA to properly contextualize and analyze the massive GHG emissions that would result from the Willow Project. NEPA mandates a "'full and fair analysis' of the environmental impacts" of BLM's permitting decisions.[507] Only after proper analysis, which includes analyzing potential mitigation for Willow's GHG emissions, can BLM fulfill its mandate to discuss the project's adverse impacts so that the agency can make an informed decision that complies with its other statutory mandates to protect

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[501] Tim Bradner, *Ratcheting Up*, FRONTIERSMAN, April 21, 2018, available at: http://www.frontiersman.com/business/ratcheting-up/article_dda92c24-45b7-11e8-a008-0b176b106442.html.

[502] *See generally* Broken Promises.

[503] *See supra* Overview at III (explaining Willow is the largest single oil and gas drilling operation being considered on federal lands).

[504] 1 DSEIS at 333.

[505] NRC Report at 9.

[506] *Id.* at 148.

[507] See *League of Wilderness Defs./Blue Mts. Biodiversity Project v. Connaughton*, 752 F.3d 755, 762 (9th Cir. 2014) (quoting 40 C.F.R. § 1502.1).

the resources and values in the Reserve under the NPRPA and FLPMA,[508] which would require the agency to choose the no-action alternative.[509]

In the draft SEIS, BLM discusses the environmental impacts of climate change generally on the Arctic.[510] And it discusses the environmental effects of the project on climate change, solely by quantifying Willow's GHG emissions.[511] Crucially, what is missing from this analysis is: (1) any explanation of whether this project would square with the urgent need to transition away from fossil fuel consumption and the federal government's commitments to take action within its power to facilitate that transition; (2) adequate analysis of the significance of Willow's GHG emissions, connecting GHG emissions resulting from Willow to climate disruption impacts on the Arctic and, specifically, the Reserve, its resources, and the people who depend on it; (3) evaluation of how climate change impacts will act cumulatively and synergistically with effects from developing Willow; (4) analysis of the potentially nonlinear, catastrophic climate impacts; (5) adequate evaluation of how a rapidly warming climate in the Arctic will affect the project's infrastructure over its 30-year life; (6) adequate discussion of mitigation for Willow's GHG emissions and the attendant climate impacts; and (7) proper analysis of methane emissions that would result from the project. Additionally, while BLM's evaluation of energy substitution and its resulting estimate of "net emissions" avoids the errors that rendered its previous analysis unlawful, modeled estimates of net emissions are inherently uncertain and should not be relied on as the sole authoritative estimate of a project's emissions. The DSEIS also fails to consider any reasonable alternative that meaningfully reduces lifetime GHG emissions of the project, as explained above.[512]

A. BLM fails to explain whether approving Willow would be consistent with the need to rapidly shift away from fossil fuel consumption in response to the climate crisis.

1. The effects of climate change are already severe and are worsening, especially in the Arctic.

An overwhelming international scientific consensus has established that human-caused climate change is already causing severe and widespread harms and that climate change threats are becoming increasingly dangerous. The climate crisis, caused primarily by fossil fuel emissions, poses an existential threat to every aspect of society. Fossil fuel-driven climate

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[508] *See, e.g.*, *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 351–52 (1989) (reading NEPA as charging agencies with mitigating adverse environmental impacts of their actions).

[509] *See, e.g.*, *Agdaagux Tribe of King Cove v. Jewell*, 128 F. Supp. 3d 1176, 1194 (D. Alaska 2015) (holding that an agency may choose the no-action alternative and that the "agency's decision may be based on any relevant considerations of law or policy . . . as long as [those considerations] are explained in the decision document").

[510] 1 DSEIS at 34–37; 6 DSEIS App. E.2A at 1–5.

[511] 1 DSEIS at 37–50; 6 DSEIS App. E.2A at 10–14.

[512] *Supra* Legal/Policy IV.D.3.

change has already led to more frequent and intense heat waves, floods, and droughts; more destructive hurricanes and wildfires; rising sea levels and coastal erosion; increased spread of disease; food and water insecurity; acidifying oceans; and increased species extinction risk and collapse of ecosystems. The climate crisis is killing people across the nation and around the world, accelerating the extinction crisis, and costing the U.S. economy billions in damages every year. The harms from the climate crisis and fossil fuel pollution are not felt equally, but instead fall most acutely on Black, Brown, Indigenous, and other communities of color, as well as low-wealth and other frontline communities, worsening the environmental justice crisis.[513]

The vast scientific literature documenting these findings has been set forth in a series of authoritative reports from the Intergovernmental Panel on Climate Change (IPCC), U.S. Global Change Research Program, and other institutions,[514] which make clear that fossil-fuel driven climate change is a "code red for humanity."[515] Without limits on fossil fuel production and deep and rapid emissions reductions, global temperature rise will exceed 1.5°C and will result in catastrophic damage in the U.S. and around the world.[516]

The IPCC, the international scientific body for the assessment of climate change, concluded in its *Climate Change 2021: The Physical Science Basis* report that: "[i]t is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred," and further

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[513] Donaghy, Tim & Charlie Jiang for Greenpeace, Gulf Coast Center for Law & Policy, Red, Black & Green Movement, and Movement for Black Lives, Fossil Fuel Racism: How Phasing Out Oil, Gas, and Coal Can Protect Communities (2021), https://www.greenpeace.org/usa/wp-content/uploads/2021/04/Fossil-Fuel-Racism.pdf; U.S. Environmental Protection Agency, Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts, EPA 430-R-21-003 (2021), www.epa.gov/cira/social-vulnerability-report.

[514] U.S. Global Change Research Program, Climate Science Special Report: Fourth National Climate Assessment, Vol. I (2017), https://science2017.globalchange.gov/; U.S. Global Change Research Program, Impacts, Risks, and Adaptation in the United States, Fourth National Climate Assessment, Vol. II (2018), https://nca2018.globalchange.gov/; Intergovernmental Panel on Climate Change, Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (2021), https://www.ipcc.ch/report/sixth-assessment-report-working-group-i.

[515] United Nations Secretary-General, *Secretary-General's statement on the IPCC Working Group 1 Report on the Physical Science Basis of the Sixth Assessment*, Aug. 9, 2021, https://www.un.org/sg/en/content/secretary-generals-statement-the-ipcc-working-group-1-report-the-physical-science-basis-of-the-sixth-assessment.

[516] Intergovernmental Panel on Climate Change, Summary for Policymakers. In: 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 (2018) [Masson-Delmotte, V. et al. (eds.)], https://www.ipcc.ch/sr15/.

that "[t]he scale of recent changes across the climate system as a whole and the present state of many aspects of the climate system are unprecedented over many centuries to many thousands of years."[517]

The U.S. government has repeatedly recognized that human-caused climate change is causing widespread and intensifying harms across the country. Most recently, the Fourth National Climate Assessment, prepared by hundreds of scientific experts and reviewed by the National Academy of Sciences and 13 federal agencies, including the Department of the Interior, found that "evidence of human-caused climate change is overwhelming and continues to strengthen, 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."[518]

And in October 2021, several reports issued by the Department of Homeland Security, the Department of Defense, the National Security Council, and the National Intelligence Director highlight the threat that climate change poses to national security. For example, the Office of the Director of National Intelligence issued the first-ever National Intelligence Estimate on Climate Change (NIE). The NIE notes that climate change will increasingly exacerbate a number of risks to U.S. national security interests through (1) increased geopolitical tension as countries argue over who should be doing more, and how quickly, and compete in the ensuing energy transition; (2) cross-border geopolitical flash points from the physical effects of climate change as countries take steps to secure their interests; and (3) climate effects straining country-level stability in select countries and regions of concern.[519] The NIE further states that "[g]iven current government policies and trends in technology development . . . collectively countries are unlikely to meet the Paris goals," and concludes that "[h]igh-emitting countries would have to make rapid progress toward decarbonizing their energy systems by transitioning away from fossil fuels within the next decade."[520]

The National Climate Assessments make clear that the harms of climate change are long-lived, and the choices we make now on reducing greenhouse gas pollution will affect the severity

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[517] Intergovernmental Panel on Climate Change, Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (2021), https://www.ipcc.ch/report/sixth-assessment-report-working-group-i/ at SPM-5 and SPM-9.
[518] U.S. Global Change Research Program, *Fourth National Climate Assessment, Volume II: Impacts, Risks, and Adaptation in the United States* (March 2021)[hereinafter NCA4] at 36; https://nca2018.globalchange.gov/downloads/NCA4_2018_FullReport.pdf.
[519] National Intelligence Council's National Intelligence Estimate on Climate Change, Oct. 2021, available at https://www.dni.gov/files/ODNI/documents/assessments/ NIE_Climate_Change_and_National_Security.pdf;
[520] *Id.*; *see also* Report on the Impact of Climate Change on Migration, Oct. 2021, available at https://www.whitehouse.gov/wp-content/uploads/2021/10/Report-on-the-Impact-of-Climate-Change-on-Migration.pdf Climate Risk Analysis, Oct. 2021, available at https://media.defense.gov/ 2021/Oct/21/2002877353/-1/-1/0/DOD-CLIMATE-RISK-ANALYSIS-FINAL.PDF.

of the climate change damages that will be suffered in the coming decades and centuries.[521] As the Fourth National Climate Assessment explains: "[m]any climate change impacts and associated economic damages in the United States can be substantially reduced over the course of the 21st century through global-scale reductions in greenhouse gas emissions…The effect of near-term emissions mitigation on reducing risks is expected to become apparent by mid-century and grow substantially thereafter."[522] As summarized by the National Research Council:

> Emissions of carbon dioxide from the burning of fossil fuels have ushered in a new epoch where human activities will largely determine the evolution of Earth's climate. Because carbon dioxide in the atmosphere is long lived, it can effectively lock Earth and future generations into a range of impacts, some of which could become very severe. [E]mission reduction choices made today matter in determining impacts experienced not just over the next few decades, but in the coming centuries and millennia.[523]

Climate change is being acutely felt in Alaska, where parts of the Arctic are warming at four times the rate of the rest of the world.[524] The effects of warming in Arctic Alaska have been especially severe. The Arctic's average winter temperature has increased by 6°F over the past 60 years, and the Arctic is expected to warm by an additional 10°F to 12°F this century.[525] This rapid warming presents myriad disruptions to Arctic ecosystems, including in the Reserve. In the Arctic, climate change is causing, and will continue to cause, sea-level rise, sea-ice melt, river flow changes, and permafrost thaw.[526]

The Fourth National Climate Assessment highlighted the extreme pace of climate change in Alaska and the Arctic in particular:

- Alaska is on the front lines of climate change and is among the fastest warming regions on Earth. It is warming faster than any other state, and it faces a myriad of issues associated with a changing climate.[527]

- The rate at which Alaska's temperature has been warming is at least twice as fast as the global average since the middle of the 20th century,[528] with

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[521] NCA4, Vol. II at 34.
[522] *Id.* at 1347.
[523] National Research Council, Climate Stabilization Targets: Emissions, Concentrations, and Impacts over Decades to Millennia, Washington, DC: National Academies Press (2011) at 3.
[524] Mika Rantanen et al., *The Arctic has warmed nearly four times faster than the globe since 1979*, Communications Earth & Environment (2022)3:168 (Aug. 11, 2022).
[525] BLM, National Petroleum Reserve in Alaska, Final Integrated Activity Plan and Environmental Impact Statement, Vol. 1 at 3-2 (June 2020) (2020 IAP).
[526] *Id*. at 3-3; BLM, National Petroleum Reserve-Alaska, Final Integrated Activity Plan/Environmental Impact Statement, Vol. 1 at 144 (Nov. 2012).
[527] NCA4 Vol. II at 1190.
[528] *Id*.

recent studies showing that the Arctic has warmed nearly four times faster than the rest of the globe.[529]

- Temperatures have been increasing faster in Arctic Alaska than in the temperate southern part of the state, with the Alaska North Slope warming at 2.6 times the rate of the continental U.S.[530]

- In Alaska, starting in the 1990s, high temperature records occurred three times as often as record lows, and in 2015, an astounding nine times as frequently.[531]

According to the Assessment, Alaska will experience more heating than any other state, with the greatest increases expected in the Alaskan Arctic.[532] Heating is projected to be less severe under scenarios where GHG emissions are greatly reduced. For example, average temperatures on the North Slope are projected to rise by 8°F to 10°F under the lower RCP 4.5 scenario, compared with 14°F to 16.5°F under the higher RCP 8.5 scenario by 2070–2099.[533]

Other recent scientific assessments have similarly documented the extreme impacts of Arctic climate change, including NOAA's Arctic Report Card[534] and the Arctic Monitoring and Assessment Programme's 2017 Snow, Water, Ice and Permafrost in the Arctic report.[535] For example, one study found that decreasing seasonal sea ice extent and a lengthening of the open-water season is resulting in fall storms that generate more destructive waves and cause damage later in the year, resulting in increased flooding and erosion.[536] Another study evaluated infrastructure hazard areas in the Northern Hemisphere's permafrost regions under projected climatic changes through 2050, and identified 550 km of the Trans-Alaska Pipeline System that are in the area in which near-surface permafrost thaw may occur by 2050;[537] another reported a trend toward earlier spring snowmelt and later onset of autumn snow accumulation in the North Slope.[538] Other studies have also documented extreme whether events, including one that determined that the record-setting warmth during the 2015/16 cold season in Alaska — when

529 Mika Rantanen et al., *The Arctic has warmed nearly four times faster than the globe since 1979*, Communications Earth & Environment (2022)3:168 (Aug. 11, 2022).
530 *Id* at 1191.
531 *Id.* at 1190.
532 *Id.* at 1191.
533 NCA4 Vol. II at Figure 26.1.
534 Arctic Report Card, https://arctic.noaa.gov/report-card/report-card-2020.
535 AMAP, Snow, Water, Ice and Permafrost in the Arctic (SWIPA) 2017. Arctic Monitoring and Assessment Programme (AMAP), Oslo, Norway. xiv + 269 pp (2017).
536 Fang, Z. et al., 2018. Reduced sea ice protection period increases storm exposure in Kivalina. 4 Arctic Science 4:525.
537 Hjort, J. et al. 2018. Degrading permafrost puts Arctic infrastructure at risk by mid-century. Nature Communications 9:5147.
538 Cox, C.J. et al., Responses to the changing annual snow cycle of northern Alaska, Bulletin of the American Meteorological Society 2559 (December 2017).

statewide average temperatures exceeded the mean by more than 4°C over the 7-month cold season and by more than 6°C over the 4-month late-winter period — was driven in large part by anthropogenic climate change.[539] Another study examined how climate change is expected to alter the frequencies and intensities of extreme temperature and precipitation events, concluding that "the shifts in temperature and precipitation indicate unprecedented heat and rainfall across Alaska during this century."[540] And yet another study projected that wet snow and rain-on-snow events will increase in frequency and extent in Alaska with climate warming.[541]

The four-fold increases in air temperatures over the Arctic are already having a pronounced effect on permafrost and the plants and systems that depend on this highly specialized ecosystem. The Arctic's permafrost layer is expected to decrease significantly by the end of the century, releasing carbon dioxide and methane into the atmosphere and accelerating climate feedback effects.[542] Permafrost on Alaska's Arctic coast has warmed substantially, causing profound changes in the active layer temperatures.[543]

Alaska, in particular, is experiencing substantial increases in tundra greenness, contributing to increasingly limited opportunities for tundra travel by local communities.[544] One study analyzing the impact of climate change on vegetation in the Arctic noted that plants in the Alaska Arctic region are increasing in height.[545] The study stated, "If the observed rate of trait change continues . . . community height . . . could increase by 20-60% by the end of the century."[546] This trend could make plants an integral part of positive feedback loops contributing to extreme warming.[547] The study found that positive feedback effects are possible if branches or leaves above the snowpack reduce albedo or increase snow accumulation, leading to warmer soil temperatures in the winter and increased decomposition rates.[548]

As a result of climate change in Alaska's Arctic, the annual area burned by wildfire is expected to double by 2050 and to triple by the end of the century.[549] This will in turn release

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[539] Walsh, J.E. et al. 2017. The exceptionally warm winter of 2015/2016 in Alaska. Journal of Climate 30: 2069.
[540] Lader, R. et al. 2017. Projections of twenty-first-century climate extremes for Alaska via dynamical downscaling and quantile mapping. Journal of Applied Meteorology and Climatology 56:2393.
[541] Pan, C.G. et al. 2018. Rain-on-snow events in Alaska, their frequency and distribution from satellite observations. Environmental Research Letters 13:075004.
[542] 2020 IAP Final EIS, App. G at G-6.
[543] *Id.*
[544] *Id.* at G-7.
[545] Ann Bjorkman, et. al., Plant Functional Trait Change Across a Warming Tundra Biome, UC RIVERSIDE, (2018) at 58.
[546] *Id*. at 59.
[547] *Id*.
[548] *Id*.
[549] 2020 IAP Final EIS, App. G at G-9.

commensurate amounts of carbon dioxide into the atmosphere, illustrating yet one more climate feedback system that is exacerbated in Alaska's Arctic.[550]

2. Approving new fossil fuel extraction projects, including Willow, is incompatible with meeting commitments to hold warming to 1.5 degrees Celsius.

The climate emergency demands immediate action to halt new fossil fuel development. As recently stated by several scientific experts, "[t]he scale of threats to the biosphere and all its lifeforms — including humanity — is in fact so great that it is difficult to grasp for even well-informed experts" and our planet faces a "ghastly future" unless swift action is taken to reverse the climate crisis, including "a rapid exit from fossil fuel use."[551] There is very little space in the global carbon budget for new fossil fuel infrastructure and extraction if we are to avoid the worst dangers from climate change.[552] Instead, new fossil fuel exploration, production, and infrastructure projects need to be halted and much existing production phased out to avoid catastrophic climate damages.[553]

A 2016 global analysis found that the carbon emissions that would be released from burning the oil, gas, and coal in the world's currently operating fields and mines would fully exhaust and exceed the carbon budget consistent with staying below 1.5°C.[554] The reserves in currently operating oil and gas fields alone, even excluding coal mines, would likely lead to warming beyond 1.5°C.[555] Thus, many of the world's 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°C.[556] An important conclusion of the analysis is that "[n]o new fossil fuel extraction or transportation infrastructure should be built, and governments should grant no new permits for them."[557]

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[550] *See id*.

[551] Bradshaw, C., et al. 2021. Understanding the Challenges of a Ghastly Future. Front. Conserv. Sci. Vol. 1, Article 61541.

[552] D. Tong et al., Committed emissions from existing energy infrastructure jeopardize 1.5 °C climate target, 572 NATURE 373 (2019) (Tong et al. 2019).

[553] *Id*.

[554] Oil Change International, *The Sky's Limit: Why the Paris Climate Goals Require a Managed Decline of Fossil Fuel Production* at Tbl. 3 (Sept. 2016) (Oil Change International 2016). According to this analysis, the CO_2 emissions from developed reserves in existing and under-construction global oil and gas fields and existing coal mines are estimated at 942 $GtCO_2$, which vastly exceeds the 1.5°C-compatible carbon budget estimated in the 2018 IPCC report of 420 $GtCO_2$ to 570 $GtCO_2$.

[555] The CO_2 emissions from developed reserves in currently operating oil and gas fields alone are estimated at 517 $GtCO_2$, which would likely exhaust the 1.5°C-compatible carbon budget estimated in the 2018 IPCC report of 420 $GtCO_2$ to 570 $GtCO_2$.

[556] Oil Change International 2016 at 5.

[557] *Id.* at ES-5; *see also id.* at 36, 45 (similar). This conclusion was reinforced by the IPCC 2014 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

The landmark 2019 United Nations *Production Gap Report* used publicly available data to estimate the difference between fossil fuel volumes and emissions that countries are currently planning and what the IPCC estimates would be consistent with 1.5°C or 2°C pathways.[558] The analysis shows that countries' current plans and projections for fossil fuel production would lead, in 2030, to the emission of 39 $GtCO_2$.[559] That is 13 $GtCO_2$, or 53 percent, more than would be consistent with a 2°C pathway (with an interquartile range of 11–15 $GtCO_2$) and 120 percent or 21 $GtCO_2$ (with a range of 18–23 $GtCO_2$) greater than fossil fuel production levels consistent with a 1.5°C pathway.[560] This gap grows wider by 2040, when production levels reach 110 percent (22 $GtCO_2$, with a range of 18–24 $GtCO_2$) and 210 percent (28 $GtCO_2$, with a range of 27–31 $GtCO_2$) higher than those consistent with the 2°C and 1.5°C pathways.[561] The subsequent 2020 *Production Gap Report* warned that the world must decrease fossil fuel production by roughly 6 percent per year between 2020 and 2030 to limit warming to 1.5°C. Instead, fossil fuel producers are planning and projecting an average annual increase of 2 percent, which by 2030 would result in more than double the production consistent with the 1.5°C limit.[562]

A 2019 analysis underscored that the U.S. must halt new fossil fuel extraction and rapidly phase out existing production to avoid jeopardizing our ability to meet the Paris Agreement climate targets and avoid the worst dangers of climate change.[563] The analysis showed that the U.S. oil and gas industry is on track to account for 60 percent of the world's projected growth in oil and gas production between 2017 and 2030[564] — the time period over which the IPCC concluded that global CO_2 emissions should be roughly halved to meet the 1.5°C Paris Agreement target.[565] Based on a 1.5°C IPCC pathway, U.S. production alone would exhaust nearly 50 percent of the world's total allowance for oil and gas by 2030 and exhaust more than 90 percent by 2050.[566]

Reducing fossil fuel production on federal public lands is essential to meeting climate goals. In 2018, the U.S. Geological Survey and Interior estimated that carbon emissions released from extraction and end-use combustion of fossil fuels produced on federal lands alone

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to 7 times, while fossil fuel resources exceed the carbon budget for 2 degrees by 31 to 50 times. *See* IPCC Working Group III, *Climate Change 2014: Mitigation of Climate Change* at 521, Fig. 7.2 (2014).

[558] *See* Stockholm Environment Institute et al., The Production Gap: The discrepancy between countries' planned fossil fuel production and global production levels consistent with limiting warming to 1.5°C or 2°C (2019).

[559] *Id*. at 4.

[560] *Id*.

[561] *Id*.

[562] SEI 2020 Special Report at 4.

[563] Oil Change International, Drilling Toward Disaster: Why U.S. Oil and Gas Expansion Is Incompatible with Climate Limits (Jan. 2019) (Oil Change International 2019).

[564] *Id.* at ES-6, 17.

[565] IPCC 2018 at SPM-15.

[566] *See* Oil Change International 2019 at 17.

accounted for approximately one quarter of total U.S. carbon emissions during 2005 to 2014.[567] A 2015 analysis of U.S. fossil fuel resources shows that the potential carbon emissions from already leased fossil fuel resources on 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 from U.S. federal lands would release up to 349 to 492 $GtCO_2eq$ of carbon emissions, if fully extracted and burned.[568] Comparing production horizons to dates at which carbon budgets would be exceeded if current emission levels continue, a 2020 report concluded:

- "Federal crude oil already leased will continue producing for 34 years beyond the 1.5°C threshold and 19 years beyond the 2°C;" and
- "Federal natural gas already leased will continue producing 23 years beyond the 1.5°C threshold and 8 years beyond the 2°C."[569]

A 2021 analysis similarly concluded that the largest increases by far in global oil and gas production between now and 2030 are projected to occur in the U.S.[570] If U.S. fossil fuel expansion is not immediately halted, it will make it nearly impossible to meet the 1.5°C limit and preserve a livable planet.

These analyses highlight that the U.S., as a wealthy nation with ample financial resources and technical capabilities, and due to its dominant role in driving climate change and its associated harms, has an urgent responsibility to lead in the transition from fossil fuel production to 100 percent clean energy. The U.S. is currently the world's largest oil and gas producer and third-largest coal producer.[571] The U.S. is also the world's largest historic emitter of GHG pollution, responsible for 25 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.[572] The U.S. must focus its resources and technology to rapidly phase out oil and gas extraction while investing in a just transition for affected workers and communities currently living on the front lines of the fossil fuel industry and its pollution.[573]

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[567] Matthew D. Merrill, et al., Federal Lands Greenhouse Emissions and Sequestration in the United States—Estimates for 2005–14, U.S. Geological Survey Scientific Investigations Report 1 (2018), https://doi.org/10.3133/sir20185131.
[568] 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).
[569] D. Mulvaney et al., Over-Leased: How Production Horizons of Already Leased Federal Fossil Fuels Outlast Global Carbon Budgets at 5 (2016).
[570] P. Achakulwisut & P. Erickson, *Trends in fossil fuel extraction: Implications for a shared effort to align global fossil fuel production with climate limits*, Stockholm Environment Institute Working Paper (Apr. 2021).
[571] Oil Change International 2019 at 5.
[572] C. Le Quéré *et al., Global Carbon Budget 2018*, 10 EARTH SYSTEM SCIENCE DATA 2141, 2167, Fig. 5 (2018); C. Le Quéré *et al*., Global Carbon Project, Global Carbon Budget 2018 at PDF 19 (Dec. 5, 2018) (historical cumulative fossil CO_2 emissions by country).
[573] G. Piggot et al., Realizing a Just and Equitable Transition Away from Fossil Fuels, Stockholm Environment Institute (Jan. 2019).

Another study estimated the U.S.'s portion of the global carbon budget by allocating the remaining global budget across countries based on factors including equity principles and economics. It determined that the U.S.'s fair share of the global mitigation effort in 2030 is equivalent to a reduction of 195 percent below its 2005 emissions levels, and to achieve this reduction, the U.S. will not only have to reduce its own emissions, but will also have to provide financial and technological support for additional reductions in poorer countries.[574] Therefore, whatever remaining carbon budget that the U.S. still has left, if any, is very small and rapidly being consumed.

The need to stop new production means that no new fossil fuel extraction projects should be permitted. In an IEA report[575] emphasizing the need to stay below 1.5°C in warming, IEA's Executive Director said that "[i]f governments are serious about the climate crisis, there can be no new investments in oil, gas and coal, from now—from this year."[576] The IEA's report itself concludes that "hav[ing] a fighting chance of . . . limiting the rise in global temperatures to 1.5°C . . . requires nothing short of a total transformation of the energy systems that underpin our economies."[577]

The need to end new fossil fuel production and infrastructure approvals has been acknowledged by leaders around the world, including the United States. Upon the release of the IPCC's Sixth Assessment Report, U.N. Secretary-General António Guterres said: "This report must sound a death knell for coal and fossil fuels, before they destroy our planet…. There must be no new coal plants built after 2021…. Countries should also end all new fossil fuel exploration and production…."[578] The Executive Director of the International Energy Agency (IEA), said upon the release of the IEA's climate report in May 2021: "If governments are serious about the climate crisis, there can be no new investments in oil, gas and coal, from now – from this year."[579] The Biden administration has committed the government to taking decisive

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574 U.S. Climate Action Network, *The US Fair Share: Towards a USCAN Working Consensus* (2020) (U.S. Climate Action Network 2020).
575 IEA, Net Zero by 2050: A Roadmap for the Global Energy Sector at 51, 101, 160 (2021) (IEA 2021).
576 F. Harvey, *No new oil, gas or coal development if world is to reach net zero by 2050, says world energy body*, THE GUARDIAN (May 18, 2021).
577 IEA 2021 at 3.
578 United Nations Secretary-General, *Secretary-General's statement on the IPCC Working Group 1 Report on the Physical Science Basis of the Sixth Assessment*, Aug. 9, 2021, https://www.un.org/sg/en/content/secretary-generals-statement-the-ipcc-working-group-1-report-the-physical-science-basis-of-the-sixth-assessment.
579 Harvey, Fiona, *No new oil, gas or coal development if world is to reach net zero by 2050, says world energy body,* Guardian, May 18, 2021, https://www.theguardian.com/environment/2021/may/18/no-new-investment-in-fossil-fuels-demands-top-energy-economist.

action to reduce GHG emissions by 50–52 percent below 2005 levels in 2030, and to reaching net-zero emissions by 2050.[580]

Approving Willow would be contrary to the science demonstrating there is no room for developing and burning new sources of fossil fuels in the Arctic, and to this administration's promises to take urgent action consistent with that science to lead the world in transitioning away from fossil fuels.[581]

B. BLM Inadequately Analyzes the Significance of Greenhouse Gas Emissions Resulting from the Willow Project.

Analysis of the climate impacts from Willow's projected GHG emissions is inadequate and fails to provide useful information for BLM, as the decision-maker, and for the public, obscuring the tremendous impact of this project.

The draft SEIS uses the quantification of GHG emissions as a proxy for determining climate impacts from Willow.[582] It estimates that Willow itself would result in gross emissions of approximately 346 MMT CO2e over the roughly 30-year life of the project[583] and annual average gross GHG emissions of about 9.6 MMT CO2e.[584] BLM then compares the project's annual average *gross* GHG emissions to total annual U.S. GHG emissions (~0.145%) and the project's annual average *direct* GHG emissions to annual Alaska GHG emissions (~1.97%).[585] This tranche of different numbers and comparisons is confusing. What BLM fails to compare are the project's annual average *gross* GHG emissions to annual *Alaska* GHG emissions, which would yield a more productive and illuminating analysis of the project's emissions than comparing to total U.S. GHG emissions. BLM must rectify this omission.

Moreover, in the cumulative impacts to climate change analysis — which is a total of only two pages in Volume 1 — the draft SEIS compares projected GHG emissions that would result from Willow and other North Slope projects to total U.S. GHG emissions (0.39%).[586] BLM also assesses a "higher end" projected emissions scenario comparing Willow and other North Slope projects to total U.S. GHG emissions (1.457% of the 2019 U.S. GHG inventory and 2.880% to 3% of U.S. net GHG emissions target for 2030). The draft SEIS unhelpfully

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[580] *Supra* Legal/Policy I
[581] Id.
[582] 1 DSEIS at 37.
[583] *Id*. at 41, table 3.2.3 (GHG emissions estimates based on 100-year time horizon global warming potential values from the IPPC AR6), 42, table 3.2.5 (downstream GHG emissions from change in foreign oil consumption); 6 DSEIS App. E.2A at 14, table E.2.6 (direct GHG emissions from module delivery options). The estimates are for Alternative B. However, the average lifetime and annual GHG emissions across all action alternatives are not appreciably different, further illustrating why BLM must analyze at least one reasonable alternative that results in significantly greater GHG emissions reduction.
[584] 6 DSEIS App. E.2A at 10, table E.2.2; 1 DSEIS at 324.
[585] 1 DSEIS at 42–43.
[586] *Id*. at 324.

concludes that these GHG emissions "constitute a relatively small fraction of total impacts from U.S. GHG emissions."[587] Outsized comparisons, such as comparing Willow or Willow plus North Slope emissions to total U.S. GHG emissions, are inadequate under NEPA.[588] Moreover, BLM does not offer or explain what amount of emissions *would* constitute anything other than a "relatively small fraction of total impacts from U.S. GHG emissions." If, as the draft SEIS incorrectly asserts,[589] there is no way presently to determine thresholds for GHG emissions, it is arbitrary and capricious to assign Willow's GHG emissions or total Arctic GHG emissions the designation of being a "small fraction."

BLM claims that the cumulative impacts calculations include those emissions from "Greater Willow drill sites 1 and 2."[590] But its actual numerical analysis of CO2e does not appear to do so.[591] This is despite Volume 6 estimating annual GHG emissions from Greater Willow to be about 48.5 MMT/yr.[592] The draft SEIS, however, does not indicate the projected lifespan of the Greater Willow 1 and 2. Assuming 30 years, Greater Willow would result in roughly 1.45 *billion* metric tons of additional GHG emissions — a substantial quantity of emissions. BLM must reconsider and include the GHG emissions from Greater Willow in its cumulative impacts analysis.[593]

Nonetheless, these comparisons are insufficient under NEPA for contextualizing Willow's projected emissions and informing the public about the project's climate impacts.[594]

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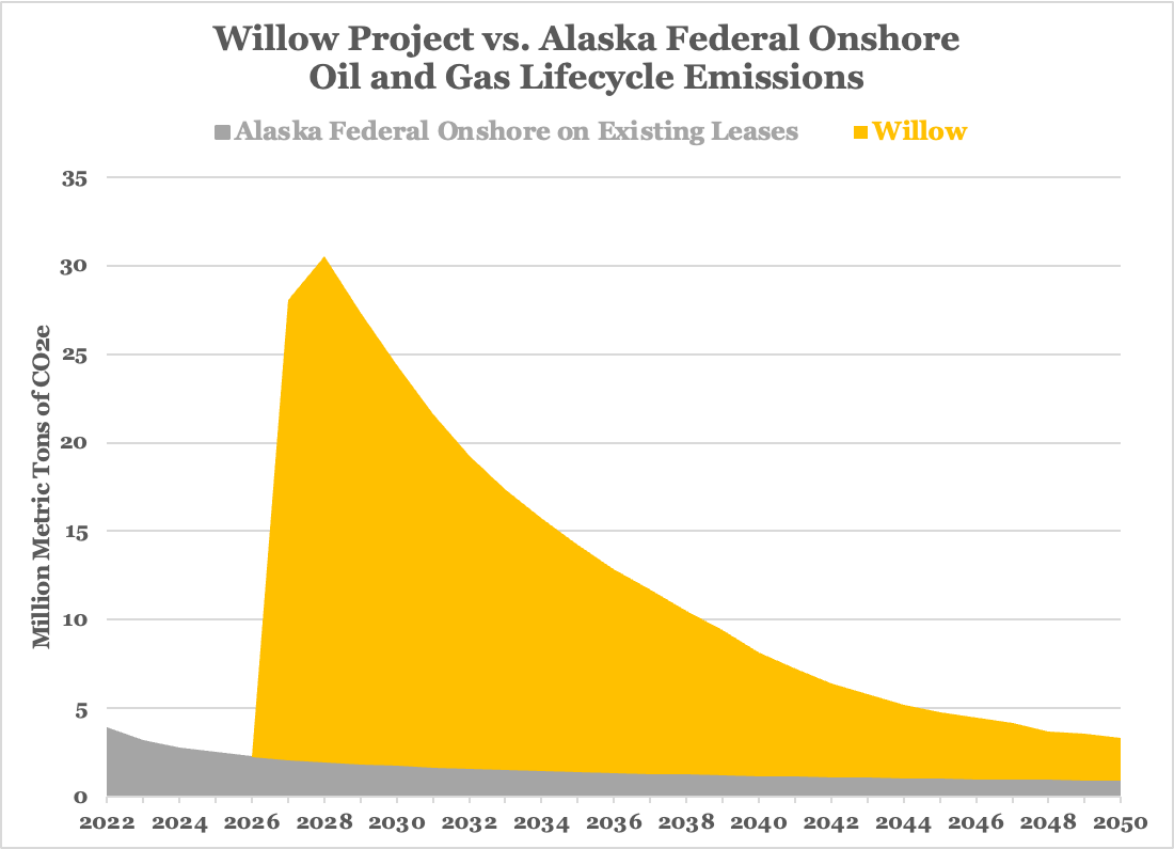
[587] *Id*. at 324; *see Sw. Elec. Power Co. v. EPA*, 920 F.3d 999, 1032 (5th Cir. 2019) (observing, in a Clean Water Act case, that a pollutant "may form a 'very small portion' of a gargantuan source of water pollution" while still "constitut[ing] a gargantuan source of water pollution on its own terms").
[588] *See e.g.*, *WildEarth Guardians v. Zinke*, 368 F. Supp. 3d 41, 77 (D.D.C. 2019) (directing BLM to place GHG emissions "in the context of local and regional oil and gas consumption").
[589] *See* 1 DSEIS at 37.
[590] *Id.* at 324.
[591] *Id.* at 324.
[592] 6 DSEIS App. E.3B at 2-66 to 2-67, table 2.2-1.
[593] *See Klamath-Siskiyou Wildlands Ctr. v. BLM*, 387 F.3d 989, 994 (9th Cir. 2004) ("The cumulative impacts analysis was designed precisely to determine whether 'a small amount here, a small amount there, and still more at another point could add up to something with a much greater impact.").
[594] *See Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1217 (9th Cir. 2008) (explaining that agencies must "provide . . . necessary contextual information about the cumulative and incremental environmental impacts"); *see also WildEarth Guardians v. BLM*, 457 F. Supp. 3d 880, 894 (D. Mont. 2020) ("The global nature of climate change and greenhouse-gas emissions means that any single lease sale or BLM project likely will make up a negligible percent of state and nation-wide greenhouse gas emissions. Thus, if BLM ever hopes to determine the true impact of its projects on climate change, it can do so only by looking at projects in combination with each other, not simply in the context of state and nation-wide emissions. Without doing so, the relevant 'decisionmaker' cannot determine 'whether, or how, to alter the program to lessen cumulative impacts' on climate change." (citing *Ctr. for Biological*

While BLM does compare the project's GHG emissions (though not cumulative emissions) to national emissions and statewide GHG emissions, BLM must further analyze, discuss, and make decisions based on a comparison of Willow's GHG emissions to those within its relevant decisional space and authority, i.e., Alaska's Arctic. Otherwise, comparisons and analysis such as that in the draft SEIS tell BLM and the public little "beyond the nature of the climate change challenge itself."[595]

For example, to adequately inform BLM's decision making on Willow and the public's understanding of the project's magnitude, it should compare and evaluate the project's GHG emissions to all Alaska federal onshore GHG emissions over which BLM has permitting authority. This comparison will reveal that Willow's approximately 9.6 MMT CO2e annual emissions are more than *triple* the annual GHG emissions from *all* estimated Alaska federal onshore production on existing leases, as shown starkly in the figure below.

Diversity, 538 F.3d at 1217 & *Churchill Cty. v. Norton*, 276 F.3d 1060, 1080 (9th Cir. 2001) (quoting *City of Carmel-by-the-Sea v. U.S. Dept' of Transp.*, 123 F.3d 1142, 1160 (9th Cir. 1997)).

[595] *See* CEQ, Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews 9–11 (Aug. 1, 2016), https://obamawhitehouse.archives.gov/sites/whitehouse.gov/files/documents/nepa_final_ghg_guidance.pdf.



AK federal onshore emissions uses projections from BLM 2020 GHG report Figure 5-1 for existing leases and EIA's AEO 2022 production projections for Alaska federal offshore.

As the single largest fossil fuel extraction project currently proposed on federal public land in the nation, Willow would not only contribute more GHG emissions than any other project in the nation over which BLM retains authority, but it would also emit on average more greenhouses gases every year than nearly every other single point source (power plants) of GHG emissions in the United States.[596] Only 13 out of 5,194 single point sources would contribute more emissions, meaning Willow would add more GHG emissions annually than over 99.7% of all single point sources in the country.[597] In light of this single project's outsized contribution to the climate problem, it is arbitrary to conclude that nothing can be done to meaningfully mitigate its GHG emissions.

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[596] *See* U.S. ENERGY INFO. ADMIN., ANNUAL EMISSIONS BY PLANT AND REGION, 2020 CARBON DIOXIDE EMISSIONS AT ELECTRIC POWER PLANTS (2020) (released Nov. 1, 2021), https://www.eia.gov/electricity/data.php.

[597] *See id.*; *cf. 350 Mont. v. Haaland*, 29 F.4th 1158, 1171 (9th Cir. 2022) (holding that an agency must properly consider the significance of a project's GHG emissions where that project would "generate more GHGs annually than the "largest single point source of GHG emissions in the United States" (internal quotation marks omitted)).

The draft SEIS also fails to offer useful contextualization of what this sizeable quantity of emissions means. Unlike the context BLM has provided in other recent NEPA review documents, including environmental assessments,[598] the draft SEIS contains no comparison to emissions sources the public can more readily comprehend. For example, the Environmental Protection Agency's Greenhouse Gas Equivalencies Calculator[599] reveals that Willow's average annual GHG emissions are equivalent to the emissions from over 24 natural gas-fired power plants or over 2 million gasoline-powered cars driven for one year. And the lifetime GHG emissions from Willow are equal to the emissions from 869 natural gas-fired power plants or over 92 coal-fired power plants in one year, or the same as 74.5 million gasoline-powered cars driven for an entire year. Such comparisons are essential (though standing alone still not sufficient) for the public and decision makers to grasp more fully the significance of the project's climate impacts.[600] BLM must include such comparisons in the SEIS.

We appreciate that BLM provides the social cost of greenhouse gas emissions estimates (SC-GHG) to help understand Willow's considerable and costly impact to the Reserve, North Slope communities, and society and the environment more broadly. However, the draft SEIS relies on the interim SC-GHG estimates from the Interagency Working Group.[601] The IWG itself acknowledged that the interim values are likely an underestimate of the true social costs.[602]

The IWG's pending final updated estimates will make a substantial difference in accurately accounting for the social costs of climate disruption. There is projected to be a roughly 20% increase in the new 3% discount rate value (and that is before updating the costs of sectoral damages).[603] That would add over $1 billion to the net estimated cost of Alternative B under the 3% discount rate. Moreover, using at least a 2% discount rate is more likely to accurately account for the damages to society and future generations.[604] The updated cost per tonnage would amount to $168/ton at a 2% discount rate.[605] The updated IWG estimates are

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598 *See, e.g.*, Bureau of Land Mgmt., Environmental Assessment, June 2022 Competitive Lease Sale, DOI-BLM-WY-0000-2021-0003-EA at 32 (Apr. 18, 2022).
599 U.S. Environmental Protection Agency, Greenhouse Gas Equivalencies Calculator, https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator (last visited, August 5, 2022).
600 *See, e.g.*, *WildEarth Guardians*, 368 F. Supp. 3d at 77.
601 Interagency Working Group on Social Cost of Greenhouse Gases, Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide, Interim Estimates under Executive Order 13990 (2021), https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf.
602 *See id.* at 4.
603 Rennert et al., The Social Cost of Carbon: Advances in Long-Term Probabilistic Projections of Population, GDP, Emissions, and Discount Rates, Brookings Papers on Economic Activity (Fall 2021).
604 See *id*.
605 *Id*.

certain to increase the SC-GHG values because this will better and more accurately account for the actual damages to society from climate change disruption.[606] With the final update to the SC-GHG estimates scheduled to be released in the near future,[607] BLM should strongly consider waiting to finalize the draft SEIS until the updated estimates are released and can be incorporated.

The insufficient quantitative (and, as discussed elsewhere, qualitative) analysis and consideration of climate change impacts are all the more problematic given the amount of GHG emissions resulting from Willow is so staggering. Yet, in the face of this gargantuan source of climate pollution, BLM appears to claim, on the one hand, that it is incapable of evaluating the significance of the project's emissions and, on the other hand, doing just that by contending the total emissions are insignificant in relation to nationwide emissions.[608] This contradictory, arbitrary conclusion and failure to properly account for and consider the significance of the GHG emissions is a violation of NEPA, and, as discussed below, the failure to discuss actions to mitigate release of the emissions and their adverse climate impacts is a violation of NEPA, FLPMA, and the NPRPA.[609]

The draft SEIS demurs grappling with whether Willow's GHG emissions will significantly and adversely impact the Reserve's resources based on a lack of "specific thresholds for GHG emissions" established by the EPA.[610] Just as uncertainty about the effects of any project does not absolve BLM from its duty to attempt to analyze those effects,[611] uncertainty about a GHG threshold, the United States' equitable share of the remaining carbon budget, or variability in carbon budgeting methods and social cost metrics do not justify failing to meaningfully address Willow's contribution to climate impacts in the Reserve. This failure to adequately consider the connection between the project's GHG emissions and harmful climate effects in the Reserve stands in stark contrast to the draft SEIS's recounting of the devastating climate disruptive impacts already occurring and projected to worsen in the Arctic.[612] BLM has discussed the catastrophic nature of climate change and stated Willow's estimated contribution

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[606] *See id*.
[607] *See* 86 Fed. Reg. 24,669, 24,670 (May 7, 2021); Jean Chemnick, *Here Comes the Social Cost of Carbon. Will It Address EJ?*, E&E News, (Feb. 10, 2022), https://www.eenews.net/articles/here-comes-the-social-cost-of-carbon-will-it-address-ej/ (last visited August 5, 2022).
[608] *See, e.g.*, 1 DSEIS at 324.
[609] *Infra* Scope Deficiencies II.F.
[610] *See* 1 DSEIS at 37.
[611] *See, e.g.*, *WildEarth Guardians v. U.S. Bureau of Land Mgmt*., 457 F. Supp. 3d 880, 894 (D. Mont. 2020) (holding that the "global nature of climate change [that] complicates an assessment of the exact climate change impacts" of the action at issue did not preclude BLM from complying with its analysis requirements under NEPA).
[612] *Compare* 6 DSEIS App. E.2A at 10 (stating merely that "[d]irect and indirect emissions of GHGs . . . will impact the climate" but providing no further discussion about how and whether Willow's GHG emissions will impact the Reserve), *with* 1 DSEIS at 34–37 (discussing the present and worsening damaging impacts of climate change to the Arctic).

of GHG emissions, but it has failed to connect the project's massive carbon load to climate impacts on the Reserve and analyze those impacts.

BLM need not and must not wait for some yet-to-be-determined GHG emissions threshold from the EPA to conduct this analysis. Indeed, the draft SEIS explains that "future global CO2 emissions anticipated from existing and proposed energy infrastructure already exceed the carbon emissions budget needed to limit global warming to 1.5ºC . . . [and] other studies suggest that attaining a 1.5ºC warming limit is possible by replacing *existing* infrastructure with zero-carbon alternatives at the end of their life spans."[613] This analysis already provides the needed standard to determine that, indeed, the substantial, additive GHG emissions from a new fossil fuel infrastructure project such as Willow are significant and must be avoided.

Assuming this justification is sufficient, which it is not, other information provides a standard for determining whether GHG emissions from Willow would significantly and adversely impact the Reserve, its resources, and the people who depend on it, which it would. As noted above, over the next 30 years Willow would contribute roughly *three times* the GHG emissions of all existing Alaska federal onshore oil and gas production combined. That alone requires adequate consideration and mitigation of Willow's climate impacts.

But the draft SEIS fails to analyze how Willow's particular GHG emissions will add to the severe impacts of climate change on and near the Reserve. BLM must also consider the latest high-quality climate science connecting each metric ton of carbon emissions to sea-ice loss in the Arctic. Research demonstrates an "observed linear relationship" of about $3m^2$ of sea-ice loss per metric ton of CO_2 emissions.[614] As such, "any measure taken to mitigate CO_2 emissions will directly slow the ongoing loss of Arctic summer sea ice."[615] Willow's projected annual GHG emissions of 9.6 MMT CO2e would result in approximately 28.8 million m^2 of summer sea-ice loss. Failing to properly analyze and base decision-making on this significant direct impact to resources and communities in and near the Reserve is arbitrary and capricious.

BLM should also consider the significance of emissions from Willow in light of the relatively small quantities of emissions necessary to trigger the disappearance of arctic sea ice and the severity of impacts should that occur. For example, whether polar bears are present in the Reserve in the summer will depend on whether global warming can be kept below 2 degrees Celsius.[616] The approval of additional development projects, especially projects the size of Willow, makes staying within this threshold vastly more difficult to achieve. FWS explains that "the sooner global warming and sea ice loss are stopped, the better the long-term prognosis for

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[613] *See* 6 DSEIS App. E.2A at 4 (emphasis added) (citations omitted).
[614] Dirk Notz & Julienne Stroeve, Observed Arctic Sea-Ice Loss Directly Follows Anthropogenic CO_2 Emission, 354 SCIENCE 747, 748 (Nov. 11, 2016).
[615] *Id.* at 750.
[616] U.S. Fish and Wildlife. 2016. Polar Bear (Ursus maritimus) Conservation Management Plan, Final at 12.

the species. To this end, we endorse efforts everywhere, big and small, to mitigate greenhouse gas emissions . . . ."[617]

In sum, while it is true that BLM cannot control *all* GHG emissions and no single project alone is the sole cause of climate disruption, the draft SEIS's conclusion that, as a result, BLM's hands are tied is arbitrary. This flawed rationale would justify broad, perverse inaction based on the assumption that stopping GHG emissions from any single *country* — let alone any single project — in isolation would not halt climate change.[618] The law demands more. Additionally, the best available scientific research now *can* tie specific tonnage of GHG emissions to direct resource impacts in the Arctic. Thus, BLM has the legal authority, mandate, and responsibility to consider and mitigate Willow's massive GHG emissions and their climate impacts.

C. BLM Must Evaluate How Climate Change Impacts Will Act Cumulatively and Synergistically with Effects from Developing Willow.

Although the DSEIS acknowledges the impacts of climate change on the Reserve's resources, it fails to consider how the severity of those impacts may change over the life of the project or how the project will affect species as they exist 30 years from now. For example, the stock of polar bears that use the Reserve (the Southern Beaufort Sea (SBS) stock) is one of the most vulnerable polar bear populations in the world.[619] A large-scale decline in the population during recent decades has been attributed to sea-ice loss resulting from climate change. The sea ice loss results in declines in survival, reproductive success, and body size, increased fasting and nutritional stress, and increased time on land exposing bears to nutritional stress and land-based threats. By mid-century, the SBS bears have "a high probability of becoming greatly decreased"[620] if not entirely extirpated.[621] Despite the dire state the polar bear population is likely to be in towards the end of the Willow's operations, BLM fails to discuss how disturbance from Willow will affect polar bears at that time. The draft SEIS only notes that Willow "could exacerbate the effects of climate change by adding development and the chance of human-bear interactions in terrestrial habitats that bears are increasingly forced to use."[622] It is unclear whether BLM's conclusion that "population-level effects would not occur" applies equally to

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[617] *Id.*
[618] *See 350 Mont. v. Haaland*, 29 F.4th 1158, 1171 (9th Cir. 2022) ("[V]irtually every domestic source of GHGs may be deemed to have no significant impact as long as it is measured against total global emission.").
[619] S. G. Hamilton and A.E. Derocher, *Assessment of Global Polar Bear Abundance and Vulnerability*, 22 ANIMAL CONSERVATION 83–95 (2019) (Hamilton & Derocher 2019) (an assessment of each subpopulation's vulnerability to climate change based on subpopulation size, amount of continental shelf habitat, prey diversity and changing ice conditions.).
[620] U.S. Fish and Wildlife Service, Stock Assessment, Polar Bear (*Ursus maritimus*): Southern Beaufort Sea Stock at 5, 14 (June 2021).
[621] 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).
[622] 1 SDEIS at 334.

impacts at the beginning of the project as well as towards the end, and if so, how BLM justifies that conclusion.[623]

In addition, climate change is predicted to affect caribou through increased wildfire, summer insect harassment, and icing events, as well as changes to forage quality and quantity, spring phenology, and distribution and migratory behavior.[624] BLM acknowledges that "additional development could interact with climate change by limiting the availability of alternative calving areas as conditions change" and that "impacts on caribou body condition resulting from climate change may also make caribou more susceptible to potential impacts from developments."[625] However, BLM fails to explain how the impacts from development, such as disturbance, will affect climate-stressed caribou 30 years from now. The agency should explain the significance of these impacts.[626]

D. BLM Must Analyze Potentially Nonlinear, Catastrophic Climate Impacts.

To fully analyze potential climate change impacts, BLM should consider impacts from tipping points, or critical threshold at which a tiny perturbation can qualitatively alter the state or development of a system.[627] Two particularly relevant tipping points are summer Arctic sea-ice disappearance adjacent to the Reserve and permafrost loss.[628] BLM should consider the impacts of Willow on the environment if either of these or other tipping points are reached.[629] While sea ice loss may not be irreversible, the loss of the polar bear would be.

E. BLM Has Not Adequately Considered How A Rapidly Warming Climate in The Arctic Will Affect the Project's Infrastructure Over Its 30-Year Life.

The DSEIS omits important information about projected changes to the Reserve's physical environment during the life of the project. BLM relies primarily on three studies to provide quantified mid-century projections for air temperature and precipitation and end-of-century projections for permafrost thaw in northern Alaska.[630]

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[623] *See infra* Resource Impacts XI (polar bears).
[624] Mallory, Conor D., and Mark S. Boyce. "Observed and predicted effects of climate change on Arctic caribou and reindeer." *Environmental Reviews* 26.1 (2018): 13–25.
[625] 1 SDEIS at 333.
[626] *See infra* Resource Impacts X (caribou).
[627] Lenton, Timothy M., et al., "Tipping elements in the Earth's climate system." *Proceedings of the national Academy of Sciences* 105.6 (2008): 1786–93; *See also* Hoegh-Guldberg, O., D., et al., Impacts of 1.5°C Global Warming on Natural and Human Systems (2018).
[628] Lenton, et al. at 1786-93
[629] *See, e.g.*, Hoegh-Guldberg, et al. at 265 (social cost of carbon increases when tipping points are considered).
[630] 1 DSEIS at 35–36.

BLM acknowledges that permafrost thawing, shorter ice road seasons, and changes to precipitation could damage infrastructure.[631] The DSEIS states that gravel roads and pads would have a minimum thickness of 5 feet, but the agency does not discuss the effectiveness of this measure in future thawing conditions. BLM also identifies "the targeted deployment of thermosiphons" but does not discuss the effectiveness of this measure, especially in light of projected permafrost thaw.[632]

ConocoPhillips plans primarily to respond to problems *after* they occur, merely performing "maintenance as needed" to "adaptively manage gravel road and pad maintenance in response to potentially changing climatic conditions."[633] But BLM must discuss the particular risks to infrastructure from permafrost thaw and the resulting risk to the environment. BLM must also analyze the role permafrost thaw played in the Alpine leak and how these risks would be addressed at Willow. The DSEIS's analysis of the impacts of climate on ice roads is also arbitrary, because it is based on recent historical information about ice road season, rather than future projections.[634] BLM also fails to discuss the impacts of projected decreased water availability on the project, such as ice-road construction, camp use, and drilling operations.

The draft SEIS should have included a map and analysis of yedoma deposits that underlie the Willow project. Yedoma deposits represent those soils with the highest ice content, upwards of 30-50 percent depending upon the definition used. Note that the final EIS for the Arctic Refuge Coastal Plain area contains a map identifying the area's yedoma deposits;[635] there should be a project-specific yedoma map in for the Willow project area.

Because ice-rich soils and permafrost beneath the Willow project will continue to warm throughout the proposed 30 year project, the underlying subsurface will thaw and melt regardless of project infrastructure. If inadequately designed or operated, however, project infrastructure would increase subsurface thawing and melting. Additionally, because subsurface thawing and melting creates unstable landforms that could impact surface infrastructure, the risks of unexpected oil and gas releases increases if the infrastructure is not designed to address the subsurface instability. [636] Moreover, subsurface thawing and melting makes it difficult if not impossible for operators to return areas to their predevelopment states following project abandonment. These considerations all need to be analyzed in the draft SEIS.

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[631] 1 DSEIS at 50.
[632] *Id.* at 51.
[633] *Id.* at 50.
[634] *Id.* at 51.
[635] Bureau of Land Mgmt., Coastal Plain Oil and Gas Leasing Program, Final Environmental Impact Statement, App. A, Map 3-12 (Sept.2019).
[636] Note that there may be permafrost thawing-related design problems that are unexpected which result in releases, as was the case with 14 of BP's wells in Alaska. Elizabeth Harball, *State agency orders review following accident at Prudhoe Bay well,* KTOO, (Jan. 11, 2019), available at https://www.ktoo.org/2019/01/11/state-agency-orders-review-following-accident-at-prudhoe-bay-well/.

F. BLM Did Not Adequately Analyze or Impose Mitigation of Greenhouse Gas Emissions and Climate Impacts Resulting from the Willow Project.

Although the draft SEIS briefly discusses limited measures to mitigate several climate impacts, it fails to meaningfully analyze and consider mitigating the actual release of GHGs that contribute to climate change disruption to the resources of the Reserve and beyond. Not only must the draft SEIS adequately analyze GHG emissions and the resulting climate impacts under NEPA, but BLM must also adequately discuss and impose measures to prevent or reduce these emissions. It has the legal authority and mandated responsibility to do so under NEPA, FLPMA, and the NPRPA.

The draft SEIS recognizes that "[c]umulative climate change impacts may be *irreversible*, depending on what future steps are taken to address future cumulative GHG emissions worldwide. *Impacts on the long-term sustainability of area resources is* [sic] *dependent on those steps*."[637] In addition to this clear acknowledgement that, in combination with other sources of emissions, the viability of the Reserve's resources hinges on avoiding greenhouse gases from Willow, the draft SEIS explains that Willow's "GHG emissions and their contribution to cumulative GHG levels and climate change are *unavoidable* and *irretrievable* throughout the life of the Project."[638] BLM must, therefore, properly evaluate mitigation measures and has the authority and mandate to avoid these emissions.

1. NEPA requires BLM to adequately analyze and BLM policies require BLM to adequately implement mitigation of willow's GHG emissions.

The draft SEIS fails to adequately analyze and impose mitigation of Willow's GHG emissions and resulting climate impacts consistent with NEPA and BLM's current mitigation policy. Proper analysis and imposition of mitigation will show that BLM must consider an emissions reduction alternative and that it can and must choose the no-action alternative.[639]

NEPA requires a "reasonably complete discussion of possible mitigation measures."[640] CEQ's regulations require consideration of mitigation.[641] The mitigation analysis must be "based on the best available science, and []consistent with how [the agency] analyzed climate change."[642] Mitigation "must be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated."[643] BLM must analyze mitigation that seeks to avoid impacts, minimize impacts, rectify impacts, reduce or eliminate impacts over time, and, only if

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637 1 DSEIS at 52 (emphases added).
638 *Id*.
639 *Supra* Legal/Policy IV.D.
640 *Okanogan Highlands All. v. Williams*, 236 F.3d 468, 473 (9th Cir. 2000) (quoting *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 351–52 (1989)) (internal quotation marks omitted).
641 40 C.F.R. §§ 1502.14(f), 1502.16(h).
642 *Nat'l Wildlife Fedn v. Nat'l Marine Fisheries Serv*., 184 F. Supp. 3d 861, 923 (D. Or. 2016).
643 *City of Carmel-by-the-Sea v. U.S. Dep't of Transp*., 123 F.3d 1142, 1154 (9th Cir. 1997) (quoting *Robertson*, 490 U.S. at 353).

those approaches are insufficient to fully mitigate the impacts, appropriately and sufficiently offset any remaining impacts.[644]

Analysis of and decision-making about the Willow Project must be guided by BLM's recently reinstated Mitigation Policy,[645] which "directs the [BLM] to consider mitigation well in advance of making decisions about anticipated public land uses."[646] In addition to NEPA's mandate to consider mitigation, BLM's mitigation policies and FLPMA[647] require BLM to actually mitigate the impacts caused by land use authorizations to public land resources, and over the past two decades, the Department of the Interior and BLM have established robust mitigation policy and guidance, including approaches to mitigate the impacts of climate change.[648]

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[644] 40 C.F.R. § 1508.20.

[645] *See* BLM Instruction Memorandum 2021-046, REINSTATING THE BUREAU OF LAND MANAGEMENT MANUAL SECTION (MS-1794) AND HANDBOOK (H-1794-1) ON MITIGATION (Sept. 22, 2021), *available at* https://www.blm.gov/policy/im-2021-046; BLM MITIGATION MANUAL, MS-1794 (Sept. 22, 2021), *available at* https://www.blm.gov/sites/blm.gov/files/docs/2021-10/IM2021-046_att1_0.pdf; BLM MITIGATION HANDBOOK, H-1794-1 (Sept. 22, 2021), *available at* https://www.blm.gov/sites/blm.gov/files/docs/2021-10/IM2021-046_att2.pdf.

[646] *See* BLM, *Mitigation*, https://www.blm.gov/how-we-manage/mitigation-policy#:~:text=The%20BLM%20Mitigation%20Policy%20establishes,about%20anticipated%20public%20land%20uses (last visited August 7, 2022).

[647] *See supra* Legal/Policy V.A.

[648] *See, e.g.*, Secretarial Order No. 3226, Amendment No. 1, "Climate Change and the Department of Interior," (Jan. 16, 2009) ("In addition to finding ways to prevent greenhouse gas emissions, the United States has recognized the need to focus on mitigation and adaptation activities" (replaced by Secretarial Order No. 3289 (Sept. 14, 2009)), https://www.blm.gov/sites/blm.gov/files/uploads/IM2012-104_att4.pdf; Secretarial Order No. 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources," (Sept. 14, 2009), https://d9-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/s3fs-public/atoms/files/SecOrder3289.pdf; Departmental Manual 523 DM 1, "Climate Change Policy" (Dec. 20, 2012) (established Interior's policy to "[p]romote landscape-scale, ecosystem-based management approaches to enhance the resilience and sustainability of linked human and natural systems" and "[a]dvance approaches to managing linked human and natural systems that help mitigate the impacts of climate change"), https://www.doi.gov/sites/doi.gov/files/elips/documents/523-dm-1.pdf; Secretarial Order No. 3330, "Improving Mitigation Policies and Practices of the Department of Interior (Oct. 31, 2013) ("land and resource managers across the Nation are recognizing the dramatic effects that climate change is having on our Nation's water, land, plant, animal, and cultural resources, as well as tribal lands and resources. In light of these effects, the Department must change the way it manages the resources for which it is the steward"), https://www.doi.gov/sites/doi.gov/files/migrated/news/upload/Secretarial-Order-Mitigation.pdf; Departmental Manual 600 DM 6, "Implementing Mitigation at the Landscape-scale" (Oct 23, 2015) (stating the policy of Interior to "effectively avoid, minimize, and compensate for impacts to Department-managed resources and their values, services, and functions; . . . improve the resilience of our Nation's resources in the face of climate change; encourage strategic

"[O]mission of a reasonably complete discussion of possible mitigation measures would undermine the 'action-forcing' function of NEPA. Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects."[649] A "perfunctory description," of mitigation, without "supporting analytical data" analyzing their efficacy is inadequate to satisfy NEPA's requirements that an agency take a "hard look" at possible mitigating measures.[650] An agency's "broad generalizations and vague references to mitigation measures . . . do not constitute the detail as to mitigation measures that would be undertaken, and their effectiveness, that [an agency] is required to provide."[651] Moreover, in its final decision documents, an agency must "[s]tate whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why they were not."[652]

CEQ recognizes that the consideration of mitigation measures and reasonable alternatives is closely related. For example, CEQ's guidance on mitigation and monitoring states that "agencies may commit to mitigation measures considered as alternatives in an EA or EIS so as to achieve an environmentally preferable outcome."[653] The Final Climate Guidance from CEQ specifically directs agencies to consider where appropriate a variety of mitigation measures for actions that will cause climate pollution, including measures that will capture or use methane emissions:

> As Federal agencies evaluate potential mitigation of GHG emissions and the interaction of a proposed action with climate change, the agencies should also carefully evaluate the quality of that mitigation to ensure it is additional, verifiable, durable, enforceable, and will be implemented. Agencies should consider the potential for mitigation measures to reduce or mitigate GHG emissions and climate change effects when those measures are reasonable and

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conservation investments in lands and other resources; increase compensatory mitigation effectiveness, durability, transparency, and consistency; and better utilize mitigation measures to help achieve Departmental goals."), https://www.doi.gov/sites/doi.gov/files/elips/documents/600-dm-6.pdf.

[649] *Robertson*, 490 U.S. at 353.

[650] *Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1380 (9th Cir. 1998).

[651] *Id*. at 1380–81; *see also Northwest Indian Cemetery Protective Association v. Peterson*, 795 F.2d 688, 697 (9th Cir. 1986), rev'd on other grounds, 485 U.S. 439 (1988) ("A mere listing of mitigation measures is insufficient to qualify as the reasoned discussion required by NEPA."); *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, 1151 (9th Cir. 1988) ("Without analytical data to support the proposed mitigation measures, we are not persuaded that they amount to anything more than a 'mere listing' of good management practices.").

[652] 40 C.F.R. § 1505.2(c).

[653] CEQ, Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact (Jan. 14, 2011) at 1, https://www.federalregister.gov/documents/2011/01/21/2011-1188/final-guidance-for-federal-departments-and-agencies-on-the-appropriate-use-of-mitigation-and.

> consistent with achieving the purpose and need for the proposed action. Such mitigation measures could include enhanced energy efficiency, lower GHG-emitting technology, carbon capture, carbon sequestration (e.g., forest, agricultural soils, and coastal habitat restoration), sustainable land management practices, and capturing or beneficially using GHG emissions such as methane.[654]

BLM has significant obligations and authority related to mitigation for all unavoidable impacts. BLM's current mitigation policy[655] provides that BLM must:

- Implement consistent principles and procedures for mitigation in the BLM's authorization of public land uses;
- Apply mitigation to address reasonably foreseeable impacts to resources (and their values, services, and/or functions) from public land uses; and
- Follow the mitigation hierarchy by first avoiding damage to the public lands and resources; second, minimizing damage that cannot be avoided; and third, compensating for any residual impacts to important, scarce, or sensitive resources or resources protected by law.[656]

Mitigating climate-related impacts includes avoiding and minimizing generation of GHG emissions through management prescriptions and preventing harm to carbon sinks. The CEQ Final Climate Guidance provides that agencies should analyze reasonable alternatives that would mitigate both direct and indirect GHG emissions impacts and the cumulative effects of climate change.[657] BLM must address the quality of mitigation measures as well as ensure they are additional, verifiable, durable, enforceable, and will be implemented.

In addition to the legal and policy requirements to mitigate climate impacts, it is important to underscore that, as a land manager, the federal government in general and BLM in particular are facing huge and rapidly escalating costs to address the impacts caused by fossil-fuel driven climate disruption. Forest fires, widespread drought, unusual flooding, rising sea levels, spread of invasive species, loss of Arctic sea-ice, and spread of disease already result in significant costs to the federal government, and each new fossil fuel production project that BLM authorizes will worsen these problems and increase the associated costs.

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[654] *See* CEQ, Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews 19 (Aug. 1, 2016), https://obamawhitehouse.archives.gov/sites/whitehouse.gov/files/documents/nepa_final_ghg_guidance.pdf.

[655] IM No. 2021-046 and Manual and Handbook Sections 1794.

[656] *Id*.

[657] *See* CEQ, Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews 25–26 (Aug. 1, 2016), https://obamawhitehouse.archives.gov/sites/whitehouse.gov/files/documents/nepa_final_ghg_guidance.pdf.

In sum, consistent with the mitigation hierarchy, BLM must analyze how to avoid, minimize, and offset climate impacts from the Willow Project. Discussion of mitigation and the proposed mitigation measures in the draft SEIS are woefully inadequate to meet BLM's legal obligations and adequately address Willow's enormous GHG emissions and resulting climate impacts.

The draft SEIS details the calamitous present and future impacts of climate change.[658] However, information about impacts is much too scant, basic, and high level. It is mostly focused on broad observed and predicted changes for physical science such as air temperature, precipitation, permafrost extent, or snowfall, but is not specific to the Alaska Western Arctic region and therefore of questionable accuracy for describing and understanding specific climate change impacts.

A 2018 IPCC polar regions report demonstrates an example of critical information at a much greater level of detail that reflects the complexity and uncertainty of current knowledge and future predictions in polar regions.[659] To really understand the impacts of climate change it is necessary to look at the topic in much more detail. The 2018 IPCC report on polar regions has information summarized for these regions across physical, biological, and social topics with specific studies in Alaska. This is the best available scientific information for polar regions and must be analyzed in the SEIS. Still, on the ground impacts will be quite different in certain places. For example, changes in air temperature could vary seasonally between coastal, foothill, or mountainous regions, which would cause a spectrum of differential impacts to physical processes, ecosystems, and species. BLM must acknowledge and account for this reality in the SEIS.

Regarding climate change impacts on ecosystems specific to the Reserve, the draft SEIS is severely deficient. The document focuses on changes in climate and physical components but fails to describe impacts to the Arctic ecosystems and biological communities. These impacts are known, and BLM must incorporate them into its analysis.

The draft SEIS does explain how the IPCC "estimates with high confidence that in order to limit global warming to 1.5°C, global GHG emissions in 2030 would need to be 40% to 50%" and, under more recent estimates, up to 55% "lower than 2010 emissions" and "estimated that current pledges for 2030 reduce the projected 2030 emissions by only 7.5%."[660] The draft SEIS then recounts various adverse climate change impacts. These impacts include:

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[658] *See, e.g.*, 1 DSEIS at 34–37.

[659] Meredith, M., M. Sommerkorn, S. Cassotta, C. Derksen, A. Ekaykin, A. Hollowed, G. Kofinas, A. Mackintosh, J. Melbourne-Thomas, M.M.C. Muelbert, G. Ottersen, H. Pritchard, and E.A.G. Schuur, 2019: Polar Regions. In: IPCC Special Report on the Ocean and Cryosphere in a Changing Climate [H.-O. Pörtner, D.C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Alegría, M. Nicolai, A. Okem, J. Petzold, B. Rama, N.M. Weyer (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 203–320. https://doi.org/10.1017/9781009157964.005.

[660] *Id.* at 36.

- Degradation of permafrost and thremokarsting;
- Increasing air temperature;
- Increasing winter precipitation;
- Damage to soils;
- Drying wetlands;
- Plant mortality;
- Loss of surface water and degradation of water resources;
- Degradation of bird ecology, forage, and habitat, affecting the entire food web;
- Earlier snowmelt;
- Diminishing forage for caribou;
- Accelerating loss of sea-ice causing extreme pressure on marine mammals;
- Multiple harmful effects to subsistence activities, including decreased safety, predictability, and harvesting success rates;
- Damage to fish quantity, quality, and habitat;
- Increasing lakeshore and riverbank erosion;
- Decline in caribou populations;
- Water and food scarcity;
- Damage to mental health; and
- Increased environmental contaminants.[661]

Also, as explained above, every metric ton of GHG emissions from Willow would result in the direct loss of $3m^2$ of summer sea-ice. These are direct, harmful, and irreversible impacts to the resources of the Reserve.

Despite these striking and devastating adverse impacts, the draft SEIS considers ***zero*** measures to meaningfully mitigate GHG emissions. BLM purports to include applicable lease stipulations and required operating procedures "intended to mitigate impacts to climate change."[662] But none of these provides concrete mitigation of GHG emissions themselves, instead requiring only monitoring or merely possible and uncertain future measures:

- For an application to develop a potential substantial air pollutant emission source, BLM may require the proponent to provide an emissions reduction plan.
- For an application to develop a potential substantial air pollutant emission source, the AO may require air quality modeling analyzing the project's direct, indirect, or cumulative impacts to air quality. The modeling shall compare predicted impacts to all applicable local, State, and federal air quality standards and increments, as well as other scientifically defensible significance thresholds.

[661] *E.g.*, 1 DSEIS at 51, 72, 77, 100, 116, 128, 137, 140, 164, 192, 213, 263–64, 295–96, 307, 321, 323–25, 328–31, 333–34, 338–39; 6 DSEIS App. E.2.A at 1–3, App. E.8.B at 3–4.
[662] 1 DSEIS at 38, table 3.2.1.

- BLM may require air quality mitigation measures and strategies within its authority, in addition to regulatory requirements and proponent committed emission reduction measures.
- If ambient air monitoring indicates project-related emissions are causing or contributing to impacts that would cause undue degradation, exceedances of NAAQS, or fail to protect health, the AO may require changes to reduce emissions.[663]

These measures are not only vague, but also self-contradictory based on climate science and other assertions in the draft SEIS. The agency has already claimed that there are no established "significance thresholds." According to BLM, then, a measure relying on comparison to such thresholds is purely speculative. More importantly, BLM provides no mitigation measures that would actively reduce project GHG emissions. As such, even if BLM requires ConocoPhillips to prepare an "emissions reduction plan" and "emission reduction measures," short of considering severely restricting how much oil ConocoPhillips could actually produce — which the draft SEIS does not propose as a measure and which the draft SEIS otherwise clearly does not envision under any action alternative, particularly given emissions estimates — these measures will not result in meaningful GHG emissions reductions, if any.

Moreover, the draft SEIS claims that "CPAI's design measures related to climate change meet or exceed [] federal and state regulations . . . and would help reduce GHG emissions. These measures include capturing and injecting produced gas in a closed process to enhance oil recovery."[664] First, BLM does not state what federal regulations it is referring to. Second, it does not explain how ConocoPhillips' design measures would "reduce GHG emissions." Finally, capturing and injecting produced gas will not meaningfully reduce GHG emissions, particularly if intended to enhance oil recovery.

Climate-related mitigation measures elsewhere in the draft SEIS similarly have no bearing on reducing GHG emissions. At best, they address minimizing some climate impacts to the project or resource or deal primarily with climate adaptation.[665] Additionally, BLM states that "[n]o additional ROPs or mitigation measures are recommended" to mitigate climate impacts.[666]

As is apparent from the draft SEIS, under any of the action alternatives, the project's GHG emissions will be unreasonably and unsustainably massive. None of the draft SEIS's proposed mitigation measures will seriously reduce projected GHG emissions. BLM must rectify this harmful error by analyzing concrete mitigation measures that will meaningfully reduce or eliminate GHG emissions. Given the reality that if Willow produces oil and gas, it will result in substantial GHG emissions, BLM must recognize that it has the authority to choose the no action alternative. Indeed, based on the project's GHG emissions and resulting climate impacts, including directly to the Reserve from, among other things, significant loss of sea ice, BLM *must* avoid Willow's GHG emissions by choosing the no-action alternative.

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[663] *Id.* at 38, table 3.2.1 (ROP A-10(d), (e), (f), (g)).
[664] *Id.* at 39.
[665] *E.g.*, *id.* at 38, 56, 218, 300.
[666] *Id.* at 39.

2. BLM must mitigate Willow's GHG emissions and resulting climate impacts under the NPRPA.

The NPRPA provides direct authority requiring BLM to mitigate climate impacts resulting from Willow's GHG emissions. It states:

> Mitigation of adverse effects. Activities undertaken pursuant to this section shall 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 of the National Petroleum Reserve in Alaska.[667]

This authority could not be clearer. It is reasonably foreseeable that release of GHG emissions from Willow — independently and in combination with the cumulative GHG emissions from other sources — will cause significantly adverse effects on the Reserve's surface resources, including substantial sea-ice loss. As such, the draft SEIS "shall include" mitigation measures sufficient to prevent this degradation, one of which must be "prohibiti[ng]" the project from being permitted.

3. BLM must mitigate Willow's GHG Emissions and resulting climate impacts under FLPMA.

FLPMA requires BLM to protect "air and atmospheric" values, in addition to accounting for "the long-term needs of future generations," preventing "permanent impairment of the productivity of the land and quality of the environment," and taking "any action necessary to prevent unnecessary or undue degradation of the lands."[668] In particular, FLPMA's "unnecessary or undue degradation" mandate endows BLM with unmistakable authority to take action required to mitigate adverse impacts — including adverse climate impacts — to the Reserve. To ensure no unnecessary or undue degradation occurs, BLM has considerable discretion, including to suspend all operations and production on existing leases or units.[669] The agency has the authority to deny or delay an application for permit to drill (APD).[670] And ConocoPhillips' leases explicitly contain BLM's authority to condition, restrict, or prohibit activities.[671]

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667 42 U.S.C.S. § 6506a(b).
668 42 U.S.C. §§ 1701(a)(8), 1702(c), 1732(b); *see also supra* Legal/Policy V.A.
669 *Id.* § 6506a(k)(2).
670 43 C.F.R. § 3162.3-1(h)(2) (stating BLM has authority to "[r]eturn the application and advise the applicant for the reasons for disapproval"); *see also N. Alaska Evt'l Ctr. v. Kempthorne*, 457 F.3d 969, 976 (9th Cir. 2006) (assuming government could deny a specific application altogether if adequate mitigation measures are not available).
671 *See* U.S. Department of the Interior, Offer to Lease and Lease for Oil and Gas, Form 3100-11 (Oct. 2008) § 6 (stating BLM can require additional reasonable mitigation measures as conditions of approval to "minimize[] adverse impacts to the land, air, and water, to cultural biological, visual, and other resources, and to other land uses or users"); *id.* § 4 ("Lessor reserves the right to specify rates of development and production in the public interest.").

Climate mitigation measures are required to satisfy BLM's obligation to prevent unnecessary or undue degradation under FLPMA.[672] In other contexts, BLM has defined its obligation to avoid unnecessary or undue degradation as requiring mitigation for adverse impacts.[673] The Interior Board of Land Appeals (IBLA), for example, and courts have likewise recognized that BLM has authority to incorporate mitigation measures into project authorizations to observe its FLPMA obligations.[674] Just as BLM can deny a project outright to protect the environmental uses of public lands, it can also condition a project's approval on the commitment to mitigation measures that lessen environmental impacts.[675] BLM's duty to prevent unnecessary or undue degradation is mandatory, and BLM must demonstrate compliance with the standard.[676] The anti-degradation mandate is distinct from requirements under NEPA. "A finding that there will not be significant impact [under NEPA] does not mean either that the project has been reviewed for unnecessary and undue degradation or that unnecessary or undue degradation will not occur."[677] BLM must define and apply the substantive unnecessary or undue degradation requirements in the context of the specific resource values at stake.

The draft SEIS specifically mentions degradation to permafrost and habitat.[678] It provides the same general mitigation measure related to climate change and several other impacts: "If

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[672] *See, e.g.*, *Rocky Mountain Oil & Gas Ass'n v. Watt*, 696 F.2d 734, 739 (10th Cir. 1982) ("In general, the BLM is to prevent unnecessary or undue degradation of the public lands.").
[673] *E.g.*, 43 C.F.R. §§ 3809.5, 3809.420(a)(4) (stating that, in the hard rock mining context, UUD means conditions, activities or practices that are not "reasonably incident" to the mining operation or that fail to comply with other laws or standards of performance, which include "mitigation measures specified by BLM to protect public lands").
[674] *See, e.g.*, *Theodore Roosevelt Conservation P'ship v. Salazar*, 661 F.3d 66, 76, 78 (D.C. Cir. 2011) (holding that an environmental impact may rise to the level of unnecessary and undue degradation if it results in "something more than the usual effects anticipated from [] development, subject to *appropriate mitigation*" (emphasis added) (citing with approval *Biodiversity Conservation Alliance*, 174 IBLA 1, 5–6 (March 3, 2008))); *Biodiversity Conservation Alliance v. BLM*, No. 09-CV-08-J, 2010 U.S. Dist. LEXIS 62431, at *1, *27 (D. Wyo. June 10, 2010) (holding infill drilling project would not result in unnecessary and undue degradation where BLM required enforceable mitigation of project impacts).
[675] *See, e.g.*, *Pub. Lands Council v. Babbitt*, 167 F.3d 1287, 1300–01 (10th Cir. 1999) ("FLPMA unambiguously authorizes the Secretary to specify terms and conditions in livestock grazing permits in accordance with land use plans."); *Grynberg Petro*, 152 IBLA 300, 307–08 (2000) (describing how appellants challenging conditions of approval bear the burden of establishing that they are "unreasonable or not supported by the data").
[676] *See Sierra Club v. Hodel*, 848 F.2d 1068, 1075 (10th Cir. 1988) (holding that the unnecessary or undue degradation mandate provides the "law to apply" and "imposes a definite standard on the BLM").
[677] *Center for Biological Diversity v. Salazar*, 623 F.3d 633, 645 (9th Cir. 2010) (quoting *Kendall's Concerned Area Residents*, 129 I.B.L.A. 130, 140 (1994)).
[678] *See, e.g.*, 1 DSEIS at 51 (permafrost degradation), 72 (same), 77 (same), 100 (same), 116 (same), 325 (same), 328 (same), 337 (habitat degradation).

ambient air monitoring indicates project-related emissions are causing or contributing to impacts that would cause undue degradation, exceedances of NAAQS, or fail to protect health, the AO may require changes to reduce emissions."[679] For the same reasons explained above, this single, identical measure is both too uncertain to occur and, even if it were, is incapable of meaningfully reducing or eliminating GHG emissions once the project is permitted (not to mention the inability to prevent unnecessary or undue degradation to myriad other resources resulting from project infrastructure development).

The lack of actionable and material mitigation is brought into sharp relief by the following recognition in the draft SEIS:

> Global warming impacts observed globally and nationally are amplified in the Arctic. The Arctic has warmed at more than double the global rate over the past 50 years, and minimum temperatures have increased at about three times the global rate (IPCC 2021). The average surface air temperature over the Arctic in 2021 (October 2020 to September 2021) was the seventh warmest on record, and it was the eighth consecutive year that surface air temperatures were at least 1.8ºF (1 degree Celsius [ºC]) above the long-term average (Moon, Druckenmiller et al. 2021). In 2020, the annual surface air temperature was 3.4ºF (1.9ºC) higher than the 1981–2010 average on the land north of 60 degrees North, marking the second-largest annual average surface air temperature anomaly since at least 1900 (Thoman, Richter-Menge et al. 2020) . . . . Temperatures in the North Slope have been warming at a rate 2.6 times faster than the continental U.S. (USGCRP 2018).[680]

As noted in this comment letter, the draft SEIS goes on to recount numerous adverse impacts occurring in the Arctic and, specifically, in the Reserve due to climate change and continued GHG emissions. The mitigation contained in ROP A-10 and the single mitigation measure discussing "undue degradation," fail to fulfill FLPMA's mandate to take all actions necessary to prevent unnecessary or undue degradation.

Failing to prevent unnecessary and undue degradation by adopting climate mitigation also works against the Biden Administration's and the Unites States' climate commitments. New research shows that parallel supply-side and demand-side climate policy would lead to greater and more efficient GHG emissions reductions that either in isolation.[681] Focusing on reducing oil and gas supply in tandem with demand-side reductions is therefore justified and important for achieving the Administration's climate goals.

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[679] *Id.* at 38, 58, 218, 300, 312.
[680] 6 DSEIS App. E.2.A at 2–3.
[681] *See* Brian C. Prest, Partners, Not Rivals: The Power of Parallel Supply-Side and Demand-Side Climate Policy, Resources for the Future (Apr. 2022).

The Supreme Court's recent decision in *West Virginia v. EPA* is also not an impediment to BLM fulfilling its statutory mandate under FLPMA (or NEPA and the NPRPA).[682] BLM is at the apex of its authority in making management decisions about federal public lands within its purview.[683] In particular, FLPMA's directive and delegation to the Department of the Interior to "take any action necessary to prevent unnecessary or undue degradation of the lands"[684] endows BLM with the authority and discretion to enact broad measures to uphold this antidegradation mandate. As such, BLM unquestionably may take those actions necessary to implement the Congressional direction pursuant to FLPMA.

Taking those actions — be they imposing needed mitigation or deciding to choose the no-action alternative and not permit Willow — does not raise major questions as defined in *West Virginia v. EPA*.[685] Neither the Willow Project, nor a decision not to permit Willow implicates a decision of "vast economic and political significant."[686] To be sure, the Willow is a consequential oil and gas project with detrimental impacts to the resources of the Reserve and the people who depend on it. But it would not impose the type of economy-wide energy shifting or monetary implications on wide swaths of industry and consumers, nor seek "to regulate a significant portion of the American economy."[687] Therefore, decision making regarding Willow invokes neither the major questions doctrine, nor the non-delegation doctrine.

Because of the clear degrading impacts to resources in the Reserve from climate impacts resulting from GHG emissions, including, for example, direct loss of sea-ice, along with the clear scientific consensus that continued development of oil and gas resources is causing and will continue to cause catastrophic climate damages, to comply with FLPMA, BLM must examine alternatives that seriously constrain the project from emitting greenhouse gases. Ultimately, avoidance of GHG emissions to the greatest extent practicable is required to satisfy BLM's obligation to prevent unnecessary or undue degradation under FLPMA. Because permitting will lead to sizeable emissions, proper analysis will demonstrate that BLM must choose the no-action alternative.

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[682] 142 S. Ct. 2587 (2022).
[683] *E.g.*, 42 U.S.C.S. § 6506a(b); 43 U.S.C. §§ 1701, 1732; *see, e.g.*, U.S. CONST. art. IV, § 3, cl. 2 ("The Congress shall have Power to dispose of and make all needful Rules and Regulations respecting the Territory or other Property belonging to the United States; and nothing in this Constitution shall be so construed as to Prejudice any Claims of the United States.").
[684] 43 U.S.C. § 1732(b).
[685] *See West Virginia*, 142 S. Ct. at 2595 ("Precedent teaches that there are 'extraordinary cases' in which the 'history and the breadth of the authority that [the agency] has asserted,' and the 'economic and political significance' of that assertion, provide a 'reason to hesitate before concluding that Congress' meant to confer such authority." (citations omitted)).
[686] *Id.* at 2605.
[687] *Id.* at 2621, 2563 (citations omitted) (internal quotation marks omitted).

G. BLM Must Properly Analyze Methane Emissions that Would Result from the Willow Project.

Analysis in the draft SEIS of projected methane emissions resulting from Willow is inadequate. In addition to gaps and flaws in its examination of direct methane emissions from development and production, the draft SEIS fails to account for the compounding release due to increasing permafrost melting. BLM must correct these errors.

Methane is a potent climate pollutant that has contributed about half a degree Celsius to observed global warming.[688] There is now more methane in the atmosphere than at any time in the last 800,000 years, with concentrations increasing at an alarming rate since 2007, largely because of fossil fuel production.[689] Recent findings have amplified the urgent need to curtail oil and gas emissions, demonstrating that methane release from such development has been dramatically underestimated.[690] Analysis of pre-industrial ice cores "indicate that anthropogenic fossil [methane] emissions are underestimated by about 38 to 58 teragrams CH_4 per year, or about 25 to 40 percent of recent estimates."[691] This "highlights the human impact on the atmosphere and climate, [and] provides a firm target for inventories of the global [methane] budget."[692] BLM must, in its baseline, properly account for current methane levels and update its analysis of the greenhouse gas emissions and climate impacts of permitting Willow based on the best available science.

BLM has improperly quantified methane emissions because of flaws with its methane emissions analysis in the draft SEIS. The draft SEIS does not account for *any* methane emissions that would result from venting. BLM must remedy this omission. For projected flaring of gas from operations, the draft SEIS assumes certain maximum flowrates for year-round high-pressure and low-pressure flares.[693] BLM provides no citations and fails to explain on what it bases these flowrates and according to what time period.

Even more concerning is the comparison of assumed flare volumes at the Willow Processing Facility (WPF) to those conducted at the Alpine Central Processing Facility. The draft SEIS analyzed flaring at Alpine only over a two-year period: 2020 and 2021.[694] And there is a sizeable difference in the amount flared in each of those years: 176.2 MMSCF/yr in 2020

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[688] Intergovernmental Panel on Climate Change (IPCC), Climate Change 2021: The physical Science Basis, Contribution of Working Group I to the Sixth Assessment Report of the IPCC, Summary for Policymakers SPM-7 (V. Masson-Delmotte et al. eds, 2021) [hereinafter IPCC AR6 WGI], https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf.
[689] IPCC, SIXTH ASSESSMENT REPORT, CLIMATE CHANGE 2021: THE PHYSICAL SCIENCE BASIS, TECHNICAL SUMMARY TS-67.
[690] B. Hmiel et al., Preindustrial CH_4 indicates greater anthropogenic fossil CH4 emissions, 578 NATURE 409, 409–12 (Feb. 19, 2020); S. Pandey et al., Satellite observations reveal extreme methane leakage from a natural gas well blowout, 116 PNAS 52 (2019).
[691] *Id.* at 409.
[692] *Id*.
[693] 6 DSEIS App. E.3A at 2-22.
[694] *Id*.

and 304.0 MMSCF/yr in 2021.[695] There is no explanation for looking solely at these two years at Alpine, and BLM should provide flaring data for additional previous years at the facility. Moreover, the draft SEIS fails to explain why the year 6 total flaring estimate for the WPF of 197.1 MMSCF/yr is much closer to the Alpine year 2020 (lower) than year 2021 (higher). BLM also assumes, without explanation, that 197.1 MMSCF/yr will remain the flaring quantify for all future years.[696] It provides no basis for this assumption, particularly when seeing the vast disparity between flaring totals at Alpine for 2020 and 2021, and considering the fact that the WPF and related infrastructure (pipelines and VSMs) are being constructed to support much higher throughput than just Willow production.[697]

Specific to the "Year 6+" assumptions in Volume 6, Table 2.1-10, the draft SEIS must explain why the high-pressure flare pilot/purge for the WPF is lower than Alpine, while the low-pressure flare pilot/purse is nearly identical.[698] Additionally, there is no explanation or justification for why the total low-pressure flare for the WPF is projected to be so much lower (88.3 MMSCF/yr) than Alpine in 2021 (260.1 MMSCF/yr). For all numbers provided in Table 2.1-10, BLM must provide the assumptions and calculations supporting these projections.

In the cumulative impacts analysis, BLM fails to adequately account for methane emissions from accelerating permafrost thawing caused by anthropogenic warming. Thawing permafrost is releasing not only methane, but also carbon dioxide and "significant amounts of [nitrous oxide]."[699] The draft SEIS documents observed near-surface permafrost warming of 3ºC to 4ºC since the 1980s, with this warming trend continuing.[700] But, while BLM notes in its discussion of cumulative impacts that the "impacts of GHG emissions on climate change would be compounded by impacts from climate change on the environment,"[701] it makes no attempt to quantify what the draft SEIS itself describes as significant amounts of GHG emissions from permafrost thawing.[702] By failing to quantify these emissions from permafrost thaw or otherwise properly consider them in the draft SEIS's GHG emissions analysis, BLM has failed to "ensure[] that important effects will not be overlooked or underestimated."[703] BLM must sufficiently quantify, contextualize, and analyze current and projected GHG emissions resulting from permafrost thawing.

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[695] *Id.* at 2-22, table 2.1-10.
[696] *Id.*
[697] *See infra* Scope Deficiencies IV.B (future development).
[698] *Id.* 2-22, table 2.1-10.
[699] 1 DSEIS at 35.
[700] Id.
[701] *Id.* at 325.
[702] *See id.* at 320–39.
[703] *Robertson v. Methow Valley Citizen Council*, 490 U.S. at 349.

H. Modeled Estimates of Net Emissions Are Inherently Uncertain and Should Not Be Relied on As the Sole Authoritative Estimate of a Project's Emissions.

While BLM's evaluation of energy substitution and its resulting estimate of "net emissions" avoids the errors that rendered its previous analysis unlawful, BLM should not rely on this inherently uncertain estimate as the sole metric by which to judge the project's climate consequences. It is critical that BLM highlight the uncertainty in its substitution analysis and not present this speculative estimate as equal in kind to the more certain estimate of total lifecycle GHG emissions.

There are several inherent problems with substitution or net displacement analysis that renders such analysis insufficient to meet NEPA's goals of full disclosure and consideration.[704]

First, the analysis relies on an untenable business-as-usual assumption that under a no-action alternative, fossil fuel production will continue unabated. In this case, BLM's analysis is tied to the Energy Information Administration's (EIA) 2021 reference case, which assumes near constant oil consumption through 2050.[705] This ignores the national and international commitments — and indeed existential necessity — to rapidly phase out production and consumption of fossil fuels to near zero in the next several decades. "Centering an EIS analysis on the assumption that 'if we don't produce or move this fossil fuel, someone else will' ignores both these pledges and the science that motivated them."[706] It also ignores that the transition away from fossil fuels is well under way as a result of both market forces and government policies,[707] a trend that should accelerate as a result of the recently passed Inflation Reduction Act (IRA), which includes hundreds of millions of dollars in federal investment aimed at speeding the transition to clean energy. BLM must consider the impact of the IRA on fossil fuel production and consumption.

Second, this analysis compares a relatively straightforward calculation of the lifecycle emissions from fossil fuel production — determined by tallying up the GHG emission that occur at each stage of fossil fuel extraction, processing, refining, transport, and end-use — with a highly uncertain and very complicated analysis of what will happen if the project is not approved.[708] The effect of a single new project on complex global fossil fuel markets is highly uncertain and "requires extremely careful handling in order to provide clear and useful information instead of misleading conclusions."[709]

Third, the substitution analysis ignores that new fossil fuel infrastructure locks in long term emissions and creates barriers to decarbonization. The very high, privately financed costs of oil production facilities, especially in the Arctic, creates pressure to recoup the investment by

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[704] *See* J. Hasselman & P. Erickson, NEPA Review of Fossil Fuels Projects—Principles for Applying a "Climate Test" for New Production and Infrastructure, 8 (May 2022).
[705] 6 DSEIS App. E.2B at 1; EIA, Annual Energy Outlook 2021 at 7 (Feb. 3, 2021).
[706] Hasselman & Erickson at 9.
[707] *See id.* at 8.
[708] *Id.* at 10–11.
[709] *Id.* at 11

operating for many decades into the future.[710] Additionally, such projects incentivize investment other new exploration and production projects with their own long-term investment horizons.[711] ConocoPhillips' has made clear that is precisely the plan for Willow, which the company has touted as a "hub" for future development.[712] This must be analyzed.

Finally, focusing solely on an energy substitution estimate deflects the agency's responsibility to analyze concrete harms caused by its actions on the basis that someone else will probably cause the same harms anyway. BLM has authority over, and responsibility for, the impacts that will be caused by its decisions, and NEPA requires it to assess and be accountable for those impacts.

III. BLM FAILED TO ADEQUATELY CONSIDER 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."[713] Accordingly, an EIS must discuss appropriate mitigation measures.[714] Specifically, agencies must "include appropriate mitigation measures not already included in the proposed action or alternatives."[715] BLM must, in order, seek to avoid impacts, minimize impacts, and, only if those approaches are insufficient to fully mitigate the impacts, appropriately and sufficiently offset any remaining impacts. Those measures "must be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated."[716] 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."[717] In addition, CEQ has instructed that the "possibility of mitigation" should not be relied upon to avoid further environmental

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[710] *Id.* at 12.
[711] *Id*.
[712] ConocoPhillips Market Update at 9–10.
[713] *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 351-52 (1989) (quoting 42 U.S.C. § 4332(2)(C)(ii)).
[714] *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.
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.
[715] *Id.* §§ 1502.14(f), 1502.16(h).
[716] *Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1380 (9th Cir. 1998) (quotations and citation omitted).
[717] *S. Fork Band Council of W. Shoshone of Nevada v. U.S. Dep't of Interior*, 588 F.3d 718, 727 (9th Cir. 2009).

analysis.[718] 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.

BLM's analysis of mitigation measures is deficient for multiple reasons. First, it unclear if BLM is authorizing, through the current NEPA process, any deviations from the lease stipulations and best management practices that BLM identifies as likely to occur. Additionally, BLM does not analyze the need for the potential deviations or impacts from granting them. Additionally, BLM fails to adequately identify and analyze additional mitigation measures to impose given the failure of existing lease stipulations and best management practices to actually mitigate from the impacts of oil and gas activities on Reserve resources and uses.

BLM identified that "some Project facilities would require deviations" from lease stipulations and required operating procedures.[719] We note that it is unclear if BLM is considering granting waivers, exceptions, or modifications for these requirements when it refers to "deviations" in this broad manner, which are not defined in the DSEIS or the 2020 IAP Final EIS. The DSEIS states that "some LSs and ROPs may require exceptions or deviations due to Project constraints and would be evaluated by BLM for a waiver, exception, or modification on a case-by-case basis," but does not explain what these different authorizations are or how they would be granted.[720] BLM proposed course of action must be clarified, as each option is different, with potentially different resulting impacts.

It is not clear if BLM is granting the deviations now, or if it will evaluate potential deviations in the future.[721] BLM must be clear about whether it is granting deviations from these protective measures so that the public can understand the full impacts of the project and BLM's decision. While we assume that BLM is not actually granting the waivers now based on its lack of analysis, BLM must nevertheless fully evaluate the impacts of granting these deviations in this DEIS, regardless of whether it is in fact granting them, because the agency has identified that such deviations are likely.

For the stipulations that BLM anticipates deviations, BLM provides no explanation of how the factors leading to the stipulations' inclusion in the lease have changed sufficiently to make the protection provided by the stipulations no longer justified.

Additionally, while BLM indicates that the deviations are likely and/or necessary, it does not appear that BLM has analyzed impacts from such deviations to ensure that the objectives of the protective measures are still met, as required. In the IAP, BLM explained lease waivers, exceptions or modifications can only be granted if the agency official "determines that the

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[718] 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).
[719] 1 DSEIS at 23.
[720] 1 DSEIS at ES-3; 1 2020 IAP FEIS at 2-8–2-9 (describing differences between waivers, exceptions, or modifications to lease stipulations and required operating procedures).
[721] 1 DSEIS at ES-3.

factors leading to the stipulation's inclusion in the lease have changed sufficiently to make the protection provided by the stipulation no longer justified" and if the proposed operation would still meet the objective stated for the stipulation.[722] But BLM fails to evaluate either of these prongs for the various resources for which it is considering granting deviations. This analysis must be done now, regardless of whether BLM is actually granting the deviation now, because it might show that the protective measures can in fact be met under different alternatives, and might lead BLM to identify additional protective measures to impose.

Relatedly, BLM indicates that the deviations would be applicable to all alternatives. BLM's problematic purpose and need statement and its limited range of alternatives is reinforced by the fact that all of the alternatives would need the same deviations. BLM did not consider an alternative that would not require deviations or would require fewer or minimal deviations, but it should. To the extent BLM cites ConocoPhillips' design features as mitigation, this mistakes mitigation for the company's project design. For example, BLM points to ConocoPhillips' choice to place its CPF in a specific location to serve as a hub for future development as one such "mitigation" measure.[723] That BLM would characterize enabling ConocoPhillips' unanalyzed future development as mitigation demonstrates that the agency has an arbitrary and capricious understanding of its obligation to consider how to mitigate impacts from the Willow proposal.

An additional problem with BLM's approach to protective measures is that it focuses on the deviations that may be granted, but BLM does not take the necessary step of considering additional protective measures to impose to protect all likely resources that would be negatively impacted by the Willow development. In the IAP, BLM clearly stated that it could impose additional requirements to meet the projective objectives of lease stipulations and best management practices.[724] To protect the Reserve's resources and comply with legal mandates, including the NPRPA, FLPMA, ESA, and NEPA, BLM must propose and consider additional mitigation measures to impose on the project. BLM purports to identify and consider additional mitigation measures in Appendix I by including a chart of suggested measures, but there is no analysis of the proposed measures in the DSEIS so it is unclear that what is proposed is sufficient to ensure that resources are protected. BLM generally just lists the suggested additional measures in both the Appendix I and includes that same list in the DEIS analysis, without analyzing if they are sufficient to protect the Reserve's resources.[725] BLM must actually analyze the measures to fully understand the impacts from the proposed action and ensure that the protective measures proposed are in fact, sufficiently protective.

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[722] 1 2020 IAP Final EIS at 2-8.

[723] 1 DSEIS at 352 ("CPAI proposed locating the WPF as far south and west as possible under Alternative B. The intent of this was to construct the WPF in a location where it could potentially be used for future projects CPAI may develop.")

[724] 2020 IAP Final EIS, vol. 1 at 2-8–2-9.

[725] *See, e.g.*, *Id*. at 48 (listing additional measures but not providing analysis), *Id*. Appendix I at 18–21. (This is also a failing with BLM's analysis of resources, described in more detail below).

Finally, it is deeply concerning that for other BLM-approved projects within the Reserve, BLM requires mitigation measures in its ROD that are never in fact implemented. For example, the GMT-1 ROD incorporated Supplemental Best Management Practice 2: Air Quality (new subparagraph to BMP A-10) into BLM's final decision for approval of that project.[726] The relevant text of that requirement provides:

> Objective: Provide BLM oversight and technical review of air quality monitoring near theGMT1 project; address concerns in the local community regarding oversight for air quality.
>
> Requirement/Standard: The permittee will provide funding for monitoring to identify and address concerns related to air quality in the Nuiqsut area. Reports from the monitoring station in Nuiqsut will be provided to BLM, the State, NSB, and the local community and tribal government pursuant to BMP A-10(h). The permittee will provide funding for BLM technical review of these documents. The permittee will also provide funds to BLM, via an ongoing cost reimbursement agreement, to support BLM's independent verification of the air quality monitoring and reports.
>
> Potential Benefits and Residual/Unavoidable Impacts: Members of the public have expressed concern over air quality in the project vicinity. Providing for a technical BLM review of the monitoring results provides certainty for BLM and the community that air quality is being carefully considered and will help identify any potential project-related impacts that would cause exceedances of NAAQS, or fail to protect public health.[727]

It is our understanding that BLM never in fact required ConocoPhillips to provide such funding and that the monitoring reports from Nuiqsut have not been shared with federal, state, and local agencies or the tribal government. Trustees for Alaska submitted a Freedom of Information Act Request in September 2021 seeking documents related to ConocoPhillips' compliance with this supplemental best management practice.[728] BLM's release of documents in response did not contain any documentation illustrating compliance with this requirement.[729] Instead, BLM provided simple reports from ConocoPhillips to BLM regarding recorded exceedances of air quality standards; however, no documentation was provided indicating funding had been provided for any independent review.

BLM cannot purport to require ConocoPhillips to mitigate impacts, and consider that mitigation for purposes of downplaying the true impacts of the project, if there is no certainty that such mitigation will actually occur in the future. BLM should require enforceable mitigation and not allow ConocoPhillips to move forward with construction and operation of Willow unless and until mitigation measures are complied with. If there is no enforcement mechanism or other

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[726] GMT-1 ROD at 41.
[727] *Id*. at 41–42.
[728] Bridget Psarianos, Trustees for Alaska, Freedom of Information Act Request (Sept. 27, 2021).
[729] *See* Bureau of Land Management Reply to FOIA# BLM-2021-006299 (Mar. 7, 2022).

guarantee that the mitigation will actually occur, BLM needs to consider the full breadth of what those impacts would be if that mitigation does not occur.

IV. BLM FAILED TO PROVIDE SUFFICIENT INFORMATION AND ANALYSIS REGARDING THE PROJECT DESIGN AND RISKS.

BLM may not rely solely on the one-sided information and conclusions provided by the applicant, ConocoPhillips. As the lead agency responsible for developing the EIS, the BLM is obligated to obtain appropriate baseline data for the project area and do a thorough analysis of potential impacts from the proposed project and the manner in which ConocoPhillips intends to design and operate Willow. In addition to the comments below, we have attached, and incorporate by reference, comments drafted by Susan C. Lubetkin, PhD, whom Defenders of Wildlife contracted to provide expert advice regarding the draft SEIS's consideration of the oil spill risk analysis presented in the DSEIS.[730]

A. The Draft SEIS Contains Inconsistent and Questionable Project Design Decisions.

ConocoPhillips' proposed project maximizes oil recovery from the leased area with five pads located in a north-south alignment spaced over approximately 25 miles of the Reserve's landscape and many associated infrastructure components that contribute to the project's footprint such as the gravel mine, module and fuel delivery infrastructure, etc. The two northernmost pads would be located in the Teshekpuk Lake Special Area.

Under ConocoPhillips' proposed project, the Willow Processing Facility would be designed for peak processing of 200,000 barrels/day; projected peak oil production, important in sizing pipelines, is expected to be in excess of 180,000 barrels/day.[731] The proposed project also would include a 16.3 acre constructed freshwater reservoir,[732] 42.2 acres for the airstrip and its apron,[733] 37.4 miles of gravel roads, and an estimated 55,000-387,000 ground vehicle trips per year (150-1,060 per day).[734] We note that the per pad production levels for the proposed pads, does not appear to add up to even 180,000 barrels per day, the peak production projected by BLM. Thus, it appears the agency and ConocoPhillips may already be accounting for future production in those numbers without being transparent about doing so.

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[730] Susan C. Lubetkin, Ph.D. Comments on the Spill Risk Assessment in the Willow Master Development Plan DSEIS (Aug. 2022).
[731] 1 DSEIS at ES-1.
[732] *Id*. at 17.
[733] *Id*. at ES-10.
[734] 5 DSEIS, App. D.1, at 111 Table D.4.13.

As a threshold matter, ConocoPhillips is still continuing to change the project design even during the pendency of BLM's DSEIS process,[735] raising serious questions regarding BLM's ability to meaningfully consider the project's impacts and alternatives. As discussed further in this section, BLM should nonetheless examine each of these proposed infrastructure components and require implementation of alternatives that would reduce overall environmental impacts.

First, BLM should carefully evaluate whether construction of the Willow Processing Facility (WPF) is necessary. According to the DSEIS, "The Alpine central processing facility does not have capacity to process Project production (peak estimate of 200,000 barrels of oil per day, 175,000 barrels of water per day, and 300 million standard cubic feet of gas per day). The Alpine central processing facility is currently at gas handling capacity and the expected production from GMT-1 and GMT-2 will keep the facility at or near capacity for gas and water handling into the 2030s."[736] This is the primary, but not the only, rationale for not utilizing the Alpine central processing facility for this project.[737]

What is missing from the above statement on Alpine central processing facility capacity is a data-driven analysis of the expected Alpine decline rates for gas, oil, and water along with an analysis of the ramp up projections for Willow production. It is important to analyze if Willow ramp up can be phased in over time, e.g., not producing from certain pads, to see if the Alpine central processing facility can be slightly reconfigured without major impacts to its Colville River Delta location to accommodate Willow production. Indeed, BLM is already considering deferring one pad, so if construction of the WPF could be avoided by deferring another one or two pads, that should be considered as an alternative. The DSEIS also notes that partial processing facility could potentially be constructed, which is another alterative component that should be considered. If the WPF does not need to be constructed, that could have significant environmental benefits for the Reserve.[738]

Second, BLM should consider the necessity of the Constructed Freshwater Reservoir (CFWR) and should analyze the difference in impacts to waters and wetlands from continuous annual withdrawals without the reservoir as opposed to the significant impacts from building the reservoir in the first instance. The proposed 16.3 acre freshwater reservoir would provide a reliable, i.e., non-lake, year-round source of freshwater for ConocoPhillips's proposed project. As discussed in the DSEIS, "freshwater would be needed during construction for domestic use at construction camps, construction and maintenance of ice roads and ice pads, and hydrostatic

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[735] Kristen Nelson, Conoco says Willow FID depends on 'supportive' ROD from BLM, PETROLEUM NEWS (Aug. 14, 2022), https://www.petroleumnews.com/pnads/782049330.shtml.
[736] *Id*. at 20, Table D.3.3.
[737] *Id*.
[738] As noted in Table D.3.3., however, some processing infrastructure to address Willow's lower pressure reservoir would be needed at Willow. "Partial processing facilities in the Project area would be required (i.e., although a full central processing facility would not be required, a partial processing facility would still be required)." *Id*.

testing of pipelines. During drilling, freshwater would be required for domestic use at the drill rig camps and to support drilling activities. Water for construction and drilling would be withdrawn from lakes in the Project area. Freshwater for domestic use during operations would be sourced from the CFWR and Lake L9911 using the freshwater intake infrastructure (Section 4.2.4.5, Potable Water). However, year-round water withdrawal at Lake L9911 would occur only during construction; during operations, Lake L9911 water withdrawal would be limited to winter months…."[739] ConocoPhillips plans to construct the CFWR in Year 3.[740]

BLM should examine if there is a need at all for the proposed 16.3 acre CFWR as this acreage decreases wildlife habitat. Following construction, lakes can continue to provide freshwater *without a freshwater reservoir*, as they are expected to do prior to CFWR construction in Year 3. "The CFWR adjacent to Lake M0015 (also called R0056) would be the primary source of freshwater for domestic use under Alternatives B, C, and D (Table D.4.2)…Additional freshwater sources include Lake L911 (Alternatives B, C, and E)."[741] Prior to CFWR construction, some ice roads, pipelines, the Willow Operations Center and the airstrip all would have been constructed without the CFWR.[742]

Additionally, BLM should evaluate whether there is a low salinity formation below the permafrost layer that could be used to produce freshwater, which could would reduce impacts on fish and surface water resources either/both from withdrawing water from lakes or building the CFWR. The Prince Creek formation near Milne Point and Prudhoe Bay fields is a formation that produces industrial freshwater, thus reducing the need for lake water. The schematic below illustrates the relative position of the Prince Creek, low salinity, freshwater formation compared to the Schrader Bluff, Kuparuk, Sag River, and Ivishak oil-bearing formations (depths not to scale).[743] "Prince Creek Formation water is used as make-up water supporting secondary recovery from Schrader Bluff and Kuparuk Formations. Prince Creek water is also used for artificial lift of Sag River produced fluids."[744]

This formation provides substantial amounts of industrial freshwater. According to a 2018 submittal by BP to the Alaska Department of Natural Resources, the formation provided

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[739] 5 DSEIS, App. D.1, at 114.
[740] *Id*. at 118.
[741] *Id*. at 81.
[742] *Id*.
[743] Piceno, Yvette M et al. "Temperature and injection water source influence microbial community structure in four Alaskan North Slope hydrocarbon reservoirs." Frontiers in microbiology vol. 5 409. 7 Aug. 2014, doi:10.3389/fmicb.2014.00409 at Fig. 1.
[744] *See id*.

10.7 million barrels per day to just one portion of the Prudhoe Bay field,[745] equivalent to over 164 MG per year. In comparison, the CFWR would have a total capacity of 80 MG.[746]

Third, BLM must explain the need for the project airstrip, as identified elsewhere in these comments.[747] ConocoPhillips's proposed project includes 42.2 acres for the airstrip and its apron. An airstrip provides comparatively rapid access to Willow infrastructure but that access is weather-dependent in contrast to the planned road which would provide virtually all-weather access. In case of emergencies where rapid access is important, helicopters may be used.

As noted in Table ES.1, airstrips "increase[] noise, [result in] Changes to undisturbed characteristic visual landscape including night skies [and] Disturbance and displacement of birds, caribou, and polar bears."[748] The DSEIS analysis of why utilizing the Alpine airstrip rather than a new Willow airstrip in alternatives connected by roads was eliminated includes states that "This option would not support reasonably foreseeable future development within the Project area."[749] While the DSEIS provides three additional reasons to reject elimination of the Willow airstrip, i.e., avoiding additional environmental impacts in the Colville River Delta, increasing emergency response times, and fewer weather-related (e.g., fog) delays likely near Willow,[750] these three reasons are not likely the key rationale driving ConocoPhillips's decision to build a Willow airstrip. Rather, the main reason is "future development."[751] BLM should reject ConocoPhillips's decision to build the Willow airstrip in favor of increased protections for the Willow region from aircraft noise, visual landscape preservation, and disturbance and displacement of birds, caribou, and polar bears.

Fourth, BLM also fails to fully explain the need for Willow's extensive traffic and ways to mitigate such traffic. Table D.4.13. of the DSEIS provides information on the number of ground trips per year for Years 1-30 of the development for all types of vehicles. The table's footnote for Ground Traffic Volume states that the number listed, "Includes buses, light commercial trucks, short-haul trucks, passenger trucks, and other miscellaneous vehicles. Ground transportation also includes gravel hauling operations (i.e., B-70/Maxi Haul dump trucks)."[752] The yearly numbers thus aggregate all types of ground vehicles, whether they are small or large trucks, buses, etc. The table's footnote does not state whether the Ground Vehicle quantities listed include diesel deliveries nor deliveries of needed chemicals for oil production such as corrosion inhibitors, biocides, defoaming agents, surfactants, methanol, etc. If it does include these trips, that should be clarified in the final SEIS or, if it does not, another column

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[745] *See* Katrina Gamer, BP Exploration (Alaska) Inc. Ltr. to Division of Oil and Gas, Alaska Dept. of Natural Resources 4 (Mar. 28, 2018) available at https://dog.dnr.alaska.gov/Documents/Units/2018/20180329_PB_IPA_POD_2018.pdf.
[746] 5 DSEIS, App. D.1. at 82.
[747] *Supra* Legal/Policy IV.D.3 (explaining BLM rejected reasonable alternatives).
[748] 1 DSEIS at ES-10.
[749] 5 DSEIS, App. D.1. at 16, Table D.3.3.
[750] *Id*.
[751] *Id*.
[752] *Id*. at 111, Table D.14.13.

should be added to this Total Traffic Volumes table. Currently, it is impossible for the public to assess the environmental risk of hazardous spills from transportation and whether traffic quantities could be reduced through, for example, larger gravel or fuel hauling trucks, fewer bus trips, or other measures.

Finally, BLM should consider meaningful ways to reduce impacts from methane releases. Fugitive releases and maintenance related venting of methane from pipeline systems including pipelines and pump and compressor stations are not typically quantified or reported to any state or federal agency unless they reach a threshold size.[753] Additionally, neither the Alaska Department of Environmental Conservation (ADEC) nor the Alaska Oil and Gas Conservation Commission monitors pipeline infrastructure outside of facilities with air quality permits which have periodic ADEC inspections.

Remote sensing of methane releases from both satellites[754] and drones[755] is now possible and occurs regularly via satellite at lower 48 oil and gas fields. BLM needs to either require ConocoPhillips to perform regular remote sensing of its Willow development to detect methane releases from its infrastructure, especially its pipeline infrastructure which has no required monitoring for gas releases, or BLM should engage in remote sensing of methane releases in the Reserve.

Methane Releases from Wellhead Maintenance and Processing Facilities. Gas venting from maintenance operations results in unnecessary and not insignificant releases of methane. This type of venting largely can be eliminated with proper maintenance procedures and flexible facility design to allow depressurization of process equipment rather than atmospheric venting. Proper facility design and operations would allow methane gas to bleed back into the production process and compression train. To reduce methane emissions, BLM needs to add a Required Operating Practice that ensures minimization of methane venting during wellhead and processing facility maintenance.

B. The DSEIS Does Not Adequately Reflect the True Scope of ConocoPhillips' Future Plans for Development in the Reserve.

BLM should not allow ConocoPhillips to segment the agency's review and analysis of this project to artificially downplay the true scope of the impacts that could occur from Willow and future expansions. For example, it is unclear precisely how BLM is handling its consideration of the BT5 pad for purposes of Alternative E. The DSEIS indicates that under

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[753] *See* 49 C.F.R. § 191.3 (natural gas pipeline reporting thresholds); 49 C.F.R. § 195.50 (crude oil and other hazardous liquid pipeline federal reporting thresholds).
[754] *See* de Gouw, J.A., Veefkind, J.P., Roosenbrand, E. *et al.,* Daily Satellite Observations of Methane from Oil and Gas Production Regions in the United States. *Sci Rep* 10, 1379 (2020). https://doi.org/10.1038/s41598-020-57678-4.
[755] See Magnus Gålfalk *et. al*., Sensitive Drone Mapping of Methane Emissions without the Need for Supplementary Ground-Based Measurements. CS Earth Space Chem. 2021, 5, 10, 2668–2676 (202) https://doi.org/10.1021/acsearthspacechem.1c00106.

Alternative E, there would not be a BT4 pad and the approval for BT5 would be deferred.[756] It is unclear exactly how BLM might handle future approvals for BT5, given that it is being considered to some extent at this stage and was approved by the Corps in the project's CWA 404 permit, and yet BLM purports to be deferring approval for it.[757] BLM needs to further clarify if and how it will consider authorizations for BT5 in the future and should not use the deferral of that pad as a basis for downplaying the true impacts of Alternative E. There is also no binding commitment at this point that appears to guarantee that ConocoPhillips not come back and attempt to permit BT4 at a future point in time. BLM should incorporate measures that expressly limit and restrict ConocoPhillips' ability to expand its unit operations in the future to ensure that impacts are truly minimized, and that ConocoPhillips does not just use this as an opportunity to permit something smaller-scale now, when it in fact still intends to expand things in the future.

As noted above, ConocoPhillips also indicated to investors that it sees Willow as the "next great Alaska hub" and the "new infrastructure hub [that] unlocks the west."[758] ConocoPhillips represented that it identified upwards of 3 billion additional barrels of oil equivalent in the vicinity of Willow that "could leverage the Willow infrastructure."[759] Given these representations, it seems that ConocoPhillips has not been transparent with the full scale of what it is envisioning for Willow's use as a central hub for further development in the Reserve, despite the fact that ConocoPhillips appears to be incorporating in project elements that are meant to facilitate future expansion. For example, the Central Processing Facility for Willow is projected to have a processing capacity of upwards of 200,000 barrels of oil per day and Willow will supposedly have a peak production level of 180,000 barrels per day, but the projected flow rate provided elsewhere in the DSEIS is estimated to be only 23,000 barrels per day from each individual drill pad.[760] It is unclear where the additional production to reach 180,000 barrels per day is coming from if the individual pad projections for the pads considered in the DSEIS are cumulatively so much lower than that projected production level. BLM needs to clarify these inconsistencies in its analysis and provide a transparent estimate for Willow's production.

The fact that Willow is intended to be a hub for further expansion is further borne out by the DSEIS itself. For example, the screening criteria for the alternatives expressly ties the viability of different alternatives to whether the alternative will support future development.[761] The DSEIS states that any alternative "should have the potential to support reasonably foreseeable future development."[762] As discussed earlier in these comments, it is unclear how BLM is even defining "reasonably foreseeable future development" for purposes of its alternatives analysis, let alone its cumulative impacts assessment. BLM needs to clearly identify

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[756] 1 DSEIS at 10.
[757] BLM's deferral of BT5 conflicts with its assertions that it cannot otherwise defer approval of Willow. If BLM can defer approving one pad, it can defer approval of the project overall.
[758] ConocoPhillips Market Update, *supra*, at 9–10.
[759] ConocoPhillips Market Update, *supra*, at 9–10; ConocoPhillips, Inc., 2021 Market Update Powerpoint Slides 25 (June 30, 2021) [hereinafter ConocoPhillips Slides].
[760] 1 DSEIS at 2, 346.
[761] 5 DSEIS at 6.
[762] *Id*.

and analyze the impacts of this future expansion potential as part of its analysis; it cannot on the one hand ignore those impacts, while at the same time authorizing a project where the design and alternatives are expressly tied to ConocoPhillips' intent to use Willow as a jumping-off point for future expansion. The mitigation section in the DSEIS also indicates that ConocoPhillips proposed locating the processing facility as far south and west as possible with the intent of constructing the processing facility "in a location where it could potentially be used for future projects CPAI may develop" to the south and west of Willow.[763] This location is purportedly to "minimize future (cumulative) impacts related to further development to the west of the Project area."[764] Despite this, the DSEIS does not contain an adequate analysis of the true scope and impacts of what it would mean to have a major hub like Willow utilized for even further expansion into the Reserve.

The DSEIS also relies on too low of an overall estimate for Willow's potential production levels. ConocoPhillips has previously indicated that resource estimates for the Willow area are between 450 million and 800 million barrels of oil equivalent.[765] Despite that, the DSEIS only assumes ConocoPhillips will produce up to 629 million barrels of oil.[766] History shows that BLM should approach these numbers and the likely impacts conservatively and in a way that overestimates the likely impacts. For example, Alpine was originally estimated to hold only 430 million barrels of oil equivalent, and yet cumulative production at Alpine is already over 600 million barrels and ConocoPhillips estimates there may be an additional ~600 million barrels of oil equivalent remaining.[767] At a presentation in March, ConocoPhillips highlighted the fact that Kuparuk and GMT 2 were producing more oil than originally estimated and emphasized that once a project is underway in Alaska, it has a long life and great potential for expansion, citing Alpine as an example.[768] Even EPA raised questions and concerns regarding estimates for Willow's production, and encouraged BLM to require additional NEPA adequacy review if the production from Willow is higher than anticipated in the EIS.[769] The agency should accurately assess and estimate Willow's likely production before issuing a final EIS and any project approvals, and needs to ensure the final EIS accounts for those increased production estimates in its impacts analysis.

Overall, the DSEIS does not reflect the true impacts that are likely to occur to the region from Willow and its future use as an industrial hub. BLM should not allow ConocoPhillips to downplay the likely impacts of this project for purposes of this analysis, and should revise the DSEIS to account for the impacts that are likely to occur from Willow facilitating future expansion into the Reserve.

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[763] 1 DSEIS at 352.
[764] *Id*.
[765] ConocoPhillips Alaska, Willow Fact Sheet, https://static.conocophillips.com/files/resources/fact-sheet-willow-final.pdf.
[766] 1 DSEIS at 2.
[767] ConocoPhillips Slides at 24.
[768] Energy Task Force - March 1, 2022 - ConocoPhillips Alaska North Slope and Willow Project Update, https://www.youtube.com/watch?v=djmsmvobkrs at 8:24, 14:13, 56:07.
[769] U.S. Envtl. Prot. Agency, Ltr. to Bureau of Land Mgmt. (Mar. 9, 2022).

C. The DSEIS Is Still Lacking Site-Specific Information About the Project and the Impacted Area.

While agencies can "defer detailed analysis until a concrete development proposal crystallizes the dimensions of a project's probable environmental consequences,"[770] 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."[771] 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."[772] An agency reaches the threshold triggering site-specific review when it proposes to make an irreversible and irretrievable commitment of resources.[773]

BLM is analyzing this project at the site-specific level and considering authorizing this project as proposed. This is not a programmatic decision subject to future NEPA. It is at this stage, when the agency makes a critical decision to act, that the agency is obligated fully to evaluate the impacts of the proposed action.[774]

The exact nature of what BLM is authorizing, particularly since it does not yet have right-of-way or other permit applications before it, is unclear. However, BLM appears to indicate in the DSEIS that it will be relying on this EIS for those future authorizations and it is unclear the agency will be engaging in any further, more in-depth reviews of the Willow project.[775] Problematically, it appears that ConocoPhillips is still continuing to change the project design even during the pendency of BLM's DSEIS process,[776] making it impossible for BLM to determine whether the agency is actually analyzing the project and its site-specific impacts accurately. Because this appears to be the analysis BLM is doing in support of those ultimate permitting decisions, BLM is obligated to ensure that it has sufficient site-specific information about the project and the project area to engage in a meaningful analysis.

The DSEIS does not reflect that BLM has sufficient site-specific information about the project to do an adequate analysis of the impacts and ways to mitigate those impacts. This is particularly troubling with regard to the potential aquatic impacts from the project. For example, there is still only vague information provided about the exact locations and ways in which

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[770] *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1216 (9th Cir. 1998).
[771] *Id.* (emphasis added).
[772] *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.").
[773] *Block*, 690 F.2d at 761.
[774] *See* '*Ilio'ulaokalani Coal. v. Rumsfeld*, 464 F.3d 1083, 1097 (9th Cir. 2006).
[775] 1 DSEIS at ES-1, 1.
[776] Kristen Nelson, Conoco says Willow FID depends on 'supportive' ROD from BLM, PETROLEUM NEWS (Aug. 14, 2022), https://www.petroleumnews.com/pnads/782049330.shtml.

ConocoPhillips plans to construct bridges or install culverts and culvert batteries.[777] The DSEIS points to Appendix D as containing more information about the bridges and culverts, but that information is similarly vague and does not reflect that BLM has adequate site-specific information about the proposal to do a meaningful analysis.[778] Without more detailed site-specific information about what those project elements might look like, it is unclear how BLM can engage in a meaningful analysis of the likely impacts and ways to minimize them.

Moreover, the lack of site-specific analysis of Willow's impacts is even more troubling given BLM's assertions that it cannot select the No Action alternative. It is a dangerous public policy for BLM to assert that it must approve any and all drilling and right-of-way applications received in the Reserve once it issues a lease, especially given that the agency has not historically conducted any site-specific NEPA analyses at the lease sale stage. BLM cannot fully evaluate site-specific impacts once it reaches the point of making "a critical decision . . . to act on site development"[779] without considering the current site-specific environmental baseline as part of a meaningful analysis of the No Action alternative.

D. BLM Fails to Analyze the Direct, Indirect, and Cumulative Impacts of Hydraulic Fracturing and Other Forms of Well Stimulation Techniques.

The agency's DSEIS acknowledges that "[e]ach production well would receive a multistage hydraulic fracturing operation similar to those employed at other North Slope developments."[780] Yet, like the EISs issued by the Trump administration, the Biden administration's new analysis also fails to analyze the direct, indirect, and cumulative impacts from hydraulic fracturing ("fracking") and other well stimulation techniques that would be used at Willow. The failure to do so violates the agency's obligation to take a hard look of the impacts of the project as required by NEPA.

Indeed, numerous courts have held an agency's NEPA analysis unlawful for failing to examine the impacts from fracking.[781] This is because fracking and other well stimulation

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[777] *See, e.g.*, 1 DSEIS at 14 (indicating ConocoPhillips is "estimat[ing]" there will be culverts every 1000 feet, but will ultimately figure out later whether that is sufficient or if more need to be added).

[778] 1 DSEIS at 14; 5 DSEIS App. D.1 §§ 4.3–4.6.

[779] *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)).

[780] 1 DSEIS at 22.

[781] *See Envt'l Defense Ctr v. BOEM*, 36 F.4th 850, 864, 872–82 (9th Cir. 2022) (holding agency failed to take a hard look at the impacts of fracking in federal waters off California); *Los Padres ForestWatch v. U.S. Bureau of Land Mgmt.,* No. CV-15-4378-MWF, 2016 U.S. Dist. LEXIS 138782 (C.D. Cal. Sept. 6, 2016) (holding that the "hard look" required by NEPA "necessarily requires [BLM] to address the unique risks and concerns associated with fracking" and the agency's failure to do so rendered an EIS on an oil and gas lease unlawful); *San Juan Citizens All. v. U.S. Bureau of Land Mgmt*., 326 F. Supp. 3d 1227, 1254 (D.N.M. 2018) (setting aside leases due to NEPA violations where BLM failed to evaluate, *inter alia*, the volume of water that would be used for hydraulic fracturing operations); *Ctr. for Biological Diversity v. Bureau of*

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 traffic, among other harms. The agency's failure to analyze the impacts of increased risk of water contamination, harmful air pollution, increased harm to wildlife, and induced seismicity are particularly glaring.

1. The DSEIS fails to analyze impacts from fracking on water quality.

The DSEIS fails to analyze the risks of fracking on water quality. Fracking fluid (i.e. "recovered" or "flowback" fluids collected into tanks following well stimulation, but before oil and gas production starts) and wastewater (i.e. "produced water" extracted with oil and gas during production)[782] from oil and gas operations are a toxic mix of chemicals harmful to human health. One peer-reviewed study that examined fracking fluid products determined the chemicals used in these practices can cause a myriad of harms, including damage to the respiratory system, the nervous system, immune system, cardiovascular system, endocrine system; and that some can cause cancer and mutations.[783] Another study found that numerous chemicals used to acidize wells are F-graded hazardous chemicals — carcinogens, mutagens, reproductive toxins, developmental toxins, endocrine disruptors or high acute toxicity chemicals.[784]

And a systematic evaluation of 240 chemicals regularly found in fracking fluids and/or wastewater reported that forty-three percent are associated with reproductive toxicity, forty percent are associated with developmental toxicity, and seventeen percent have been shown to cause both developmental and reproductive harms.[785] The study identified 781 other chemicals found in fracking fluid and wastewater which lacked toxicity information and thus could not be evaluated, but which may pose similar risks. Another recent analysis of 111 chemicals routinely found in fracking fluids and wastewater found that 44 percent are known, probable, or possible

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Land Mgmt., 937 F. Supp. 2d 1140, 1157 (N.D. Cal. 2013) (BLM could not rely on 2006 RMP/FEIS to demonstrate that impacts of decision to lease were adequately analyzed because the "emergence of fracking raises potential concerns that were not considered by the 2006 PRMP/FEIS.").

[782] California Council on Science and Technology and Lawrence Berkeley National Laboratory An Independent Scientific Assessment of Well Stimulation in California, Volume II, Potential Environmental Impacts of Hydraulic Fracturing and Acid Stimulations (July 2015) at 50.

[783] 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.

[784] Khadeeja Abdullah, Timothy Malloy, Michael K. Stenstrom & I. H. (Mel) Suffet. 2016. Toxicity of acidization fluids used in California oil exploration, Toxicological & Environmental Chemistry.

[785] Elliott, Elise G., et al., A systematic evaluation of chemicals in hydraulic-fracturing fluids and wastewater for reproductive and developmental toxicity, 27 Journal of Exposure Science and Environmental Epidemiology 90 (2016).

human carcinogens, and seventeen are linked to increased risk for leukemia and lymphoma, including 1,3-butadiene, cadmium, ethanol, ethylene oxide, and formaldehyde.[786] The suite of chemicals used in oil and gas development poses threats to virtually all systems of the body including the sensory, gastrointestinal, immune, reproductive, cardiovascular, endocrine, and nervous systems.[787] And scientific research has indicated that 40% of the chemicals used in fracking can harm aquatic animals and other wildlife.[788]

Studies have also demonstrated that drilling and fracking activities, and associated wastewater disposal practices, inherently threaten groundwater and have polluted drinking water sources.[789] Scientists have concluded that there is "irrefutable evidence that groundwater contamination occurs as a result of fracking activities and is more likely to occur close to well pads."[790] Another recent study from California reported that produced water from ninety-five percent of 630 fracked wells contained measurable, and sometimes elevated, concentrations of toxic BTEX (benzene, toluene, ethylbenzene and xylene) and PAH (polycyclic aromatic hydrocarbon) compounds.[791] And another study found greater hormone-disrupting properties in water located near hydraulic fracturing drilling sites than in areas without drilling, and they found that 11 chemicals commonly used for fracking are endocrine disruptors.[792]

2. The DSEIS fails to analyze impacts from fracking on air quality.

Air pollution associated with fracking and flaring is a serious concern with a range of impacts. A growing body of scientific research has documented adverse public health impacts from these practices, including studies showing air pollutants at levels associated with reproductive and developmental harms and the increased risk of morbidity and mortality.[793]

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[786] Elliott, Elise G. et al., Unconventional oil and gas development and risk of childhood leukemia: Assessing the evidence, 576 Science of the Total Environment 138 (2017).
[787] Yost, Erin et al., Estimating the Potential Toxicity of Chemicals Associated with Hydraulic Fracturing Operations Using Quantitative Structure-Activity Relationship Modeling, 50 Environmental Science and Technology 14 (2016).
[788] Colborn, Theo, et al., Natural Gas Operations for a Public Health Perspective, 17 Human and Ecological Risk Assessment 1039 (2011).
[789] *E.g.*, Bonetti, Pietro, et al. 2021. Large-sample evidence on the impact of unconventional oil and gas development on surface waters. Science 373:896–902.
[790] Physicians for Social Responsibility, Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking (Unconventional Gas and Oil Extraction) Seventh Edition, December 2020 at 86.
[791] Chittick, Emily A. & Tanja Srebotnjak, An analysis of chemicals and other constituents found in produced water from hydraulically fractured wells in California and the challenges for wastewater management, 204 Journal of Environmental Management 502 (2017).
[792] Kassotis, Christopher D., et al. Estrogen and Androgen Receptor Activities of Hydraulic Fracturing Chemicals and Surface and Ground Water in a Drilling-Dense Region. Endocrinology, doi 10.1210/en.2013-1697 (2013).
[793] Hays, Jake & Seth B.C. Shonkoff , Towards an Understanding of the Environmental and Public Health Impacts of Unconventional Natural Gas Development: A Categorical Assessment

Researchers have documented more than 200 different air pollutants near drilling and fracking operations, including hazardous air pollutants with known health risks and endocrine disruptors.[794]

Areas with substantial drilling and fracking show high levels of ground-level ozone (smog), striking declines in air quality, and, in several cases, increased rates of health problems with known links to air pollution.[795] For example, a 2018 study of pediatric asthma-related hospitalizations, it was found that children and adolescents exposed to newly spudded unconventional natural gas development wells within their zip code had 1.25 times the odds of experiencing an asthma-related hospitalization compared to children who did not live in these communities.[796] And a study of more than 1.1 million births in Pennsylvania found evidence of a greater incidence of low-birth-weight babies and significant declines in average birth weight among pregnant women living within 3 km of fracking sites.[797]

And a comprehensive review of the risks and harms of fracking to public health conducted in 2021 came to several key findings related to air pollution: (1) "drilling and fracking contribute to toxic air pollution and ground-level ozone at levels known to have health impacts," (2)"public health problems associated with drilling and fracking, include poor birth outcomes, reproductive and respiratory impacts, and cancer risks"; and (3)"fracking infrastructure poses serious potential exposure risks to those living near it."[798] Scientists have concluded "with a high

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of the Peer-Reviewed Scientific Literature, 11 PLoS ONE e0154164 (2016); Shonkoff, Seth B.C. et al., Environmental Public Health Dimensions of Shale and Tight Gas Development, 122 Environmental Health Perspectives 787 (2014); Webb, Ellen et al., Developmental and reproductive effects of chemicals associated with unconventional oil and natural gas operations, 29 Rev Environ Health 307 (2014); McKenzie, Lisa M. et al., Human Health Risk Assessment of Air Emissions From Development of Unconventional Natural Gas Resources, 424 Science of the Total Environment 79 (2012); Clean Air Task Force, Fossil Fumes: A Public Health Analysis of Toxic Air Pollution From the Oil and Gas Industry, June 2016, available at http://www.catf.us/resources/publications/files/FossilFumes.pdf.

[794] Physicians for Social Responsibility, Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking (Unconventional Gas and Oil Extraction) Seventh Edition, December 2020.

[795] *Id.*; McAlexander, Tara P., et al. 2020. Unconventional Natural Gas Development and Hospitalization for Heart Failure in Pennsylvania. Journal of the American College of Cardiology. Vol. 7 6, No. 24.

[796] Willis, Mary D. et al., Unconventional natural gas development and pediatric asthma hospitalizations in Pennsylvania, 166 Environmental Research 402 (2018).

[797] Currie, Janet et al., Hydraulic fracturing and infant health: New evidence from Pennsylvania, 3 Science Advances e1603021 (2017).

[798] Physicians for Social Responsibility and Concerned Health Professionals of NY, Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking, Sixth Edition, June 2019 ("PSR 2019") available at https://concernedhealthny.org/wp-content/uploads/2019/06/Fracking-Science-Compendium_6.pdf.

level of certainty" that living in close proximity to drilling and fracking is associated with adverse health outcomes.[799]

3. The DSEIS fails to analyze impacts from fracking on wildlife.

In addition to posing a significant health and safety risk to humans, fracking and other well stimulation chemicals can kill or harm a wide variety of wildlife.[800] For example, a study of the effects of exposure to fracking flowback fluid and produced water on rainbow trout found evidence for endocrine disruption, biotransformation, and oxidative stress. The researchers concluded that wastewater exposure "could cause significant adverse effects on fish, and the organic contents might play the major role in its toxicity."[801]

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[799] Seth B.C. Shonkoff, Department of Environmental Science, Policy, and Management, University of California, Berkeley, et al., Response to CalGEM Questions for the California Oil and Gas Public Health Rulemaking Scientific Advisory Panel, Oct. 1, 2021; Cushing, Lara J., et al. 2020. Flaring from Unconventional Oil and Gas Development and Birth Outcomes in the Eagle Ford Shale in South Texas. Environmental Health Perspectives 077003-1 128(7); Longxiang Li, et al. 2020. Unconventional oil and gas development and ambient particle radioactivity. Nature Communications 11:5002.

[800] Hossack, Blake R. 2018. Effects of persistent energy-related brine contamination on amphibian abundance in national wildlife refuge wetlands. Biological Conservation 228:36–43; U.S. Fish and Wildlife Service, Office of Law Enforcement. 2009; Case at a Glance: U.S. v. Nami Resources Company, LLC, www.fws.gov/home/feature/ 2009/pdf/NamiInvestigation.pdf; 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; MIT Energy Initiative. 2011. The future of Natural Gas, An Interdisciplinary MIT study, http://energy.mit.edu/publication/ future-natural-gas/; 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: 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; 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; Yuhe He, et al. 2017. Chemical and toxicological characterizations of hydraulic fracturing flowback and produced water. Water Research 114 (2017) 78-8

[801] He, Y. et al., Effects on biotransformation, oxidative stress, and endocrine disruption in rainbow trout (*Oncorhynchus mykiss*) exposed to hydraulic fracturing flowback and produced water, 51 Environmental Science and Technology 940-947 (2017).

A similar study analyzed the impacts of fracking fluids on water fleas, and found exposure to fracking fluids caused a significant decline in reproduction and increased mortality.[802] And another study found acute toxicity of zebrafish embryos from fracking fluid.[803]

Fracking also increases the 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.[804] This traffic will further exacerbate the numerous harms associated with Willow including increased air pollution and noise that can disturb birds, polar bears, caribou, and other species.[805]

Fracking also uses significant amounts of water. BLM must evaluate the water withdrawal from lakes for the use in fracking. Between 2000 and 2014, the average water used for fracking a horizontal well increased from 177,000 gallons to 4 million gallons.[806] The substantial water withdrawals needed for fracking could cause fish mortality and low water levels in the project area, which could also harm birds like the yellow-billed loon and spectacled eiders.

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[802] Tamzin A. Blewett, et al., Sublethal and Reproductive Effects of Acute and Chronic Exposure to Flowback and Produced Water from Hydraulic Fracturing on the Water Flea Daphnia magna, 51 Environ. Sci. Technol. 3032−3039 (2017). DOI: 10.1021/acs.est.6b05179.
[803] He, Y. et al. 2017, Chemical and toxicological characterizations of hydraulic fracturing flowback and produced water, 114 Water Research 78-87 (2017).
[804] 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).
[805] *See, e.g.*, Owen, Megan A. 2021. Estimating the Audibility of Industrial Noise to Denning Polar Bears, Journal of Wildlife Management 85:384; Mejia, Elizeth Cinto. 2019. Large-scale manipulation of the acoustic environment can alter the abundance of breeding birds: Evidence from a phantom natural gas field. Journal of Applied Ecology 56:2091–2101; Sawyer, Hall, et al. 2019. Long-term effects of energy development on winter distribution and residency of pronghorn in the Greater Yellowstone Ecosystem. Conservation Science and Practice. 1:e83.
[806] 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.

4. *The DSEIS fails to analyze the risk of earthquakes and other accidents from fracking.*

Studies have also drawn a strong connection between the recent rise in fracking wastewater injection and increased earthquake rates.[807] Wastewater injection has been scientifically linked to earthquakes of magnitude three and greater in several states.[808]

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.[809] 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.[810] 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.

In addition to earthquakes, well stimulation can increase the risk of well casing damage.[811] For example, a recent study by California scientists found that older wells can

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[807] 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); Sumy, D. F., et al. 2014. Observations of static Coulomb stress triggering of the November 2011 M5.7 Oklahoma earthquake sequence, J. Geophys. Res. Solid Earth, 119:1904–1923; USGS, 2014. Record Number of Oklahoma Tremors Raises Possibility of Damaging Earthquakes, http://www.usgs.gov/newsroom/ article.asp?ID=3880; 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.

[808] 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; Van der Elst et al. 2013; BC Oil & Gas Commission. 2015. Industry Bulletin: 2015-32; Rubinstein, J. L, et al. 2014; 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. 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; 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.

[809] Iason Grigoratos, et al., Distinguishing the Causal Factors of Induced Seismicity in the Delaware Basin: Hydraulic Fracturing or Wastewater Disposal? Seismological Research Letters (2022); Schultz, Ryan, et al. 2020. Hydraulic Fracturing-Induced Seismicity Reviews of Geophysics, 58, e2019RG000695.

[810] Van der Elst et al. 2013.

[811] Davies, et al. 2014; U.S. EPA, Assessment of the Potential Impacts of Hydraulic Fracturing for Oil and Gas on Drinking Water Resources, External Review Draft (June 2015) at 6-11.

become pathways for fluid migration, and that the high injection pressures used in fracking can "increase this risk significantly."[812]

Because the agency failed to properly examine any of the direct impacts from fracking or other well stimulation treatments, it also failed to examine the indirect or cumulative impacts from fracking, despite recognizing that fracking is occurring at oil and gas operations throughout the North Slope.[813] BLM also failed to consider any alternative that would mitigate the impacts from fracking and other well stimulations, such as prohibiting their use, or restricting the number of times such practices can be used per year.[814]

BLM'S ANALYSIS OF THE AFFECTED ENVIRONMENT AND WILLOW'S DIRECT, INDIRECT AND CUMULATIVE IMPACTS IS DEFICIENT ACROSS A RANGE OF RESOURCES.[815]

NEPA requires analysis of ecological, aesthetic, historical, cultural, economic, social, and health impacts.[816] BLM guidance requires the agency to "[a]nalyze relevant short-term and long-term effects and disclose both beneficial and detrimental effects in the NEPA analysis."[817] Direct effects are those that are caused by the project and that occur in the same time and place.[818] Indirect effects "are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable."[819] Cumulative effects are "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."[820] Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.[821]

As described below, BLM lacks important baseline information about the Reserve's affected environment. BLM failed to adequately analyze Willow's direct, indirect and cumulative impacts to specific resources and failed to consider a range of meaningfully different

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[812] California Council on Science and Technology and Lawrence Berkeley National Laboratory An Independent Scientific Assessment of Well Stimulation in California, Volume II, Potential Environmental Impacts of Hydraulic Fracturing and Acid Stimulations (July 2015) ("CCST 2015 Vol II") at 39.
[813] 2 DSEIS at 22.
[814] *See, e.g.*, *EDC v. BOEM*, 36 F.4th at 876–78 (holding agency failed to examine a reasonable range of alternatives in a NEPA analysis purporting to analyze the environmental impacts of fracking in federal waters off California).
[815] Hereinafter "Resource Impacts."
[816] 40 C.F.R. §§ 1508.1(g), 1508.8.
[817] BLM NEPA HANDBOOK at § 6.8.1.
[818] 40 C.F.R. § 1508.8(a); *see also* 40 C.F.R. § 1508.1(g) (CEQ Phase I revision of definition of "effects" under NEPA).
[819] 40 C.F.R. § 1508.8(b).
[820] *Id*. § 1508.7.
[821] *Id*.

action alternatives and differences in the project's impacts among the alternatives it did consider. The agency also failed to consider mitigation measures that would sufficiently avoid and minimize Willow's significant adverse effects to resources.

I. THE DRAFT SEIS DOES NOT ADEQUATELY CONSIDER IMPACTS TO AIR QUALITY.

The air quality modeling analysis performed by the BLM for the draft SEIS for the Willow Project indicates that significant adverse impacts on air quality could occur. Further, the air quality analysis is deficient and likely underestimates impacts. As a result, it is likely that air quality impacts would be more extensive than what is presented in the draft SEIS. In addition, all of the alternatives fall short of establishing enforceable mitigation measures that reflect assumptions that were made in the analysis and that will ensure that no significant air quality impacts will occur. Detailed comments on the areas of concern are provided below and in the attached expert report prepared by Megan Williams,[822] which we incorporate by reference.

A. Lack of Baseline Data and Background Concentrations.

BLM's modeling analysis is deficient and likely underestimates impacts due, in part, to a lack of reliable baseline data in the area. As as explained in the attached report, the DSEIS relies on monitoring data collected in Nuiqsut by ConocoPhillips to represent background concentrations for the air quality analysis. Since these data are not publicly available (*e.g.*, through EPA's Air Quality System Data Mart), the BLM should confirm that the data have been reviewed and approved by EPA or the State in order to assure the public that the data have been properly collected and quality-assured. BLM should also require that the data be made publicly available if the agency is relying on it for its NEPA analysis. Further, the data may not be representative of background concentrations in areas nearer to the Willow project sources and therefore may not be sufficient to assess overall air quality impacts to exposed populations outside the village of Nuiqsut and closer to the project area, *e.g.*, to subsistence hunters in the region. BLM should coordinate efforts with the State and/or EPA to secure additional monitoring around the Alpine Development Area surrounding Nuiqsut that would be made publicly available through the EPA's Air Quality System. [823]

Considering the substantial amount of oil and gas activity in this area, it would be reasonable for BLM to seek publicly supported data sources to monitor air quality in the Prudhoe Bay region.

In addition to concerns with the representativeness of the background concentration data presented in the DSEIS, BLM removed PM_{10} data from the monitoring dataset claiming high wind events that entrain silt from Nigliq Channel lead to elevated levels of PM10 that are "not reasonably controllable or preventable and are a natural event."[824]

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[822] Megan Williams, Air Quality Review of the BLM's June 2022 Willow Master Development Plan Draft Supplemental Environmental Impact Statement (Aug. 2022) [hereinafter Williams Comments].
[823] Williams Comments at 7.
[824] 6 DSEIS, App.E.3B at 3-14.

As explained in the attached report, EPA has established rigorous criteria and procedures for determining whether data are considered and treated as exceptional events and BLM must make a determination based on similar criteria and procedures prior to removing any data from the dataset used in determining representative background concentrations for the DSEIS.[825] If high wind events are occurring year after year it would seem unlikely that the resulting pollutant concentrations would be considered to be exceptional. And if the analysis intends to assess impacts in Nuiqsut then it should consider these high wind events as representative of conditions there.

B. BLM Failed to Model All Action Alternatives, Resulting in a Deficient Analysis.

BLM's failure to consider a reasonable range of action alternatives resulted in a modeling analysis that yields little useful comparison among alternatives, and this failure is exacerbated by the agency's refusal to model all action alternatives under consideration. The air pollutant impacts across the action alternatives considered in the DSEIS (B, C, D) are generally similar in magnitude, seemingly because the range of alternatives considered in the DSEIS fails to incorporate project design factors and mitigations that would meaningfully affect air quality impacts. As the charts in the attached expert report illustrate, to the extent the air quality impacts from all activities differ across alternatives B, C, and D from each other and from BLM's estimates in the 2019 draft EIS, those differences are unexplained.

Problematically, BLM entirely failed to model the air quality emissions from its new alternative E. BLM offers conclusory assertions that it need not model Alternative E because the project design is so similar to Alternative B.[826] Though BLM provided estimates of alternative E's emissions, without modeling, the agency cannot make an apples to apples comparison of impacts or ensure that the project as described in Alternative E would not violate the National Ambient Air Quality Standards (NAAQS). BLM's claims that Alternatives B and E are so similar as to make modeling unnecessary are called into question by the emissions inventory the agency did provide. As Dr. Williams explains, "The only way to accurately know the air quality impacts from Alternative E would be for BLM to have modeled the emissions from the new Alternative E development scenario. The AQTSD makes clear that emissions, as well as the location of these emissions, from these two alternatives differ."[827]

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[825] Williams Comments at 8 *citing* https://www.epa.gov/air-quality-analysis/treatment-air-quality-data-influenced-exceptional-events.

[826] 1 DSEIS at 65 ("Alternative E was not explicitly modeled in the near-field analysis because several of its design features are similar to Alternative B."); *id*. at 71 ("It is unnecessary to assess Alternative E with the regional model because its CAP emissions (and therefore regional air quality impacts) would be lower than Alternative B. Therefore, all CAPs would be below the AAAQS under Alternative E."). BLM's assertion that the air quality for Alternative E does not need to be modeled confirms that BLM did not consider a reasonable range of alternatives. *See supra* Legal/Policy.IV.D.

[827] Williams Comments at 5.

Moreover, by failing to model Alternative E, BLM cannot compare differences in air quality impacts from deferring infrastructure. BLM asserts that Alternative E would delay approval and construction of one pad for a period of time, and thus reduce the severity of impacts from Willow on resources. As described above, without any explanation or information on why this would be the case, BLM's conclusory statements cannot withstand scrutiny.[828] Air quality is one resource area where BLM undertook a quantitative analysis to consider differences among alternatives, and therefore it is perplexing that the agency would not assess the accuracy of its assumption for Alternative E that spreading out construction activity over time would reduce impacts This is concerning given that the initial version of the DSEIS released for public review and the biological assessment BLM transmitted to FWS both identified Alternative E as BLM's preferred alternative; as such, it is deeply troubling that BLM did not bother to conduct modeling to assess the impacts of this alternative, particularly where the Willow Project is quite close at exceeding the NAAQS. BLM's failure to model the impacts of Alternative A means that the agency failed to disclose all potential additional impacts from the Alternative E development scenario to the public.

Moreover, as explained in the attached expert report, it is likely that air quality impacts from Alternative E could be more impactful than previously considered alternatives.[829] As described by Megan Williams in the attached report:

> Under Alternative E, emissions from drilling operations (which start in year 3) and emissions from routine operations (which start in year 2) would likely also need to account for emissions from concurrent construction activities associated with the deferred BT5 drill site at source locations that have the potential to impact the same areas impacted by emissions from drilling and routine operations activities. The magnitude of the criteria air pollutant impacts (*e.g.*, NO_x and PM) from concurrent emissions from construction, drilling, and operations activities under Alternative E cannot be known without a modeling analysis to determine ambient air concentrations. Depending on where and when emissions occur from the various project activities it is possible that resulting impacts could exceed the NAAQS, especially when considering the 1-hour average NAAQS for NO_x and 24-hour average NAAQS for PM_{10} and $PM_{2.5}$.[830]

C. BLM's Modeling Analysis is Deficient and Likely Underestimates Impacts.

In addition to BLM's failure to holistically consider Willow's emissions in the context of construction, drilling, and operations occurring simultaneously, the agency further underestimates air quality impacts because it relies on seasonally-varying hourly background concentrations for NO_2 without justification, instead of adding a single representative background concentration to the modeled design value concentration, and its PM_{10} analysis relies on monthly-varying background concentrations instead of adding a single representative

[828] 1 DSEIS at 10, 49, 81, 90, 121, 138, 157, 208, 232, 246, 256, 290, 305, 319.
[829] Williams Comments at 4–7.
[830] *Id*. at 6.

background concentration to the modeled design value concentration,[831] and relies on certain emissions controls and operating assumptions that may not be representative of actual operating scenarios and which are not enforceable requirements in the DSEIS.[832]

BLM must use representative background concentrations and ensure that assumptions used as inputs to the modeling analysis are established as enforceable mitigation measures and implemented through permit stipulations. Otherwise, BLM should model emission sources under maximum possible operating conditions and assuming no controls.

D. BLM Must Establish Rigorous and Enforceable Mitigation Measures.

As described in the attached report by Megan Williams, the DSEIS must include a more comprehensive set of required, measurable, and enforceable mitigations to ensure there will be no significant impacts to air quality from the proposed Willow project, both ensure compliance with the Clean Air Act and because of the significant air quality concerns in the nearby Nuiqsut community.[833] While the draft SEIS contains some new proposed required operating procedures meant to address air quality, they do not go far enough.[834]

In particular, mitigation should include restrictions on flaring. Based on the flaring emissions presented in DSEIS, NOx emissions from flaring may make up almost half of all "WCF/WOC Production/ Operations" emissions, and PM2.5 emissions from flaring may constitute nearly all of "WCF/WOC Production/Operations" emissions.[835] It is also alarming that BLM appears to have underestimated the extent of flaring emissions, given discrepancies in its report regarding tons per year of flaring emissions.[836] Such a significant amount of emissions from flaring is staggering, especially in light of ConocoPhillips' historic assertions that flaring is only used during emergencies.

Additionally, BLM must require ConocoPhillips to implement a fugitive dust control plan, and that plan must be enforceable and reflect the assumptions for fugitive dust control used in the modeling for the DSEIS. There are also a number of measures BLM should require to minimize NO_x, $PM_{10,}$ hazardous air pollution (HAP), ozone, and greenhouse gas emissions, as described in the attached report.[837] In addition to mitigation, BLM should consider an Alternative aimed at minimizing air quality impacts, *e.g.*, one that would incorporate factors aimed at reducing short-term NO_x emissions from drilling.[838]

More fundamentally, as described above, BLM has in the past purported to require ConocoPhillips to mitigate air quality impacts by, for example, collecting air pollutant data in

[831] *Id*. at 6.
[832] *Id*. at 12.
[833] *Id*. at 13.
[834] 8 DSEIS App. I.1 at 48.
[835] Williams Comments at 11.
[836] *Id*. at 9–10.
[837] *Id*. at 14–15.
[838] *Id*. at 14.

Nuiqsut and making the data available to the public, but the agency never actually followed through with this requirement.[839] It is thus confusing to see this "mitigation measure" appear again in the Willow DSEIS when it has never even been implemented at GMT-1.[840] Should BLM select one of the action alternatives, any mitigation measures BLM adopts in a ROD must be enforceable, and must be actually enforced.

II. THE DRAFT SEIS DOES NOT ADEQUATELY CONSIDER IMPACTS TO WATER RESOURCES AND HYDROLOGY.

The Ublutuoch River and Fish Creek, which will be impacted by Willow, are two of the most significant coastal rivers in the Arctic and are important for subsistence use. The Colville River "is the largest river draining the Alaskan Arctic and its size and unique land features set it apart from other rivers."[841] These rivers, lakes, wetlands, and floodplains provide many essential functions, including regulating runoff and retaining or distributing nutrients, sediments, and toxins.[842] As discussed in further detail below, the impacts to these waterways and aquatic resources in general are not adequately addressed in the DSEIS.

A. Insufficient Baseline Data.

As an initial matter, the baseline information for water resources in this area is lacking. ConocoPhillips should not be permitted to rely on hydrological data within the project area that is out of date and in some instances limited to only a few, or even a single season of data.[843] Data that is decades old may be problematic and may no longer reflect the realities of today. Twenty-year-old data, such as that relied on to analyze riverbed elevation and breakup conditions along Fish Creek,[844] may no longer be reliable in light of current conditions, especially in consideration of climate change, highly erodible and dynamic systems, and other factors likely affecting channel and bed stability within the project area. The DSEIS needs to explain the validity and reliability of this old data to the project. More recent data should be obtained and considered as part of a revised DSEIS and prior to project construction in project waterways.

Additionally, in some instances design criteria for waterway crossings relied on 17 years of data, however, for Willow Creek 8 two monitoring stations were established in 2018.[845] The date of and the magnitude of the peak discharge were not recorded until 2019 and 2020.[846] This appears to be very limited data to inform two crossings of this waterway and it is not clear how reliable a single summer data is for planning water crossings in a dynamic system.[847] BLM must

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[839] *Supra* Scope Deficiencies III (mitigation measures).
[840] 8 DSEIS App. I.1 at 42.
[841] 1 2012 IAP FEIS at 227.
[842] *Id*. at 220.
[843] 1 DSEIS at 103–04 (table noting one season of data for Kalikpik River, two summers of water quality data for other waterways).
[844] 6 DSEIS, App. E.8.A at 6–8.
[845] *Id*. at 10.
[846] *Id*.
[847] *See* 2019 Terzi at 13-15.

address the adequacy of this information in its EIS. There are numerous other instances of shortcomings in the data relied upon for these water crossings detailed in the Terzi report and incorporated here by reference that have not been addressed or fixed in the DSEIS.[848]

The draft SEIS particularly lacks important baseline information necessary to evaluate the impacts to aquatic resources and fisheries, for example at the Colville River Crossing. Despite ConocoPhillips' technical memorandum addressing the crossing, BLM never obtained key baseline information or took a hard look at the impacts of the crossing. The technical memorandum only analyzes a hypothetical "synthetic data set" based on information from a wholly different area because there was "no flow data available" for the relevant location.[849] BLM is still missing information about the location and conditions at the crossing that are critical to conducting an adequate analysis of the impacts and any necessary mitigation measures. BLM should require ConocoPhillips to conduct monitoring at the actual crossing location in order to inform it analysis of the potential impacts at the proposed crossing, rather than rush to consider Conoco's MDP request now while such information is outstanding and the precise impacts and need for mitigation measures cannot be well understood.

In sum, NEPA requires agencies ensure adequate data and project information exist to fully analyze the impacts before approving a project — not after.[850] Moreover, this SEIS should incorporate information related to the 404 permit application, including critical baseline information about the project area's hydrology and water quality. Otherwise it is unclear how the SEIS could adequately support the Corps' obligations under NEPA and the CWA.

B. Insufficient Impacts Analysis and Consideration of Mitigation Measures.

The proposed Willow project would have significant direct, indirect, and cumulative impacts to water resources in the northeastern Reserve that are underestimated in the draft EIS. The onshore portion of the project would require construction of 6–7 bridges with roughly 36 bridge pilings, 11 culvert batteries, roughly 200 cross-drainage culverts, and about 12 Vertical Support Members (VSMs) below the ordinary high water mark.[851] As an initial matter, the prior draft EIS anticipated 56 bridge pilings being installed; it is unclear what led to the number of piles being reduced by such a substantial margin.[852] We also note that alternative E would have approximately 10 times the number of VSMs than other action alternatives.[853] This is presumably a typo that should be addressed. If it is not a typo, BLM needs to explain that difference in VSMs and consider less impactful options. The module delivery options would also result in gravel fill in the offshore marine area, a potential 11- to 15-acre sediment plume lasting

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[848] *Id.*
[849] 6 DSEIS, App.E.8.B.
[850] *N. Plains Res. Council, Inc. v. Surface Transp. Bd*. (*STB*), 668 F.3d 1067, 1085 (9th Cir. 2011).
[851] 1 DSEIS at 27–27.
[852] *Compare* 1 2019 Willow draft EIS at Table 2.8.1 *with* 1 DSEIS at 27–27.
[853] 1 DSEIS at 26.

about 55 days, screeding, water withdrawals, and nearly 1,000 acres of freshwater ice roads and ice pads.[854]

The DSEIS does not adequately describe how major project elements, including seven major bridges and roughly 200 culverts, would be constructed or provide specific design information.[855] The DSEIS contains a handful of charts and maps summarizing how many bridges and culverts there would be, as well as some short, generalized summaries of the ways bridges can impact hydrology, like restricted flow and turbidity changes.[856] However, generalized summaries of the potential impacts of bridges are not a hard look at the impacts of *this* proposal.[857] This is not the type of site-specific, detailed analysis of impacts required by NEPA, nor does this analysis or the lack of information support the Corps' ability to prevent degradation for purposes of the CWA.[858] As explained in the attached expert comments from Siobhan Fennessy, Ph.D., the lack of detailed information about the project area and the project design indicate there is insufficient information to analyze and understand the likely impacts of the infrastructure, as well as to mitigate the broad range of likely impacts or prevent degradation.[859]

Moreover, as Dr. Fennessy highlights, the DSEIS is internally inconsistent in the number of acres that would be impacted directly and indirectly, as well as the miles of pipeline which would be required for the project.[860] These errors and inconsistencies must be addressed in order for the public and BLM to accurately assess Willow's impacts to water resources.

Much of the information about these project components is vague and difficult for the public to understand, making it challenging to meaningfully consider impacts. For instance, there is essentially no information regarding the project's seawater pipeline other than its length in the chart giving overall descriptions of alternatives.[861] The DSEIS does describe where the pipeline or its intake for would be located and whether there would be marine (and other) impacts associated with the construction and operation of this pipeline. The DSEIS states that the seawater pipeline would transport seawater from the Kuparuk River Unit Central Processing Facility to the Willow Processing Facility, and this pipeline would be placed by Horizontal Directional Drilling (HDD) under the Colville River,[862] but provides little else to describe the

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[854] *Id*. at 123.
[855] *Id*. at 14, 117; 6 DSEIS, App. E.8.A.
[856] 1 DSEIS at 117.
[857] *See Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989) (stating NEPA requires an agency has "available, and will carefully consider, detailed information concerning significant environmental impacts").
[858] *See id.*; *Great Basin Res. Watch v. Hankins*, 456 F.3d 955, 973–74 (9th Cir. 2006); *STB*, 668 F.3d at 1084–85.
[859] Fennessy Comments at 2, 6–10.
[860] *Id*. at 2, 10.
[861] *See* 1 DSEIS at 26.
[862] *Id*. at 238 ("The HDD crossing of the Colville River with diesel and seawater pipelines could also create a potential risk of a spill.").

potential impacts of this proposed feature. The EIS also states that "[b]ridges would range from 40 to 420 feet in length," and lists the total length of bridges in an appendix.[863] But the document never describes or analyzes the impacts of crossings at each waterway based on site-specific information about the bridge and crossing itself. The same is true of BLM's general recognition that culverts would be required and the locations determined at a later time. But BLM must include this information and analysis in the EIS to properly analyze these impacts and potential mitigation measures.

As explained by Dr. Fennessy, "[r]oad beds essentially act as a dam across the landscape, disrupting water flow through wetlands, streams and floodplains, leading to systematic hydrological disconnection (i.e., fragmentation) of habitat."[864] Dr. Fennessy that explains that the DSEIS fails to assess road impacts related to blocked surface water and groundwater flows, either qualitatively or quantitatively.[865] Additionally, as noted in the attached Terzi report, gravel infrastructure and culverts could alter surface flows and result in ponding, subsidence, delayed plant growth, and conversion of vegetated tundra to lakes if the impoundments become permanent.[866] Increased surface water could transform the vegetation community composition into wetter tundra types and thus increase grass and sedge cover, decrease shrub cover, or lead to plant mortality.[867] During spring snowmelt, natural drainage patterns could be interrupted, resulting in decreased soil moisture and subsequent changes in vegetation communities, such as an increase in shrub cover and a decrease in grass and sedge cover, as well as conversion from a wetland to an upland.[868] As explained in the attached Terzi report, regarding the 2019 draft EIS which is largely repeated in the current DSEIS:

> Although the DEIS acknowledges the potential for these impacts to occur, BLM does nothing to correlate or quantify the impacts back to the project. Chapter 3 of the DEIS includes Best Management Practices (BMPs) and Lease Stipulations (LSs) to avoid and minimize these impacts, but without a finer scale analysis of the wetland impacts, including potential secondary impacts, as listed above, there is no way to ascertain whether the avoidance and minimization measures may be effective.[869]

Further, it is alarming that gravel infrastructure would be permanently located in the 50- or 100-year floodplain of Fish (Uvlutuuq) Creek, Judy (Kayyaaq) Creek, Judy (Iqalliqpik) Creek, Willow Creek 2, Willow Creek 4, Willow Creek 4A, and Willow Creek 8.[870] These are incredibly important waterways to the area, and several are important waterways for subsistence

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[863] *Id*. at 14.
[864] Fennessy Comments at 8 (internal citations omitted); *see also id*. at 8 (citing study showing that "the damming effect of roads, combined with climate change, leads to a spatial transformation of the tundra on both sides of a road").
[865] *Id*. at 8.
[866] 2019 Terzi Report at 4.
[867] *Id*.
[868] *Id*.
[869] *Id*.
[870] 1 DSEIS at 116.

use and access. Although the DSEIS acknowledges gravel roads or pads may lead to water impoundment, changes in flow direction, channel instability or a change in alignment, thermokarsting, erosion, and sedimentation, it does not fully address the site-specific impacts of each of these crossings or attempt to mitigate the impacts in a meaningful way.[871] As Dr. Fennessy explained, the draft SEIS acknowledges that such impacts could occur and that "rehabilitation" may be required at some future date, but does not specifically assess these impacts and how they would be mitigated or rehabilitated at specific locations.[872] This does not constitute the requisite hard look under NEPA.

BLM should not permit ConocoPhillips to permanently locate infrastructure in the 50- or 100-year floodplains of any of these waterbodies. The draft EIS is estimates that there would be a 39% chance that the design flood would be exceeded for the culverts and that they would fail.[873] This is unacceptable. As Dr. Fennessy explained, this means that the odds are more likely than not that the design flood will be exceeded, with associated impacts to wetlands and waterways in the region.[874] Dr. Fennessy further explains that "as climate change impacts intensify, the chance that the culverts will not be able to handle high flows will increase."[875] Other federal agencies have expressly recognized that critical infrastructure should be elevated to the 500-year flood elevation.[876] These proposed crossings are located in an area that is vulnerable to climate change, and several crossings also involve pipelines crossing the road. The proposal to construct crossings in such a manner should be flatly rejected by BLM.

The lack of project information is also reflected in the inadequate mitigation measures being considered for Willow. Those measures demonstrate that work to gather baseline information to inform project component design has still not occurred.[877] Without this design and key information, BLM could not analyze the specific impacts of these components. For example, BLM stated it may require continued gathering of baseline data at the Colville River crossing, and may require ConocoPhillips to identify locations of culverts during spring breakup conditions.[878] But a promise to conduct future monitoring, after project approval, is not an analysis under NEPA.[879] Another one of the mitigation "design criteria" stated, "[a]s appropriate, consider both 1) snow- and ice-impacted conditions and 2) ice-free conditions in the hydraulic design of bridges, culverts, and pipeline river crossings…. Based on the available information, develop designs that would perform satisfactorily during the design event."[880] This is analogous to the type of "plan for a plan" previously rejected by the Ninth Circuit,[881] and illustrates the

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[871] *Id*. at 117.
[872] Fennessy Comments at 5–6.
[873] 1 DSEIS, App. E.8A at 25.
[874] Fennessy Comments at 9.
[875] 2019 Terzi Report at 15.
[876] *Id*.
[877] *See* 8 DSEIS, App. I.1 at 33–35.
[878] *Id*. at 34, 35.
[879] *See STB*, 668 F.3d at 1085.
[880] 8 DSEIS, App. I.1 at 33.
[881] *STB*, 668 F.3d at 1085.

agencies lacked detailed project designs and site-specific baseline information to do a meaningful analysis.

Further, as explained in the attached Terzi Report describing the 2019 draft EIS, promises of future monitoring should not be considered "mitigation" to avoid or minimize impacts:

> Chapter 3, Section [3.9.2.1.4], Additional Suggested [Avoidance, Minimization, or Mitigation], states BLM "could" include other measures to reduce wetland and vegetation impacts. For example: "(m)onitor vegetation damage, and compression of soil and vegetation in annual resupply ice road footprint (footprints that are used consecutively each year)" is listed as one such BMP. If the BLM chooses to implement this BMP (or [ConocoPhillips] is required to do so through the Section 404 permit process) then it may provide information for future projects but would do nothing to reduce impacts from this project. If the monitoring demonstrated there were permanent direct or indirect impacts, BLM would need to address those impacts through some sort of contingency plan, a required component of any compensatory mitigation plan which is completely lacking in the DEIS.[882]

BLM should also take into consideration monitoring data from past projects in this area, such as GMT-1 and GMT-2, to analyze the effectiveness of existing mitigation and any additionally proposed ROPs and to use that as a tool for quantifying and qualifying impacts from the project.

Because of the importance of the Reserve's rivers and floodplains to wildlife, subsistence, and aquatic resources, BLM established "setbacks" prohibiting permanent oil and gas facilities and certain activities along many lakes and rivers. Particularly relevant to Willow are the 0.5-mile setback on the Ublutuoch River and Judy Creek, and the 3-mile setback on Fish Creek, all of which would require some form of "deviation" from BLM under every action alternative considered. The impacts of these deviations are either inadequately analyzed or not considered at all; this shortcoming must be rectified in a revised EIS.

Moreover, the draft SEIS offers no compensation or mitigation plan to address these and other potential impacts to water resources and hydrology in the region. Rehabilitation at a future date is not consistent with federal rules and regulations and may not be effective.[883] In addition, BLM has not provided enough information and baseline data to adequately design the infrastructure associated with this project, especially in terms of climate change and sustainability of the project into the future.[884] As Dr. Fennessy explains, climate change will continue to impact his area in ways that affect thermal dynamics in the underlying soil, raising serious concerns regarding Willow's proposed waterway crossings and gravel roads, which could lead to soil collapse and formation of thermokarst lakes.[885] BLM must analyze the impacts

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[882] *Id*.
[883] *See* 33 C.F.R. § 332.4(c).
[884] 2019 Terzi Report at 8.
[885] Fennessy Comments at 12.

climate change will have on project infrastructure, as explained in Dr. Fennessy's report and elsewhere in these comments.[886]

Finally, BLM should not consider impacts to hydrological systems in a vacuum in the draft SEIS and must consider Willow's cumulative impacts to water resources in their broader context. "Water resources impacts should be crosswalked and environmental consequences with impacts to riparian or lacustrine wetlands and how the effects of the proposed in-water infrastructure could potentially increase flood flows and detention, food chain support functions, erosion control and bank stabilization and other factors that could influence the functions of the wetlands."[887] And as further explained by Dr. Fennessy:

> The large area that the Willow Project will occupy is a critically important habitat area that is recognized internationally for the bird species it supports (with over 60 species of breeding birds). Fish diversity is also high, including support of several salmon species. It is also known for the thousands of caribou the area supports, and the importance of those to indigenous communities. This biotic diversity will be impacted by the cumulative actions and infrastructure that the project requires. The draft SEIS makes no attempt to synthesize and evaluate the potentially significant impacts to the wetlands, streams, rivers, and lakes in the area, and the biota that depend on them. The draft SEIS fails to provide specific information on the impacts caused by the very different design and implementation of the various project activities. There is also no analysis of the cumulative impacts that will accrue as a result of individual project components. This is a critical omission/ failure in the draft SEIS; in the aggregate, the adverse effects of individual impacts can amplify, generating larger than expected impacts to aquatic ecosystems and resident species. The Willow draft SEIS ignores these cumulative impacts (Walker et al. 2022). The lack of a substantive and detailed analysis of cumulative impacts may result in a major underestimate of the extent and severity of impacts to wetlands and waterways. Furthermore, the lack of an adequate mitigation plan to avoid, minimize, and compensate for these impacts, indicates that the project will lead to the degradation of wetlands and other waters.[888]

The draft SEIS should be revised to explain how the significant impacts to water resources which would result from this project will affect a variety of other resources in the area.

In sum, the agencies must base their analysis on actual project and baseline information — not hypothetical, rough estimates of anticipated infrastructure or generalized descriptions of facility components — to take an adequate hard look.[889] Lacking this critical information, they have not taken a hard look at Willow's site-specific direct, indirect, and cumulative impacts, in violation of NEPA.

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[886] *Id.* at 8, 12–14; *infra* Resource Impacts IV (climate impacts on soils and permafrost).
[887] 2019 Terzi Report at 12–13.
[888] Fennessy Comments at 12–13 (internal citations omitted).
[889] *STB*, 668 F.3d at 1085.

C. Gravel Mines.

Additionally, the draft EIS falls far short of considering direct, indirect, and cumulative impacts to water resources and wetlands as a result of the two gravel mines proposed for the project, especially given their location at the confluence of an important subsistence waterway. The gravel mines would be located within or directly adjacent to the floodplains of Bill's Creek and the Ublutoch (Tinmiaqsigvik) River. In particular, Dr. Fennessy notes that gravel mining in floodplains as proposed this winter is "one of the most aggressive human actions" to cause floodplain and channel alterations.[890] Gravel mining and road construction will irreparably harm the Reserve's aquatic resources.

As explained by both Dr. Fennessy and in the attached Terzi report, impacts from large gravel pits close to rivers and streams and within their floodplains are well documented in the literature, and include the following potential that must be addressed in a revised EIS:

- Extraction of alluvial material from within or near a stream bed has a direct impact on the stream or river's physical habitat parameters such as channel geometry, bed elevation, substrate composition and stability, instream roughness elements, depth, velocity, turbidity, sediment transport, stream discharge, and temperature.
- Channel hydraulics, sediment transport, and morphology are directly affected by gravel mining. The immediate and direct effects are to reshape the boundary, either by removing or adding materials. The subsequent effects are to alter the flow hydraulics when water levels rise and inundate the altered features. This can lead to shifts in flow patterns of sediment transport. Local effects also lead to upstream and downstream effects.
- Altering habitat parameters can have deleterious impacts on instream biota, food webs, and the associated riparian habitat. Impacts to anadromous and resident fish populations due to gravel extraction can include: reduced fish populations in the disturbed area, replacement of one species by another, replacement of one age group by another, or a shift in the species and age distributions, as well as altering competitive interactions within and among species.
- Stockpiles of overburden and gravel left or abandoned in the channel or floodplain can alter channel hydraulics during high flows.
- Wet pit mining in floodplains may reduce groundwater elevations, reduce stream flows, increase water temperature and create potential for fish entrapment.
- Destruction of the riparian zone during gravel extraction operations can have multiple deleterious effects on anadromous fish habitat…[891]

Dr. Fennessy notes that the draft SEIS largely ignores these impacts to adjacent waterways and wetlands.[892] This oversight must be corrected. And as described in the Terzi report, "it is not possible to disturb one site in isolation from the rest of the ecosystem, or confine

[890] Fennessy Comments at 5.
[891] Fennessy Comments at 4–5; 2019 Terzi Report at 8-9.
[892] Fennessy Comments at 4–5, 10–12.

the disturbance to a single detached location and then subsequently reclaim or reverse the impacts."[893] BLM claims ConocoPhillips will reclaim the mine sites in the future, however, there is no detailed analysis or reclamation plans. ConocoPhillips' supposed "plan" to allow the mines to turn into lakes over time is not a reclamation plan, and the DSEIS fails to add that such a plan is in itself likely to have serious impacts that alter the hydrology of the area, will lead to permafrost degradation, and will also lead to other downstream impacts. The draft EIS must be revised to add such analysis and actual reclamation plans.

III. THE DRAFT SEIS DOES NOT ADEQUATELY CONSIDER IMPACTS TO WETLANDS AND VEGETATION.

The prior Willow EIS was deficient in its analysis of direct, indirect, and cumulative wetland impacts and the DSEIS suffers the same flaws. As discussed in the attached report by Dr. Fennessy, wetlands serve unique functions. Those functions, and their potential impairment from Willow's infrastructure, must be analyzed under NEPA. Moreover, the Corps, a cooperating agency in the DSEIS, has distinct, substantive obligations under the Clean Water Act, which in turn extend out into its obligations under NEPA.[894] When a project is not "water dependent," and would fill wetlands, as in the case of the Willow Project, the Corps' regulations create a rebuttable presumption that there are practicable and environmentally preferable alternatives, and such alternatives are presumed to have less adverse impact unless "clearly demonstrated" otherwise.[895] This substantive requirement mandates the Corps to select the least environmentally damaging practicable alternative (LEDPA). Because the Corps intends to use the DSEIS to fulfill its substantive obligations, the DSEIS must provide adequate data regarding the environmental baseline for wetlands, closely examine differences among alternatives, assess imp DSEIS acts to wetlands, and consider means to mitigate those impacts. As described below, the DSEIS fails to do so.

Dr. Fennessy explains:

> From a landscape perspective, these wetlands are part of the larger hydrologic system and provide important functions and ecosystem services. Wetlands affect the structure and function of streams and rivers, and the loss of connectivity between wetlands and other aquatic sites, for example by road building or pipeline construction, will negatively impact the functions and ecosystem services they provide and the species they support. These functions and services include the improvement of water quality, regulation of water supply (groundwater exchange, surface water storage, contribution to stream base flow), organic matter production and export, carbon sequestration, support of biodiversity, and recreational activities.[896]

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[893] 2019 Terzi Report at 9.
[894] *Supra* Legal/Policy V.D. (Clean Water Act).
[895] 40 C.F.R. § 230.10(a)(3); *Sierra Club v. Flowers*, 423 F. Supp. 2d 1273, 1352 (S.D. Fla. 2006).
[896] Fennessy Comments at 10 (internal citations omitted).

The draft SEIS fails to provide important baseline information regarding vegetation and wetlands in the project area or describe the extent to which wetlands would be impacted. The majority of wetland impacts under Alternative B are to the following Cowardin Classes:

- 290.1 acres PEM1/SS1B (Palustrine Seasonally Saturated Persistent Emergent/Broad-Leaved Deciduous Shrub Meadow)
- 154.4 acres PEM1/SS1D (Palustrine Continuously Saturated Persistent Emergent/Broad-Leaved Deciduous Shrub Meadow)
- 105.3 acres PEM1F (Palustrine Semipermanently Flooded Persistent Emergent Meadow)[897]

As discussed in the attached expert reports, without a functional assessment and analysis, the information provided in the draft EIS is not sufficient to determine impacts.[898] The ITU methods document provided by BLM does not satisfy this requirement.[899] Indeed, both EPA and the Corps have recognized that merely providing the acres of wetland types impacted is insufficient to determine impacts from fill, and that an assessment of the functional values of wetlands is needed.[900] For example, if there is a shrub component to the wetland, then ice roads, etc. would cause vegetation mortality and/or cause significant delay in rebounding, if that is even possible after years of degradation.[901] BLM holistically states that the wetlands in the project area are "common" and assumes that impacts to such wetlands will not cause a significant impact. By way of a further example from the prior draft EIS, which remains largely unchanged, in response to comments about the lack of analysis for aquatic resources and wetlands, the final EIS merely stated "[b]ecause wetlands are abundant on the North Slope and the wetlands that would be impacted by the Project are not unique, the indirect effects to fish would likely not be measurable."[902] Such conclusory statements about the abundance of wetlands, used to minimize the context and intensity of impacts to resources, are not a hard look under NEPA. BLM and the Corps cannot make their required findings without a site-specific analysis of the impacts to wetland functions as a result of Willow.

The DSEIS also fails to consider differences in impacts among alternatives. For instance, the only real variation among the action alternatives under consideration is the presence or absence of road connections between different pads, and in the case of alternative E, the

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[897] 6 DSEIS, at Table E.9.2. Acres of Wetland Loss Due to Direct Fill or Excavation by Wetland Type and Action Alternative or Module Delivery Option.
[898] Fennessy Comments at 10; *see also* 2019 Terzi Report at 2–3.
[899] 2019 Terzi Report at 11–12 ("General information concerning wetland locations and patterns is contained in the ITU Methods Document. However, the figures' scale is so large and the discussion so general that it lends little to the wetlands functional attributes and impact analysis.").
[900] *See* Compensatory Mitigation for Losses of Aquatic Resources, 73 Fed. Reg. 19,594, 19,601–02 (Apr. 10, 2008) (EPA and Corps regulation explaining importance of assessing wetlands functions).
[901] 2019 Terzi Report at 2.
[902] 4 Willow Final EIS, App.B.2 at 107.

difference between four or five pads in the ultimate project design. But the DSEIS does not actually examine the differences among these alternatives — the document simply acknowledges differences in total infrastructure between alternatives on a single page.[903] But BLM does not describe or explain how these differences in infrastructure, particularly the presence or absence of roads, would relate to differences in impacts to wetlands. For instance, BLM repeats its statement — made verbatim throughout the DSEIS — that alternative E would lessen the severity or intensity of impacts by spreading them out over time.[904] But BLM does not explain why this delayed approach would make any difference to the severity or intensity of impacts to wetlands; permanent fill would permanently impact these special aquatic sites, and delaying such fill in certain areas by a couple of years seemingly would be a distinction without a difference. As explained by Dr. Fennessy, the differences in the presence or absence of roads warrant closer analysis.[905] BLM should include this analysis in a revised EIS.

Further, the DSEIS fails to consider the full suite of direct, indirect, and cumulative impacts to wetlands and vegetation resulting from this project. As described herein, much of the detail required for such an analysis is missing, and it is entirely unclear how ConocoPhillips, BLM, or the Corps intend to undertake any process regarding issuance of the project's CWA 404 permit.[906] As a result, critical information needed to fully determine and mitigate the impacts to wetlands and water hydrology in the region are absent in the draft SEIS.

The draft SEIS downplays the impacts that it does consider. For instance, the draft SEIS acknowledges that the physical and chemical effects from dust deposition on tundra from gravel infrastructure may reduce photosynthesis or change the soil pH and thus could cause vegetation mortality or a reduction of vegetation biomass.[907] However, the DSEIS should include a detailed discussion on the site-specific direct and indirect impacts to thousands of acres of wetlands, including hydrologic, water quality, and habitat functions. As described by Dr. Fennessy, the draft SEIS underestimates the indirect impacts to wetlands from fugitive dust, using an arbitrarily narrow distance for considering the of maximum dust deposition.[908] Nor does the DSEIS assess the impacts to individual waterways and wetlands from impoundment or fugitive dust deposition to wetland functions. The attached Terzi report further describes the 2019 DEIS's failure to examine that filling and potentially degrading sensitive tundra wetlands could result in permanent, indirect, and temporary impacts on a host of important wetland functions.[909] These errors and omissions have not been corrected in the DSEIS.

The draft SEIS also fails to adequately consider mitigation to avoid, minimize, and compensate for the significant, and likely permanent, losses of wetlands associated with the proposed Willow Plan. The document states "[s]ome loss of wetlands and vegetation would be

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[903] 1 DSEIS at 138.
[904] *Id*.
[905] Fennessy Comments at 2, 3, 12–14.
[906] *Supra* Legal/Policy V.D. (current process violates the Clean Water Act).
[907] 1 DSEIS at 137.
[908] Fennessy Comments at 6–7.
[909] 2019 Terzi Report at 9–12.

unavoidable. The function associated with those wetlands would be irretrievably lost throughout the life of the Project until reclamation is complete. If reclamation did not occur, including the removal of gravel fill, the loss would be irreversible. The loss would not be irreversible if reclamation occurred, which would also prevent impacts to the long-term sustainability of wetland function in the fill footprint."[910] The draft SEIS does not justify nor substantiate the assertion that functional loss would only occur absent reclamation, implying that reclamation can avoid such loss. BLM also does not discuss which functions could be impaired or lost and for how long. There is nothing presented that would validate BLM's claim that, if reclamation occurred, lost and impaired wetland functions would be reversible and the wetlands, their functions impacted by the project would rebound, and impacts would not be permanent.[911] Further, the prior 2019 draft EIS and current DSEIS also fail to consider measurable and enforceable mitigation measures.[912]

Finally, ConocoPhillips' prior compensatory mitigation plan — meant to compensate for impacts to wetlands and waterways under the CWA — was deficient in identifying and offsetting Willow's impacts. ConocoPhillips was required to mitigate only a fraction of Willow's direct and secondary impacts. The mitigation plan solely required compensatory mitigation for Willow's permanent impacts within 500 feet of anadromous waterways, and within the Teshekpuk Lake and Colville River Special Areas. But the Corps did not explain how it determined that impacts to these wetlands (a total of 237.8 acres) should be offset, while the impacts from fill in other wetlands (totaling 3,730.9 acres) should not. "The amount of required compensatory mitigation must be, to the extent practicable, sufficient to replace lost aquatic resource functions."[913] BLM should work with the Corps to remedy this failure, rather than repeat it in the current DSEIS process.

IV. BLM'S ANALYSIS OF THE IMPACTS AND MITIGATION MEASURES FOR SOILS, PERMAFROST, AND GRAVEL RESOURCES IS DEFICIENT.

BLM's discussion of the impacts to soils and permafrost is so truncated and generalized that it deprives the public of the ability to understand the wide range of impacts likely to occur to permafrost, soil, and gravel resources from the Willow project. It provides no indication that BLM took a hard look at the full range of potential direct, indirect, and cumulative impacts of the project, as required by NEPA. It is unclear from the DSEIS that there is adequate site-specific baseline information about the permafrost conditions and potential for degradation in the project area to inform a meaningful impacts analysis or consideration of alternatives. The DSEIS explains that the entire project area is underlain by continuous permafrost and ice rich soils.[914] This generalized, high-level information is insufficient. Permafrost soils are highly susceptible to erosion and other soil movements that can be triggered by disturbances to vegetation and cascading thawing of the permafrost. Depending on the soil type and ice content, that permafrost

[910] 1 DSEIS at 140.
[911] *See* Fennessy Comments at 5–6.
[912] 2019 Terzi Report at 18-20.
[913] 40 C.F.R. § 230.93(f)(1).
[914] 1 DSEIS 72.

may be various levels of stable or unstable — and where it is unstable, there is more likely to be thawing, settlement, erosion, and other issues that will be challenging to mitigate or fix once they occur. In addition, as recognized in the DSEIS, near-surface permafrost will likely disappear on 16–25% of the landscape by the end of this century, which could lead to additional thermokarsting or slumping, nutrient loading and suspended sediment in lakes and rivers, and an increase in drainage events.[915] Despite briefly acknowledging the potential for serious problems and the rapidly shifting nature of the conditions on the North Slope, the DSEIS does almost nothing to address these impacts or analyze potential mitigation measures specific to Willow for permafrost and soil. BLM needs to obtain site-specific information about the permafrost conditions and potential for degradation to ensure it has the baseline information necessary to consider meaningful mitigation measures that will prevent permafrost degradation.

The DSEIS arbitrarily uses a 328-foot area for analyzing the impacts for soils, permafrost, and gravel resources.[916] However, use of that arbitrary number fails to account for downstream impacts from permafrost, soil degradation and runoff that is likely to extend well beyond that footprint. That number appears to more directly relate to BLM's estimated range for potential dust impacts (where a similar number is referred to in the DSEIS),[917] and does not adequately consider the far-reaching potential of the permafrost impacts. BLM needs to incorporate in an analysis of the runoff and downstream impacts that will occur from Willow. It is also unclear exactly how the DSEIS is defining and applying that area since the overall impacts analysis is so generalized and high-level, and whether a similar arbitrary number is being taken into consideration for impacts from gravel mining.

Oil development impacts are not limited to the area where drill pad gravel or support beams touch the ground or to an arbitrary 328-foot area. 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 hydrology.[918] 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 and contribute to permafrost degradation. The road dust can smother vegetation, reducing transpiration, and decreasing albedo, leading to a warming effect that can

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[915] *Id*. at 36.
[916] *Id*. at 71.
[917] *Id*. at 77–78.
[918] *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, 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; 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* at 73-74. Levi, Finland; SULLENDER at 16–17.

increase the depth of thaw in the summer.[919] 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). 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 the immediate footprint of development. BLM needs to quantify and analyze the full set of impacts to soil and permafrost resources.

To the extent the DSEIS is utilizing 328 feet for its analysis of dust impacts, even that number is inadequate to capture the full range of impacts that need to be considered. The DSEIS estimates that dust may affect soils and vegetation up to 328 feet from roads and pads.[920] The impacts of fugitive dust, gravel spray, thermokarsting, and impoundments 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.[921] 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.[922]

BLM must clarify and quantify the extent of potential impacts to permafrost in the project area. The draft EIS does not separate out the impacts to permafrost but lumps these impacts with soils and gravel resources.[923] It appears from this table that impacts from the dust shadow (3,466.6 acres) and freshwater ice infrastructure (2,872.3 acres) could potentially impact permafrost, especially in the context of climate change.[924] However, BLM must clarify the geographic extent of these potential impacts to permafrost and should not just lump together the various impacts.

BLM also underestimates impacts to permafrost in the region as a result of the proposed Willow Plan. Damage to permafrost from gravel mining would be permanent, and the impacts from gravel roads and pads would last for decades, if not forever. The draft SEIS relies on the application of required operating procedures (ROPs) and lease stipulations (LSs) to reduce potential impacts to permafrost, but does not adequately address the permanent and irreversible impacts for this impact. BLM needs to incorporate in additional measures on the front end, rather

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[919] *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).
[920] 1 DSEIS at 77–78.
[921] 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.
[922] 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.
[923] *See* 1 DSEIS, Table 3.4.2 at 80.
[924] *See Id*.

than relying on corrective measures after the fact, because once impacts occur there is no way to rectify the impact through rehabilitation or restoration.

BLM's ROPs, LSs, and other mitigation measures are not specific enough to ascertain whether any of the measures would be effective at minimizing direct and indirect impacts to soils, permafrost, and gravel resources. In addition, the lack of clarity on how these measures would be monitored and enforced is a substantial gap in BLM's impacts analysis that must be addressed.

The DSEIS is virtually silent on whether and how mitigation measures would be included to address permafrost impacts from all the gravel infrastructure, as well as the gravel mines. In the DSEIS, BLM defers to ConocoPhillips to determine where it might implement measures like insulation or thermosiphons. For example, the DSEIS indicates ConocoPhillips will build roads and pads at a minimum 5-foot thickness and an average of 7 feet, and that ConocoPhillips would use insulation where "practicable."[925] If local thaw and subsidence starts to occur, ConocoPhillips would increase insulative value with additional gravel or other techniques and would "adaptively manage" those problems.[926] There is no analysis of whether that gravel thickness will actually be sufficient to mitigate permafrost impacts. This is particularly concerning since the analysis as a whole appears to be untethered from any sort of site-specific consideration of what will actually be necessary on the ground to prevent degradation. There is similarly no indication that thickness takes into consideration the rapidly changing permafrost conditions in the Arctic from climate change, which the DSEIS acknowledges could be significant. BLM needs to update the analysis in the DSEIS to analyze the effectiveness of those measures. BLM should also analyze if and how the use of insulation (e.g., such as the use of rigid foam insulation board for the roadway) could be used throughout the road and other project areas to better protect the permafrost and reduce the need for ConocoPhillips to mitigate impacts by simply piling on more gravel. Such an approach is unlikely to be effective and will create other serious impacts in itself through additional gravel mining, which go unanalyzed in the DSEIS.

ConocoPhillips' statements that it would "adaptively manage" problems is also wholly inadequate, both for permafrost and for other resources. First, BLM should require adequate mitigation measures on the front end to minimize the potential for permafrost impacts before they happen. Second, BLM should not rely on vague statements from ConocoPhillips that it will adaptively manage problems; BLM needs to clearly set out parameters and requirements for how permafrost degradation will be addressed and mitigated should problems occur.

The plans for the use of thermosiphons are also unclear. ConocoPhillips plans to use thermosiphons to maintain the existing thermal regime in areas with likely permafrost degradation.[927] The DSEIS identifies in some areas that the thermosiphons may be used for the drill pads, but elsewhere the DSEIS indicates thermosiphons will be used in specified areas, such

[925] 1 DSEIS at 11, 50.
[926] *Id*. at 50.
[927] *Id*. at 51.

as near well house shelters and on maintenance shop or warehousing facilities, based on North Slope industry standard best practices.[928] These vague and possibly conflicting statements provide zero clarity around precisely where thermosiphons will actually be used for the project and whether they will be sufficient or effective to address the serious permafrost issues from Willow's infrastructure. BLM needs to obtain additional information about the plans for the use of the thermosiphons and should not leave it open-ended for ConocoPhillips to make that decision based on unspecified industry practices. The DSEIS also does nothing to analyze the effectiveness of the thermosiphons or to provide any analysis or guidelines on how they might be effectively implemented to reduce permafrost impacts. BLM should update the DSEIS to fully analyze the effectiveness of that measure and incorporate clear parameters for their use into the DSEIS.

The DSEIS briefly acknowledges there could be serious alterations to the thermal regime from the extensive anticipated use of culverts.[929] Despite that, the DSEIS includes zero discussion about how to address or minimize those impacts before they occur. And as discussed in the attached report from Dr. Fennessy, impacts to the thermal regime from culverts could be significant.[930] It is unacceptable for the sole mechanism to address those issues to be that they are addressed after they occur, at a point when such impacts will be challenging to address and cannot be undone.

Even those few relevant ROPs and LSs that are included in the analysis are inadequate. ROP C-2 provides, "[t]undra activities shall be allowed only when frost and snow cover are at sufficient depths to protect the tundra," "[l]ow-ground-pressure-vehicles shall be selected and operated in a manner that eliminates direct impacts to tundra," and "[b]ulldozing of tundra mat and vegetation, trails, or seismic lines is prohibited."[931] BLM must include enforceable and measurable terms to make this mitigation measure meaningful. BLM needs to set a threshold for "sufficient" depth in order to make this BMP meaningful and possibly minimize impacts from this project on climate change both individually and cumulatively.

Further, ROP L-1 provides "On a case-by-case basis, BLM may permit low-ground pressure vehicles to travel off gravel pads and roads during times other than those identified in ROP C-2a."[932] It is unclear what BMP C-2a is and how it differs from ROP C-2. ROP L-1 seems to allow a loophole from ROP C-2, and there is no way to enforce this ROP, nor are there any limits or sideboards on the deviation. As a result, both of these BMPs that are designed to address the potential effects of the project are weak and arguably unenforceable as written.

The additional measures suggested in the DSEIS to reduce impacts to frozen soils are also inadequate and need to go further. The DSEIS proposes three additional measures: (1) separating native soils from fill using geotextiles or fabrics, (2) using thick embankments and

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[928] *Id*. at 77.
[929] *Id*. at 78.
[930] Fennessy Comments at 9, 11–12.
[931] 1 DSEIS at 75.
[932] *Id*. at 76.

shallow slopes, and (3) monitoring thermokarsting, depth of active layer, and compression of soil and vegetation with the ice roads.[933] As noted above, BLM should go farther than measures 1 and 2 by requiring the use of insulation more extensively throughout the project. Rigid foam insulation board has the potential to significantly reduce thaw rates as compared to non-insulated sections. Merely requiring thicker embankments or the piling on of more gravel is unlikely to be adequate and can contribute to other problems and impacts, including those from additional gravel mines and impacts to subsistence users and wildlife that may struggle to traverse such infrastructure. BLM should consider additional measures, including insulation, to better address and minimize the potential for thawing. While monitoring under "Measure 3" should occur, it is unclear if BLM is only limiting that monitoring to ice roads or if that includes more extensive monitoring. BLM should ensure there are not only measures to prevent impacts on the front end, as discussed in these comments, but should also include a robust monitoring and adaptive management plan for addressing permafrost impacts for the entire project and not just related to ice roads. That plan should have clear, detailed parameters for how problems will be identified and fixed.

As discussed earlier in these comments, BLM's analysis of the impacts from the gravel mines is completely inadequate. BLM failed to adequately consider impacts to soils and permafrost as a result of the gravel mines. The DSEIS acknowledges that gravel mining would disturb frozen soils at the mine site and change thermal conditions in the area, affecting groundwater, creating ponds and lakes, and exposing pit walls to surface temperatures.[934] Seasonal mine dewatering would cause changes in the thermal regime because the ponded water in the pit would create thaw bulbs or taliks.[935] However, there is no clear mine reclamation plan in the DSEIS, outside of just allowing those areas to eventually turn into ponds, even though the DSEIS states that the site would fill with surface water and accelerate permafrost thaw, create a thaw bulb, and eventually may cause the excavation walls to slough and deposit material into the pit.[936] The acknowledgement of these serious and cascading impacts, without any consideration of measures that might be incorporated to mitigate those impacts, is unacceptable.

Given this description of potential impacts to permafrost, as outlined in the DSEIS, it is clear the impacts of the gravel mines will far exceed the ~135.8 acres of direct impact to the surface of the mining pits.[937] The area described in the DSEIS only focuses on surface disturbance and fails to adequately analyze long-term impacts from changes to the thermal regime and the potential indirect and secondary impacts from the gravel mines, including downstream impacts from runoff and overflow.[938] The DSEIS also claims that the huge berms around the gravel mine will help to maintain the thermal regime.[939] However, there is no analysis of how effective those berms will be at maintaining the thermal regime, despite the

[933] *Id*. at 77.
[934] *Id*. at 79.
[935] *Id*.
[936] *Id*.
[937] *Id*. at 79.
[938] *See Id*. 79.
[939] *Id*.

acknowledgement that dewatering and other aspects of gravel mining are likely to have significant impacts to the permafrost that will very clearly not be addressed by the adjacent berms.[940] BLM must revise its draft SEIS to analyze and include potential secondary and/or indirect impacts to permafrost and soils and must consider additional potential mitigation measures. The analysis contained in the DSEIS does not adequately analyze the full scope of impact from the gravel mines and needs to be updated in a revised SEIS.

The DSEIS notes the general applicability of LS K-1, which sets out a 0.5-mile setback for the Ublutuoch (Tiŋmiaqsiuġvik) River of any permanent oil and gas facilities, including gravel pads, roads, and pipelines.[941] The entire purpose of the setback is to minimize the impacts to floodplain and riparian areas, the loss of fish and raptor habitat, the loss of cultural and paleontological resources, the impacts and disruption of subsistence activities.[942] The 2020 Integrated Activity Plan EIS makes it clear that BLM may "authorize a modification to a lease stipulation *only* if [it] determines that the factors leading to the stipulation have changed sufficiently to make the stipulation no longer justified."[943] The proposed action "would still have to meet the objective stated for the stipulation."[944] BLM has failed to meet this standard in waiving this lease stipulation and allowing ConocoPhillips to construct its gravel mines in the heart of the Ublutuoch River setback.[945] Allowing ConocoPhillips to open two massive gravel mines in the heart of this important subsistence use area, so close into Nuiqsut, would be completely at odds with the objective of this stipulation. In addition, nothing in the DSEIS reflects that BLM has even engaged in the necessary analysis or considered mitigation measures that would in any way alleviate the serious impacts that will occur if a waiver of this provision is allowed for the gravel mines. BLM should deny the stipulation waiver request and require the consideration of other alternative sites and sources of gravel that will be less impactful on the community and the environment. As discussed earlier in these comments, prohibiting the gravel mines in the Ublutuoch River setback would also be consistent with the public interest and BLM's obligations under FLPMA and the Materials Act.

The plans for reclamation of the project and the gravel mines are woefully inadequate.[946] 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.[947] Studies have indicated that natural recovery of tundra vegetation may occur on a timeframe that could take millennia or may never occur.[948] There is not a single tundra rehabilitation site that has returned to its original state in thirty-plus years of tundra rehabilitation. Even with intensive rehabilitation efforts, the recovery process takes at

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[940] *Id*.
[941] *Id.* at 76.
[942] *Id.*
[943] 1 2020 IAP FEIS at 2-8 (emphasis added).
[944] *Id*.
[945] *See* 5 DSEIS, App. D.1 at 100.
[946] Fennessy at 11.
[947] *See, e.g.*, NRC Report, at 158.
[948] SULLENDER at 16–17.

least decades.[949] For areas where there has been thermal slumping or subsidence, rehabilitation is very expensive and likely impossible.[950] The DSEIS only summarily states for the project facilities that it will determine reclamation requirements at a later point in time. For the gravel mines, BLM and ConocoPhillips appear to in fact have no actual reclamation plan and are instead purportedly allowing the mine site to revert over time into being a pond and supposed aquatic habitat.[951] Although the DSEIS acknowledges that filling the area with water will accelerate thaw in the area, it does nothing to discuss how those impacts might be addressed. Dr Fennessy explains that thaw bulbs would form in the mine pits, resulting in increased permafrost thaw and erosion, but the SDEIS lacks a plan or analysis of impacts if the mine's berms were to wash out, causing flooding and damage to surrounding wetlands and the Ublutuoch River. Rather than consider these potential impacts or ways to mitigate them, the supposed "reclamation plan" appears to give ConocoPhillips a free ticket to take all the gravel it wants and cause significant permafrost and habitat degradation in the immediate area and downstream — all while providing no real plan for addressing those impacts in either the near-term or long-term. This is wholly unacceptable further underscores why authorization of these gravel mines is not in the public interest and should not be allowed. These concerns need to be addressed further in a revised SEIS.

V. NOISE IMPACTS ARE INADEQUATELY ANALYZED.

Soundscapes are a public land resource affected by agency-authorized uses such as oil and gas development, with corresponding impacts on other resources including wildlife and subsistence. Noise from oil and gas operations is a concern for the community of Nuiqsut.[952] As we described in our comments on the prior draft EIS, BLM still has not fully evaluated the impacts of project-related noise on people and wildlife in the DSEIS.[953]

A. The DSEIS Lacks Baseline Information.

BLM still fails to utilize acoustic modeling to fully analyze the impacts of each alternative on the natural soundscape and the resources that would be affected by anthropogenic noise associated with oil and gas development. This will require accurate data on background ambient noise levels to establish the necessary baseline. Methods for obtaining this data could be adapted from other acoustic studies in northern Alaska.[954] After gathering sufficient baseline

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[949] *Id.* at 17.
[950] *Id*.
[951] 1 DSEIS at 79.
[952] *Id*. at 83.
[953] Letter from Alaska Wilderness League *et al.*, to Racheal Jones, Project Lead, Alaska State Office, Bureau of Land Management, Re: Comments on the Willow Master Development Plan Supplemental Draft Environmental Impact Statement at 111–15 (Oct. 29, 2019) [hereinafter 2019 AWL Comments].
[954] Betchkal D. Acoustic Monitoring Report, Noatak National Preserve – 2013 and 2014. Natural Resource Data Series. NPS/NOAT/NRDS—2015/787. National Park Service. Fort Collins, Colorado. Published Report-2221854 (2015); Taylor R. Stinchcomb et al., *Extensive Aircraft Activity Impacts Subsistence Areas: Acoustic Evidence from Arctic Alaska,* 15 ENVIRONMENTAL

soundscape data, BLM must conduct a proper noise impact study, including acoustic modeling of all action alternatives. Based on the results of the modeling, 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 and subsistence. The agency must consider and fully analyze all options for avoiding, minimizing, and mitigating adverse impacts to natural soundscapes. The DSEIS should be revised to include such analysis.

The main study BLM relies on is a sound study that was conducted in 2016 (published in 2017).[955] We note that this study was completed before GMT-2 was constructed and operating, meaning that the study is no longer up-to-date. This study was also only done in the summer time, resulting in a lack of information about winter sounds and potential impacts, including from the ASRC mine site, a source of considerable noise concerns for the community of Nuiqsut, ice road traffic, gravel hauling, and construction of gravel infrastructure.

B. The Impacts Analysis is Inadequate.

The DSEIS recognizes that sources of onshore noise from the proposed project include ground, vehicle and aircraft traffic, construction and drilling activities, operation of the Willow processing facility, and gravel mining.[956] However, the affected area for BLM's noise analysis is likely too small. BLM explains that it focused its noise analysis on the area west of Mine Site F because the area to the east, near Kuparuk, already has higher noise levels from oil and gas operations.[957] By focusing on this area to the west and not including the existing soundscape across the project area, BLM may be underestimating the cumulative noise impacts or failing to account for all of the potential impulsive noise events. BLM should more clearly define its impacts analysis area and be sure that doing so does not result in the agency downplaying impacts.

Regarding impacts from aircraft, BLM states that sound levels from most aircraft would dissipate to less than 39 dBA prior to reaching Nuiqsut, which BLM states is "considered protective of residential uses."[958] This fails to account for the impact on subsistence uses in and around Nuiqsut; sounds at this level likely impacts subsistence activities and should be evaluated. Similarly, BLM largely dismisses the impact of impulsive noise such as blasting and pile driving, stating only that it would be short lived.[959] This does not sufficiently analyze the impacts of these activities.

The analysis also states that the noise impacts for alternatives B, C, and D would all be essentially the same, stating that "[a]lthough there are differences in the locations of some noise sources under Alternative C [or D], any resulting differences in noise received in Nuiqsut would

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RESEARCH LETTERS (2020).
[955] 1 DSEIS at 84.
[956] *Id*. at 88–89.
[957] *Id*. at 83.
[958] *Id*. at 88.
[959] *Id*.

not be noticeable."[960] Regarding Alternative E, BLM similarly notes that the noise impacts would not be different than Alternatives B, C, and D, with the exception of year 7 when BT5 may be constructed resulting in extended noise impacts.[961] BLM's failure to consider a reasonable range of alternatives is further evident in its noise analysis.

Noise can affect the physiology, behavior, and spatial distribution of wildlife. To the degree that noise causes or contributes to local changes in patterns of wildlife movement and distribution, such changes would have the potential to impact subsistence users. BLM cites to other sections of the DSEIS for the analysis of these impacts,[962] but it is important for the agency to consider such impacts holistically and in context. These impacts should be analyzed in the noise section. For example, the DSEIS pushes aside the impact of noise on subsistence, stating that:

> Subsistence users could be affected by noise if they are within the attenuation zone for noise sources, which are described in Table 3.6.3 and Figure 3.6.1. It is likely that subsistence users would avoid construction areas and areas of persistent operational noise (such as the WPF) and thus physical effects from noise on subsistence users would be minimal. The effects of avoidance of subsistence use areas as well as effects to subsistence resources and harvest are described in Section 3.16.[963]

To fully understand the noise impacts, these impacts should be evaluated (or at least summarized) in the noise section. Also, the assertion that subsistence users can simply go elsewhere completely ignores the fact, which is well-known to BLM, that subsistence involves use of traditional areas. Relying on subsistence users to avoid areas of extreme noise as a way to "minimize" impacts and avoid discussion of such impacts is not a complete analysis of the impacts of the project.

While impacts vary by species and habitat, studies have shown that anthropogenic noise, including from oil and gas development, can impact species in ways crucial to survival and reproductive success.[964] For instance, as described in detail in section XI.B.2 of this Resource Impacts section, marine mammals are particularly sensitive to noise impacts. Instead of partially analyzing noise impacts in multiple places in the EIS, BLM should include all of the analysis in the noise section, or at a minimum, summarize the impacts to wildlife and subsistence, so that the reader has a better understanding of what the complete impacts of noise will be.

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[960] *Id*. at 89–90.
[961] *Id*. at 90.
[962] *Id*. at 83, 89.
[963] *Id*. at 89.
[964] *E.g.*, Keyel et al., *Modeling Anthropogenic Noise Impacts on Animals in Natural Areas*, 180 LANDSCAPE AND URBAN PLANNING (2018); Shannon et al., *A Synthesis of Two Decades of Research Documenting the Effects of Noise on Wildlife*, BIOLOGICAL Reviews (2015); Barber et al., *A Framework for Understanding Noise Impacts on Wildlife: An Urgent Conservation Priority*, 11:6 FRONTIERS IN ECOLOGY AND THE ENVIRONMENT (2013).

BLM has also failed to fully consider the impacts of noise pollution to marine mammals and associated impacts to subsistence hunters who rely on hunting these resources. There is no discussion in BLM's noise analysis regarding how construction and operation of ConocoPhillips' offshore gravel island could affect marine mammals and, therefore, subsistence use. The draft EIS states that "Point Lonely also has a slightly lower level of subsistence use than Atigaru Point and thus noise in this area would have a lower impact on subsistence users."[965] But, there is no discussion of the nature and extent of these potential impacts to subsistence use from noise at the island site under either alternative.

Noise effects on caribou should also be described and analyzed. Experiments testing the response of wild woodland caribou to simulated seismic exploration found that caribou responded to noise disturbance by increasing movement rates, displacement distances, and energy expenditure, though effects were relatively short-lived.[966] A study of response to simulated drilling noise by white tailed deer found that deer avoided areas near loud noise sources but did not increase their home range sizes or movement rates relative to control animals.[967] BLM must carefully evaluate the impacts of noise from fixed-wing aircraft and helicopters on caribou. A variety of studies have also shown that caribou respond to aircraft overflights, with cows with young calves reacting most strongly, especially during calving and post-calving seasons.[968] Alaska Native communities have long voiced concerns regarding the effects of aircraft noise and activity on caribou, given corresponding impacts to subsistence.[969] The Willow Plan should account for the noise disturbances on caribou when considering the development and operation of Willow, not limit its consideration to only impacts from gravel mining. Shortcomings of the DSEIS's analysis of impacts to caribou, including noise impacts, are discussed further in these comments.

Noise from industrial activity can also impact birds 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.[970] The EIS should catalogue the existing noise in the project area, explain the changes in noise that will occur with the Willow Plan development, describe impacts that will occur for birds and the subsistence harvest of birds, and provide a method for addressing and monitoring this issue. The

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[965] 1 DSEIS at 91.
[966] Bradshaw et al., *Effects of Petroleum Exploration on Woodland Caribou in Northeastern Alberta*, 61:4 J. OF WILDLIFE MANAGEMENT (1997); Bradshaw et al., *Energetic Implications of Disturbance Caused by Petroleum Exploration to Woodland Caribou*, CANADIAN J. OF ZOOLOGY (1998).
[967] Drolet et al., *Simulated Drilling Noise Affects the Space use of a Large Terrestrial Mammal,* 22:6 WILDLIFE BIOLOGY (2016).
[968] Calef et al. 1976; Maier et al. 1998; Wolfe et al. 2000.
[969] *E.g.*, Georgette and Loon 1988; Halas 2015.
[970] Clinton D. Francis and Jessica L. Blickley, *The influence of Anthropogenic Noise on Birds and Bird Studies*, 74 Ornithological Monographs 6 (2012), *available at* http://americanornithologypubs.org/doi/pdf/10.1525/om.2012.74.1.6?code=coop-site.

draft EIS falls short of this, simply noting that "[a]ll action alternatives would require a deviation from BMP E-11 due to the proximity of Stellar's eiders to the Project area."[971] The draft EIS does not discuss impacts to these protected species as a result of noise from this project.

The DSEIS does not provide justification for its findings regarding noise levels from the gravel mines —– estimating that blasting at the two sites would result in an impact of 59 DBA in Nuiqsut.[972] BLM also predicts 90 DBA would be the sound produced from the two gravel mines 1,000 feet from the source.[973] For GMT-2, the estimated noise level in Nuiqsut from mine blasting was anticipated to be around 112.8 decibels and, closer to the source, could be closer to 140.3 decibels.[974] BLM must justify why the noise levels for blasting at Willow are so much lower than was estimated for the nearby GMT-2 project. BLM must also quantify impacts — with reliable numbers — to areas where residents of Nuiqsut engage in subsistence activities.

A level of 110 decibels is at the average human pain threshold and is equivalent to industrial noises such as a riveting machine, steel mill, or turbo-fan aircraft taking off from approximately 200 feet away.[975] The level of industrial noise from this project has the potential to cause significant disturbances to Nuiqsut residents and wildlife across a vast area. The DSEIS notes the presence of these noises 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 states that the lease stipulations, ROPs, and mitigation measures "would reduce, but not eliminate, potential noise impacts. Noise impacts from construction and operation would be unavoidable."[976] The DSEIS goes on to conclude that the noise impacts would be short term and unavoidable, but not irreversible.[977] The fact that BLM deems impacts that last for decades short term is incredible. The fact that BLM is also concluding that the impacts would be reversible and that there would not be long-term impacts on the resources in the area is not supported. There is the potential that, as a result of the decades of industrial activities and the resultant noise, human and animals permanently shift their behaviors to avoid areas. This long-term, permanent displacement as a result of noise from the Willow Project's construction and operation needs to be analyzed in revised DSEIS.

C. Proposed Mitigation is Inadequate and Poorly Analyzed.

The DSEIS lists a number of mitigation measures that the BLM states are intended to mitigate the impacts from noise.[978] There is little to no analysis of these measures and it is not

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[971] 1 DSEIS at 87.
[972] *Id*. at 88.
[973] *Id*.
[974] GMT2 draft SEIS, at 298.
[975] IAC Acoustics, Comparative Examples of Noise Levels, http://www.industrialnoisecontrol.com/comparative-noise-examples.htm (last visited Apr. 24, 2018).
[976] 1 DSEIS at 91.
[977] *Id*. at 91.
[978] *Id*. at 85–87.

clear how many would actually reduce noise impacts. For example, ROP E-5 requires the design and location of facilities to be done to minimize impacts. Importantly, it does not impose actual requirements on what is constructed or built, or how machinery is operated. As a result, it would allow the same activities that contribute to noise impacts such that while it may shift where noise impacts occur, it is not apparent that it would result is actually reducing noise impacts.

Additionally, BLM lists ROP E-11 as a mitigation measure to protect birds but then notes that ConocoPhillips would need a deviation from this mitigation measure because all action alternatives would encroach on the buffer for yellow-billed loon nesting sites.[979]

BLM also includes the following as additional suggested mitigation measures that "could" be implemented:

> 1. Altering flight paths to avoid sensitive areas (such as Nuiqsut); and
> 2. Limiting blasting to between the hours of 10am and 8pm.[980]

There is still no discussion of how these measures may reduce noise impacts from this project. This falls far short of BLM's obligation to consider meaningful mitigation measures. For instance, how would flight paths be altered — would there be a certain distance buffering the community of Nuiqsut? Similarly, it is unclear what mechanism BLM will use to limit blasting to that specific time period, and no analysis of whether a shorter blasting period is appropriate, or if it may make sense to have shorter or no blasting permitting during certain dates when the impacts could be more concerning.

VI. BLM Still Fails to Analyze Impacts to Wilderness Characteristics and Values.

Despite Commenters having flagged the need for BLM to identify and describe wilderness values and characteristics in the project area and analyze the impacts from the proposed project in their prior comments on the DEIS,[981] BLM still fails to do so in the draft SEIS. BLM still does not identify wilderness values and characteristics in the resources and topics dismissed from detailed analysis, and simply ignores this issue entirely.[982] This continues to be an egregious error that must be corrected.

BLM expressly recognized that there are considerable wilderness characteristics and values in the Reserve.[983] As the agency stated, "almost all BLM-managed lands within the planning area, especially those lands that are more than five miles from villages, offer the

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[979] *Id*. at 86–87; 5 DSEIS at 99. The DSEIS says that that deviation is needed for Steller's eiders but the appendix states that the deviation is for yellow-billed loons. This correct reason for the deviation must be provided in the revised SEIS.
[980] 1 DSEIS at 87.
[981] 2019 AWL Comments at 158–59.
[982] 1 DSEIS at 4–5.
[983] 1 2012 IAP FEIS at 451–58. There was no new data gathered on wilderness characteristics for the 2020 IAP. 1 2020 IAP FEIS at 3-289.

wilderness characteristics of solitude, opportunities for primitive and unconfined recreation, and for the most part are natural."[984] BLM specifically found that the Teshekpuk Lake area, Colville River Valley, and the Ikpikpuk River had "outstanding wilderness characteristics."[985] Because of this, the agency concluded that the "NPR-A is one of the largest remaining wilderness resource areas in the country."[986] In adopting the 2013 IAP, the Secretary recognized that he was protecting many lands with wilderness characteristics even though no areas were recommended for Wilderness designation.[987]

BLM previously recognized that oil and gas activities like those proposed as part of the Willow MDP will have impacts to wilderness values and characteristics.[988] These impacts must be evaluated and BLM must consider how to mitigate to protect these values under its mandates.[989] BLM's failure to consider the Willow Project's impacts to wilderness values and characteristics must be remedied in a revised draft SEIS.

VII. BLM FAILS TO CONSIDER CONNECTIVITY AND HABITAT FRAGMENTATION.

Landscape connectivity is degree to which landscape facilitates or impedes movement among resource patches. Maintaining landscape connectivity is a key tenant of wildlife ecology and a founding motive of the Biden Administration's America the Beautiful Initiative which aims to "to conserve, connect, and restore lands and waters across the nation…and help combat climate change."[990] Connectivity is a key strategy to protect biodiversity, maintain viable ecosystems for wildlife populations, and aid in wildlife movement. Movement is among the best tools wildlife have to facilitate adaptations to climate change. Movement is necessary for wildlife to access variable habitat, as habitat is rapidly changing. When habitat is fragmented by barriers (e.g. roads, human infrastructure) wildlife are unable to access the extent of their needed range which can also inhibit major lifecycle events such as breeding, birthing, rearing of young, forage, or migration.[991] Despite being such an important consideration for wildlife, terrestrial connectivity is not mentioned once throughout the DSEIS.

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[984] 1 2012 IAP FEIS at 451.
[985] *Id*. at 454–58.
[986] *Id*. at 451.
[987] 2013 IAP ROD at 22.
[988] 2012 IAP FEIS at 103–06.
[989] *See Or. Natural Desert Ass'n v Bureau of Land Mgmt.*, 625 F.3d 1092, 1109–15 (9th Cir. 2010) (holding BLM has duty to consider wilderness characteristics in land planning under FLMPA and NEPA); *Or. Natural Desert Ass'n v. Rasmussen*, 451 F. Supp. 2d 1202, 1212–13 (D. Or. 2006).
[990] The White House, FACT SHEET: Biden-Harris Administration Celebrates Expansion of Locally-Led Conservation Efforts in First Year of "America the Beautiful" Initiative. https://www.whitehouse.gov/briefing-room/statements-releases/2021/12/20/fact-sheet-biden-harris-administration-celebrates-expansion-of-locally-led-conservation-efforts-in-first-year-of-america-the-beautiful-initiative/ (last visited Aug. 12, 2022).
[991] Hanski, Ilkka. 1998. Metapopulation dynamics. Nature. Springer Science and Business Media LLC. 396 (6706): 41–49.

Loss of connected natural habitat is one of the main problems in current conservation efforts. Connectivity affects the ecological mechanisms of nutrient cycling, energy flows, predator-prey dynamics, seed [and spore] dispersal, inbreeding avoidance, colonization of unoccupied habitat, altered species interactions, and spread of disease.[992] Predators like bears aid in broadcasting nutrients across the landscape. Connectivity affects this nutrient cycling by affecting access. The interactions of salmon and bear, for example, may provide up to 24% of riparian nitrogen budgets in some areas.[993] Scientists also suspect "that migrations of caribou to the Arctic Coastal Plain may allow parturient females to replenish sodium stores depleted by foraging inland through the long arctic winters, while also extending the availability of adequate phosphorus, if animals are able to selectively track emerging waves of forage."[994] As roads fragment caribou habitat, caribou will not only be nutrient deficient themselves, but also cannot provide nutrients to the landscape as they migrate. Migrating species like caribou deposit nutrients through waste products which can be otherwise absent from the landscape, providing a vital role to other animal and plant communities. This process is not addressed in the DSEIS, and needs to be addressed as it has the ability to have multiple, cascading affects across the ecosystem. The connectivity of a landscape is key to determining the overall persistence, strength, and integrity of the remaining ecological interactions and must be taken into account in the DSEIS.[995]

VIII. THE DRAFT SEIS DOES NOT ADEQUATELY CONSIDER IMPACTS TO FISH.

The Willow Project threatens serious and unavoidable harm to the twenty-four fish species and fish habitat throughout the Teshekpuk Lake Special Area and beyond. These species include thirteen different salmonids such as Chinook, sockeye, pink, chum, whitefish, Arctic grayling, cisco, and Dolly Varden; and various types of cod, stickleback, smelt, and flounder. These species are an important part of the Arctic ecosystem and provide immeasurable value as subsistence resources to Indigenous populations. The Project is likely to destroy and fragment fish habitat in dozens of areas; withdraw hundreds of millions of gallons of water from fragile waterbodies; degrade water quality due to water withdrawals, waste disposal, and chemical or oil spills; and extract substantial quantities of gravel next to high-use fish habitat. These impacts will adversely affect individual fish and threaten populations or species as a whole, particularly in conjunction with climate change and resulting changes to marine and freshwater habitat. The draft SEIS downplays or ignores many of these impacts and provided a cursory and unsupported

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[992] *Id*.

[993] Helfield, J.M. and Naiman, R.J., 2006. Keystone interactions: salmon and bear in riparian forests of Alaska. Ecosystems, 9(2), pp.167-180.

[994] Oster, K.W., Barboza, P.S., Gustine, D.D., Joly, K. and Shively, R.D., 2018. Mineral constraints on arctic caribou (Rangifer tarandus): a spatial and phenological perspective. Ecosphere, 9(3), p.e02160.

[995] United States Forest Service, Chapter 3-Factors Influencing Ecosystem Integrity https://www.fs.fed.us/psw/publications/documents/psw_gtr172/psw_gtr172_ch3.pdf (last visited Aug. 12, 2022).

analysis of others. Several flaws in the draft SEIS demonstrate that BLM failed to take a "hard look" at impacts of the project on fish and fish habitat in violation of NEPA.

The draft SEIS fails to include adequate information and key details about each species and its habitat in the affected area. BLM includes only cursory background information for all twenty-four fish species and relied on crude information about fish and habitat in the area – identifying only what broad habitat types are used by each species.[996] But these species are diverse and have varying distribution patterns, habitat needs, and life history characteristics, all of which are necessary to understand before evaluating the effects of the project. Appendix E.10 acknowledges crude variations in the types of overwintering habitat for each species but fails to identify other seasonal or temporal differences in habitat for spawning, rearing, migration, and other life cycle needs for each species. The draft SEIS does not include a rational explanation as to why the agency could not, or need not, disclose additional background information such as this. While some information about these species is limited, BLM should consider the additional information that is available or should conduct additional surveys and information about fish and fish habitat. Without adequate baseline information, BLM has failed to take a "hard look" at the impacts of the project on fish and fish habitat.

The entirety of the draft SEIS section attempting to address impacts to fish is inadequate.[997] As an initial matter, BLM completely fails to explain how the action alternatives would have differing impacts on fish. BLM simply lists basic differences in infrastructure such as varying numbers of bridges and culverts, but doesn't actually tie those differences in the project back to differences in impacts to fish, or even address changes from the placement and amount of gravel pads and roads.[998] Further, Section 3.10.1 is filled with text that has no evidence to support the statements and assertions.[999] Every sentence that does not have a citation must be assumed to be an unattributable perspective and not based in fact.[1000] Additionally, much of the cited research only provides a perspective.[1001] Much of the information on the Colville River is scant and unsupported by evidence. The draft SEIS lacks support for numerous conclusions it reached, ignored several important issues, and largely failed to connect the dots between likely impacts and what that means for a fish species as a whole The following are several examples of these failures that BLM must rectify.

The draft SEIS fails to fully or accurately describe how various impacts of the project will affect each fish species and its habitat. Instead, it largely lumps all species or habitat together when evaluating impacts, which masks impacts to individual species or populations. Because different species have different habitat or life history needs, population levels, or sensitivities, the project may affect each species differently and thus project impacts should be

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[996] *See* 1 DSEIS at 140–43 & table 3.10.2.
[997] *See Id*. at 140.
[998] *Id*. at 157.
[999] *Id.* at 140–43.
[1000] *E.g.*, *id.* at 140 ("Freshwater fish habitats in the Willow area are generally representative of habitats across the ACP.").
[1001] *E.g.*, *id.* at 140 ("Large rivers and main streams are typically characterized by unstable banks and substrates dominated by shifting sand, silt, and isolated areas of gravel (CPAI 2018a).").

evaluated at a more granular level. The draft SEIS repeatedly claims that individual fish may be affected by the project but that such impacts will not rise to population level effects; these sweeping conclusions are unsupported and speculative. Neither the draft SEIS nor Appendix E.10 suggests that BLM relied on estimates of how many individuals will be affected or the thresholds for loss that each fish population/species can sustain. Without such information, the agency cannot rationally conclude that impacts to individuals will not affect populations or a species as a whole.

The draft SEIS fails to analyze what differences between alternatives mean for fish and fish habitat.[1002] Most notably, BLM never explains how module delivery option 2 – which requires twice as much freshwater to be withdrawn as option 1 – will impact fish in the short- or long-term, claiming only that such a massive withdrawal "might" alter habitat in the future if lakes do not recover.[1003] Given the substantial quantities of water to be withdrawn under this alternative and the importance of water quantity to fish in the area, the agency needs to include a more thorough analysis of these impacts.

The draft SEIS fails to adequately analyze the implications of locating infrastructure adjacent to fish-bearing water bodies, the impacts of water withdrawals from water bodies, and the need for better baseline information about fish and critical fish habitat. While recent research has made significant progress to monitor hydrology[1004] and fish species[1005] within aquatic

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[1002] *See id.* at 150–60.

[1003] *Id.* at 160.

[1004] Whitman, M., C. Arp, B. Jones, W. Morris, G. Grosse, F. Urban, and R. Kemnitz. 2011. Developing a long-term aquatic monitoring network in a complex watershed of the Alaskan Arctic Coastal Plain. Pages 15-20 in C. N. Medley, G. Patterson, and M. J. Parker, editors. Proceedings of the Fourth Interagency Conference on Research in Watersheds: Observing, Studying, and Managing for Change. USGS, Reston. Arp, C. D., M. S. Whitman, B. M. Jones, R. Kemnitz, G. Grosse, and F. E. Urban. 2012; Drainage network structure and hydrologic behavior of three lake-rich watersheds on the Arctic Coastal Plain, Alaska. Arctic, Antarctic, and Alpine Research 44(4): 385-398; Arp, C. D., M. S. Whitman, B. M. Jones, G. Grosse, B. V. Gaglioti, and K. C. Heim. 2015. Distribution and biophysical processes of beaded streams of Arctic permafrost landscapes. Biogeosciences 12: 1-19; Jones, B. M., A. Gusmeroli, C. D. Arp, T. Strozzi, G. Grosse, B. V. Gaglioti, and M. S. Whitman. 2013. Classification of freshwater ice conditions on the Alaskan Arctic Coastal Plain using ground penetrating radar and TerraSAR-X satellite data. International Journal of Remote Sensing 34(23): 8253-8265.

[1005] Heim, K. C., M. S. Wipfli, M. S. Whitman, C. D. Arp, J. Adams, and J. A. Falke. 2015. Environmental cues of Arctic grayling seasonal movement in a small Arctic stream: the importance of surface water connectivity. Environmental Biology of Fishes DOI 10.1007/s10641-015-0453-x; McFarland, J. 2015. Trophic pathways supporting Arctic Grayling in a small stream on the Arctic Coastal Plain, Alaska. M.S. Thesis. University of Alaska Fairbanks, Fairbanks, AK; Heim, KC, Wipfli, MS, Whitman, MS, Seitz, AC. 2015. Body size and condition influence migration timing of juvenile arctic grayling. Ecology of Freshwater Fishes. Doi:10.111/eff.12199.

ecosystems, exploration and development activities still pose a serious threat to aquatic ecosystems.

Continued withdrawal of water from lakes or rivers as envisioned in the draft SEIS without more robust consideration of overall impacts could harm scarce over-wintering fish habitat.[1006] BLM must more specifically and accurately consider within existing alternatives or in new reasonable alternatives locations and quantities of all water withdrawals by water body, both for ice roads, as well as water sources needed for drilling, water flooding, camp operations, and all other uses during the entire time of development and production. BLM should strictly enforce the withdrawal limits established in the 2013 ROD's BMP B-2,[1007] and provide adequate monitoring to ensure that these limits sufficiently protect fish, invertebrates, and important aquatic habitats used by a variety of species.

Current water-use permits issued from the Alaska Department of Natural Resources Division of Mining Land and Water are restricted based upon general categories of water withdrawal sensitivity (non-sensitive, sensitive) for fish present and the liquid water volume available under ice. While this provides some level of protection, it does not take into account the potential spatial heterogeneity of winter dissolved oxygen (DO) levels in individual tundra ponds, which has been documented in Alaska[1008] and likely driven by a combination of lake level attributes and landscape factors.[1009] BLM should provide a list of all ice road source lakes as well as all physical and biological information collected at each lake (including methodology) to determine suitability for water withdrawal.

Adequate under-ice DO concentrations are an important water quality parameter that affect fish respiration, growth, and survival. Freshwater fish require DO levels between 4 and 6 mg/l227 with lethal levels potentially occurring below 2 mg/l.228Research in the Northwest Territories, Canada has documented that water withdrawal of 20% under ice volume in small (<30 ha.) tundra pond affects oxygen concentrations beyond natural fluctuations.[1010] Due to

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[1006] Cott, P. A., Sibley, P. K., Gordon, A. M., Bodaly, R.A., Mills, K. H., Somers, W. M. and Fillatre, G. A. (2008), Effects of Water Withdrawal From Ice-Covered Lakes on Oxygen, Temperature, and Fish1. JAWRA Journal of the American Water Resources Association, 44: 328–342.

[1007] 2013 IAP ROD at 52 B-2 ("Lakes with sensitive fish (i.e., any fish except ninespine stickleback or Alaska blackfish): unfrozen water available for withdrawal is limited to 15% of calculated volume deeper than 7 feet; only ice aggregate may be removed from lakes that are ≤7-feet deep.").

[1008] Clilverd, H., White, D., and Lilly, M. 2009. Chemical and Physical Controls on the Oxygen Regime of Ice-Covered Arctic Lakes and Reservoirs. JAWRA Journal of the American Water Resources Association 45: 500–511.

[1009] Leppi, J.C., Arp, C.D. & Whitman, M.S. 2016. Predicting Late Winter Dissolved Oxygen Levels in Arctic Lakes Using Morphology and Landscape Metrics. Environmental Management 57: 463.

[1010] Cott, P.A., Sibley, P.K., Gordon, A.M., Bodaly, R.A.D., Mills, K.H., Somers, W.M., Fillatre, G.A., and Peter, A. 2008. Effects of water withdrawal from ice-covered lakes on oxygen,

difficulties in conducting water quality measurements in winter, winter DO concentrations have only been measured sporadically across the Reserve and limited information is known about the spatial variability. Additionally, individual fish species have different oxygen requirements and in order to provide suitable overwintering habitat a species specific-oxygen requirement should be determined and implemented for sensitive fish in the region. Willow's water withdrawals would have a substantial impact on DO concentrations, which would require significant mitigation.

The draft SEIS includes a meager section on potential "injury or mortality" to fish, which identifies only a single mechanism through which such harm would occur: burying of fish where waterbodies are filled.[1011] This improperly ignores the numerous other direct and indirect mechanisms through which the project threatens to injure or kill fish, including low water or dissolved oxygen levels, oil spills, destruction of habitat, and more. BLM also fails to estimate the number or scope of injuries or mortality expected and to which species, which makes it impossible for the agency to accurately assess impacts on each species and population. As a result, the section on injury or morality is misleading and inaccurate.

The draft SEIS downplays the possibility oil spills, never discusses what spills would mean for fish, and fails to acknowledge the serious risks that spills of other chemicals like fracking fluids pose to fish.[1012] BLM should discuss the impacts that potential oil spills or other accidental releases – particularly a worst-case scenario spill – may have on fish and fish habitat, rather than ignoring impacts based on specious claims that such spills are unlikely to occur or negatively affect fish habitat.

In several places, the draft SEIS fails to address how the timing of specific actions would coincide with temporal or seasonal life cycle needs for fish. For example, BLM admits that increased marine vessel traffic could disturb or displace marine fish and affect individuals but does not address whether such impacts will occur during seasons or times that certain species are particularly vulnerable to noise or disturbance.[1013] The draft SEIS should consider whether open-water seasons for vessels will overlap with key migration or spawning periods and thereby cause disproportionate impacts on certain populations or species. This and other deficiencies in the discussion of the temporal or seasonal nature of alternatives and fish needs are serious flaws that BLM must correct.

The draft SEIS contends that unavoidable and irretrievable impacts to fish and fish habitat would not affect the long-term sustainability of fish resources.[1014] But neither the draft SEIS nor Appendix E.10 provides any support or rational explanation for such sweeping conclusions, which is a serious flaw.

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temperature and fish. 44: 328–342.
[1011] 1 DSEIS at 160.
[1012] *See id.* at 161.
[1013] *See id.*, Table 3.210.5 at 160.
[1014] *Id.* at 161.

The draft SEIS discloses that dozens of bridge piles would permanently remove freshwater fish habitat within their footprint, but never discusses how that will affect fish that use or rely on that habitat.[1015] Nor does BLM address or acknowledge the impacts of climate change on project infrastructure such as bridges and other water crossings, and how potential bridge failures would impact fish and fish habitat in the future.

The draft SEIS claims, without explanation, that increased suspended sediment and turbidity levels in nearshore marine habitat during the summer construction season would not affect fish at the population level, explaining that such effects would be temporary and localized.[1016] However, BLM never identifies the size of each population or the number and importance of the fish affected – the agency needed to reach such conclusions about the populations as a whole.

Tundra ponds in the Arctic cover up to 40% of the landscape[1017] and are a critically important landscape feature providing summer feeding and overwintering habitat for numerous Arctic fish. Also important are the hundreds of kilometers of anadromous fish streams within the vicinity of this project.[1018] Extreme conditions in the Arctic have forced fish to develop seasonal migration strategies where individuals will travel hundreds of kilometers between ponds, streams, and rivers, to meet their caloric demand and to find suitable spawning and overwintering habitat.[1019] Deeper seasonally connected tundra ponds that do not freeze to the bed surface (floating-ice tundra pond) provide potential winter habitat for fish,[1020] but may also serve as water sources for industrial applications.[1021] During the spring, much of the Arctic coastal

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[1015] *See id.* at 150.
[1016] *Id.* at 151–52.
[1017] Grosse, G., B. Jones, C. Arp. 8.21 Thermokarst Lakes, Drainage, and Drained Basins, Edited by John F. Shroder, Treatise on Geomorphology, Academic Press, San Diego, 2013, Pages 325-353.
[1018] Alaska Dep't of Fish and Game. 2011. Anadromous Waters Catalog. GIS dataset, *available at* http://www.adfg.alaska.gov/sf/SARR/AWC/index.cfm?ADFG=data.GIS; Walker, N., M. Smith, and R. Wilson. 2012. A Decision-Support Tool for the National Petroleum Reserve - Alaska. Audubon Alaska: Anchorage.
[1019] Morris, W. 2006. Seasonal movement and habitat use by Broad Whitefish (Coregonus nasus) in the Teshekpuk Lake region of the national petroleum reserve- Alaska. 2003-2005, *available at* http://www.adfg.alaska.gov/static/home/library/pdfs/habitat/06_04.pdf; Moulton, L.L., Morris, W.A., and Bacon, J. 2007. Surveys of fish habitat in the Teshekpuk Lakes region, 2003-2005. Final Report December 2007, *available at* http://www.adfg.alaska.gov/static/home/library/pdfs/habitat/tesh_fish_2003_2005.pdf.
[1020] Arp, C., Whitman, M., Jones, B. (2012) Drainage Network Structure and Hydrologic Behavior of Three Lake-Rich Watersheds on the Arctic Coastal Plain, Alaska. Arctic, Antarctic, and Alpine Research. 44, 385–398.
[1021] Brewer, M.C. 1958. The thermal regime of an arctic lake. EOS Trans. AGU, 39, 278; Jones, B., Arp, C., and Hinkel, K. 2009. Arctic lake physical processes and regimes with implications for winter water availability and management in the National Petroleum Reserve Alaska. Environmental Management 43: 1071–84.

plain becomes flooded, allowing fish to access a variety of productive habitats.[1022] Thus, the identification of important pathways and seasonal habitat (i.e., spawning, rearing, and overwintering habitat) for migratory fish is crucial information that BLM must collect and consider more fully in the SEIS.

Current knowledge on Arctic fish life histories is limited, but recent research shows that fish use a variety of habitats, across a large geographic range, to complete their life cycles.[1023] Development of gravel and ice roads has the potential to fragment important fish habitat by creating barriers that inhibit fish from making seasonal migrations. Because maintaining natural seasonal flow patterns across the landscape is essential for fish survival, the impacts on fish migration of any roads or infrastructure associated with Willow require greater consideration than provided in the draft SEIS.

Fish use a variety of aquatic habitat types within the region for feeding, spawning, and overwintering. Tundra ponds deeper than 1.6 meters with seasonal connection to streams provide foraging areas as well as overwintering habitat for numerous fish species; however, these locations are generally limited within the region. Delta and off channel habitat also provide important rearing areas for juvenile fish species, and riverine habitat provides migratory pathways that allow species to move across the landscape during different seasons. While there have been studies documenting summer fish presence across habitats,[1024] there has been relatively little research that identifies fish presence during the fall, winter, and spring.[1025] Exploration and development has the potential to impact aquatic habitat during critical life cycle stages. As a result, it is important to conduct fish presence surveys in habitat seasonally used prior to permitting. Since fish may migrate across the landscape using different habitat types to forage, spawn and overwinter, summer fish surveys may not provide a complete understanding of habitat use. BLM needs to more adequately consider the environmental impacts of the module transfer station of Arctic fish that use near shore environments for feeding and migration as causeways pose a concern for fish.

[1022] Morris, W. 2006. Seasonal movement and habitat use by Broad Whitefish (Coregonus nasus) in the Teshekpuk Lake region of the national petroleum reserve- Alaska. 2003-2005, *available at* http://www.adfg.alaska.gov/static/home/library/pdfs/habitat/06_04.pdf.

[1023] *Id.* Morris, W. 2003. Seasonal movement and habitat use of Arctic grayling (Thymallus arcticus), burbot (Lota Lota), and broad whitefish (Coregonus Nasus) within the fish creek drainage of the National Petroleum Reserve- Alaska, 2001-2002. http://www.adfg.alaska.gov/static/home/library/pdfs/habitat/03_02.pdf.

[1024] Moulton, L.L., Morris, W.A., and Bacon, J. 2007. Surveys of fish habitat in the Teshekpuk Lakes region, 2003-2005. Final Report December 2007, *available at* http://www.adfg.alaska.gov/static/home/library/pdfs/habitat/tesh_fish_2003_2005.pdf.

[1025] Morris, W. 2006. Seasonal movement and habitat use by Broad Whitefish (Coregonus nasus) in the Teshekpuk Lake region of the national petroleum reserve- Alaska. 2003-2005, *available at* http://www.adfg.alaska.gov/static/home/library/pdfs/habitat/06_04.pdf.

Additionally, recent research has shown that fish detection probability is influenced by species, gear type and site specific variables (i.e. lake depth, day of sample, lake connection).[1026] While certain species such as least cisco and nine spine stickleback had high detection probability, other species more sensitive to water withdrawal (e.g., Arctic grayling, slimy sculpin) had low detection probabilities.[1027] This finding is important because it suggests that previous research methods may be inadequate to detect certain species. As a result, it is necessary to use new techniques such as eDNA monitoring to identify fish presence. [1028] BLM must consider discuss this research in the SEIS.

We also have serious concerns that BLM must address regarding the ice bridge crossing at Ocean Point over the Colville River.[1029] The draft SEIS lacks sufficient baseline information and empirical data regarding how much streamflow will be present for the years that the ice bridge will be used.[1030] It can be assumed that some flow will be present every year, but the amount and where within the channel is important. Simple assumptions of streamflow have been made based on the Umiat gage, but this does not account for major rivers between Umiat and Ocean Point that likely have winter surface or subsurface flows (such as the Anaktuvuk River). These assumptions also do not take into account changes in winter climate that are reducing maximum ice thickness and increasing winter streamflow on certain years. These climate-related changes will likely equate to shorter ice duration and increased winter streamflow. BLM must properly analyze and address these factors in the SEIS.

Empirical data of where water is flowing and its depth and velocity will provide critical information of the habitat that may or may not be impacted. It will also provide a clearer picture of what fish species may use the habitat or be able to migrate through the area. The draft SEIS lacks this information, which must be rectified.

The draft SEIS also fails to adequately explain how the streamflow, ice bridge, and module weight will interact to allow flow below the bridge at a natural rate, increase the velocity of flow under the bridge, or restrict flow where water will be pushed up or around the bridge. With sub-freezing temperature it is possible that streamflow will be pushed upward and create thick aufeis-like features in the area.

Fall, winter, and spring under-ice conditions and fish movement and habitat use should be studied to understand better the natural conditions during the months of the proposed ice bridge. The description of baseline conditions is not adequate to understand the potential impacts

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[1026] Haynes, T.B., Rosenberger, A.E., Lindberg, M.S., Whitman, M. & Schmutz, J.A. 2013. Method-and species-specific detection probabilities of fish occupancy in Arctic Lakes: implications for design and management. Can J. Fish Aquat. Sci. 70. 1055-1062.
[1027] *Id*.
[1028] *See, e.g*., Arp, Christopher D., et al. "Ice roads through lake-rich Arctic watersheds: Integrating climate uncertainty and freshwater habitat responses into adaptive management." *Arctic, Antarctic, and Alpine Research* 51.1 (2019): 9-23.
[1029] *See* 1 DSEIS at 160–61.
[1030] *Supra* Resource Impacts II (water resources).

on fishes. For example, what fish species and life stages overwinter directly downstream or upstream of the crossing? How would the ice bridge affect the movement of fish and the habitat under a variety of scenarios where water movement is impacted by the ice bridge? From research on adult Broad Whitefish we know that individuals are using the area in the fall,[1031] but where they overwinter and how much they move are still unknown. Recent research has also shown that Broad Whitefish have a variety of life history types, with individuals spending different amounts of time in freshwater, estuarine, and marine habitats.[1032] The draft SEIS must analyze this information, and should clearly define the differences in impacts to fish among alternatives to understand the benefits and detriments to allowing ConocoPhillips to bring in its modules via ice bridge.

Ice bridges can cause migration barriers and impact habitat downstream. BLM must address several questions, including:

- Will the ice bridge be removed in the spring?
- How will it be moved, if at all?
- What is the timing for it to be moved, if at all?

This information is important because fish move a tremendous amount. The Colville River likely provides a major connectivity corridor for a variety of fishes to upstream foraging habitats. The SEIS must answer these questions and address these concerns.

The Colville River pipeline crossing near the ASRC mine requires greater analysis.[1033] There are numerous cases where pipelines have failed,[1034] which would have a devastating impact on fish population. If the pipeline did fail, it would cause a significant impact to subsistence fisheries. For example, if a rupture occurred, the proposed crossing at the head of the delta would send containments downstream, impacting delta and nearshore areas. Arctic Cisco and Least Cisco overwinter in the delta. These fish spawn and rear in the Mackenzie River, YK, and travel to the Colville River (juveniles and adults) to overwinter. It represents a significant food source for the community of Nuiqsut (and other communities), meaning it would also have damaging subsistence impacts. Broad Whitefish also utilize the delta for rearing, migration to spawning habitats, and foraging. As the largest delta on the North Slope, this is a unique feature.

[1031] Jason C. Leppi et al., Landscape geomorphology and local-riverine features influence Broad Whitefish (Coregonus nasus) spawning habitat suitability in Arctic Alaska, Ecol Freshw Fish. 2022;00:1-18 at 7 (Oct. 12, 2021), available at https://onlinelibrary.wiley.com/doi/epdf/10.1111/eff.12657.

[1032] Leppi JC, Rinella DJ, Wipfli MS, Brown RJ, Spaleta KJ, Whitman MS (2022) Strontium isotopes reveal diverse life history variations, migration patterns, and habitat use for Broad Whitefish (*Coregonus nasus*) in Arctic, Alaska. PLoS ONE 17(5): e0259921. https://doi.org/10.1371/journal.pone.0259921.

[1033] *See, e.g.*, 1 DSEIS at 118.

[1034] E.g., Elizabeth Douglass, Yellowstone Oil Spills Expose Threat to Pipelines Under Rivers Nationwide, Inside Climate News (Feb. 6, 2015).

A pipe leak could cause a significant impact. The SEIS must fully analyze and account for pipeline failure.

New research[1035] on Broad Whitefish should be documented in this section to help provide a more rounded (but still inadequate) perspective on how Broad Whitefish use the Colville River. There are no apparent citations to support assertions on burbot.[1036] The assumption of overwintering habitat in rivers[1037] is not true. Is this based on depth or empirical data? Stream and rivers can have springs and groundwater upwellings that can create overwintering habitat in areas less than 2.2 meters. Discussion of the nearshore marine area in section 3.10.1.2 appears outdated.[1038] BLM must determine how the fish species composition, behavior, and movements have changed since 1982. The analysis of essential fish habitat in section 3.10.1.3[1039] seems overly generous considering salmon have not yet been shown to have a sustainable population in the Beaufort Sea Region.

Section 3.10.2.3.1 on habitat loss or alteration requires additional analysis.[1040] Fish move all over the region. Culverts and ice roads have the potential to block seasonal migration paths. This is acknowledged,[1041] but analysis is required of seasonal fish movements across a large enough extent and across enough species to know when fish use corridors. The draft SEIS contains an assumption regarding timing of movement, but it has not been adequately analyzed. Further, new research suggests that lakes would not be recharged on certain years,[1042] which BLM has not but must take into account in its analysis. Further, BLM must analyze the dynamics (e.g. lake expansion or drainage) of water bodies that will be used for withdrawal. BLM should consider how these dynamics function in providing aquatic habitat[1043] and the risks they entail to Willow infrastructure.[1044] Finally, BLM must consider the potential for any lakes used for the

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[1035] Leppi JC, Rinella DJ, Wipfli MS, Whitman MS (2022) Broad Whitefish (*Coregonus nasus*) isotopic niches: Stable isotopes reveal diverse foraging strategies and habitat use in Arctic Alaska. PLoS ONE 17(7): e0270474. https://doi.org/10.1371/journal.pone.0270474; *see also* Leppi (2022) and (2021) cited above.
[1036] *See, e.g.*, 1 DSEIS at 141.
[1037] *See id.* at 140.
[1038] *See id.* at 143.
[1039] *See id.* & Table 3.10.2.
[1040] *Id.* at 150–53.
[1041] *See id.* at 152.
[1042] Anne Gädeke et al, Modeled streamflow response to scenarios of tundra lake water withdrawal and seasonal climate extremes, Arctic Coastal Plain, Alaska, doi: 10.1029/2022WR032119, https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2022WR032119.
[1043] Arp, Christopher D., and Matthew S. Whitman. "Lake Basins Drive Variation in Catchment-scale Runoff Response over a Decade of Increasing Rainfall in Arctic Alaska." *Hydrological Processes* (2022): e14583.
[1044] Arp, Christopher D., et al. "Recurring outburst floods from drained lakes: an emerging Arctic hazard." *Frontiers in Ecology and the Environment* 18.7 (2020): 384-390.

project to undergo future drainage events and the implications for water availability and the impacts of water use for the project.[1045]

BLM also fails to acknowledge impacts to fish from culverts. Much more extensive research is required to remedy these errors and omissions and provide a balanced and realistic perspective. BLM must rectify this serious problem in the SEIS.

The draft SEIS fails to comply with NEPA's requirement to discuss mitigation measures in sufficient detail, analyze their effectiveness, and disclose likely impacts. For example, BLM explains that water withdrawals can alter water quantity and quality in fish habitat, and that 1,662.4 million gallons of water will be withdrawn from "an unknown number of lakes" over the lifetime of the project.[1046] But the agency claimed, without any support or further discussion, that BMPs and permit stipulations will prevent population-level effects from such withdrawals.[1047] It is irrational for the agency to reach that conclusion without discussing how much water would be withdrawn each season and year and where, and how best management practices, ROPs, and LSs would reduce the massive impacts of withdrawals. This is especially true since of ROP B-2 is designed to protect fish during winter withdrawals but is based on surveys conducted during the summer. Moreover, the agency ignores that BMPs are inadequate to protect dissolved oxygen levels in tundra ponds. BLM needs to include physical and biological data for each lake to determine suitability for water withdrawals.[1048] BLM must also consider how water availability will be affected during years of low water availability. For example, dust abatement is most critical during dry summers when lake water levels and stream flow are also low. BLM must consider how the impacts of increased water use for dust control will exacerbate already low lake levels and corresponding downstream flows to creeks and rivers.

Applicable lease stipulations and required operating procedures[1049] could be helpful. However, in many cases they are too vague to provide objective criteria to ensure adequate protection of resources, and are otherwise easy for ConocoPhillips to get a "deviation" to violate them. In addition, they are written such that if no monitoring is occurring it would be impossible to prove they are not meeting the LSs and ROPs. BLM must impose stronger and more concrete mitigation measures. BLM's blind reliance on mitigation measures in the draft SEIS prevents the agency from taking a "hard look" at impacts of the project.

[1045] Jones, Benjamin M., et al. "Identifying historical and future potential lake drainage events on the western Arctic coastal plain of Alaska." *Permafrost and Periglacial Processes* 31.1 (2020): 110-127.

[1046] 1 DSEIS at 153.

[1047] *Id*.

[1048] *See, e.g.,* Taylor M. Johaneman, Christopher D. Arp, Matthew S. Whitman, Allen C. Bondurant, Hillary B. Hamann & Michael W. Kerwin (2020) Classifying connectivity to guide aquatic habitat management in an arctic coastal plain watershed experiencing land use and climate change, Arctic, Antarctic, and Alpine Research, 52:1, 476-490; Jones, Benjamin M., et al. "A lake-centric geospatial database to guide research and inform management decisions in an Arctic watershed in northern Alaska experiencing climate and land-use changes." *Ambio* 46.7 (2017): 769-786.

[1049] *Id.* at 144–49, Table 3.10.3.

In addition to those key flaws, the document's analysis of impacts to fish is inadequate due to other overarching problems identified in this comment letter. In particular, the analysis includes an incomplete discussion of specific aspects of the alternatives, ignores cumulative impacts that are likely to occur, fails to fully and appropriately consider the impacts of climate change, and does not address scientific information and concerns about Arctic fish populations and habitat that were raised in the scoping comments. These universal flaws in the draft SEIS also render its analysis of fish inadequate.

IX. BLM'S ANALYSIS OF BIRDS IS INADEQUATE.

A. The Description of Birds and Bird Habitat Is Inadequate.

The analytical problems and information gaps previously identified in BLM's NEPA analyses have still not been addressed in the DSEIS. The ranking of habitat by number of bird species found within the habitat type is not useful for analysis or public understanding. The DSEIS uses the number of present bird species (species richness) to rank the importance of the various habitat designations.[1050] This is incomplete, because species richness is only one metric with which habitat value can be quantified. Habitats with lower species richness can and do support highly specialized species, which are often the most acutely effected by climate change.[1051] Furthermore, many species that are ranked by the DSEIS within the most commonly used habitats are also shown as using the habitat types associated with lower species richness during portions of their life history, making these less commonly used areas still important for a species life cycle. These species displaying this pattern include yellow-billed loons and Spectacled Eiders, which are recognized by BLM as Species of Special Status. The agency should describe habitat use more fully.

We also note that a substantial portion of the analysis area is categorized as unknown and unmapped, presumably because the analyses conducted did not investigate these regions.[1052] Without more information about the analyses conducted, it is possible that there will be more permanent loss, alteration, and damage and displacement acreages for unmapped habitat than is presently reported in the DSEIS.[1053] We urge the agency to provide more information on how the area was mapped.

The DSEIS downplays the presence of special status species in the project area. The DSEIS states, "Steller's eiders, whimbrels, buff-breasted sandpipers, and red knots are unlikely to be affected by habitat loss, or disturbance or displacement, because they are rare in the vicinity

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[1050] 6 DSEIS, App. E.11, Table E.11.2.
[1051] C.M. Davey, et al., *Rise of the generalists: evidence for climate driven homogenization in avian communities*, GlobalEcology and Biogeography 21:568–78 (2012); A.R. Hof, et al., Vulnerability of Subarctic and Arctic Breeding Birds, 27 Ecological Applications 219–34 (2017); W. Jetz, et al., *Projected impacts of climate and land-usechange on the global diversity of birds*, PLoS Biology 5:e157 (2007).
[1052] *See, e.g.*, 6 DSEIS, App. E.11 at 10.
[1053] *Id*.

of the Project."[1054] The DSEIS elsewhere states, "Nine species of birds listed as special status species by the Bureau of Land Management (BLM) may occur in the analysis area: spectacled eider, Steller's eider, yellow-billed loon, red-throated loon, dunlin (*arcticola* subspecies), bar-tailed godwit, whimbrel, buff-breasted sandpiper, and red knot."[1055] This is either unnecessarily vague or misinformed, as there is substantial evidence to confirm that all listed species indeed occur within the analysis area.[1056] The fact that a species may be rare in the study area does not ensure that it will not be affected; indeed it likely increases the chances that any effects experienced would be more significant. For instance, Buff-breasted Sandpipers are a special concern, because they are rare to begin with.[1057] This rarity is exacerbated by the fact that additional important nesting habitats to the east are either developed (within the Prudhoe complex) or are at risk of being developed (within the Arctic National Wildlife Refuge). The DSEIS must correctly describe the presence of special status species in the area and note that these species may be more affected by habitat loss because of their rarity.

The scope of BLM's analysis for the full range of species present in the area is too limited. BLM felt it only necessary to consider the Project's impact on three species of birds (Stellar and Spectacled Eiders and yellow-billed loons) in more depth, but the fact remains that over 0.5 million shorebirds of 13 species (and potentially up to 17 species) breed each year in the Arctic Coastal Plain and will be at greater risk of population declines if this project is approved.[1058] The region is teeming with a variety of unique and rare bird species and across all the Arctic Coastal Plain, abundance and density of breeding aquatic bird species, including waterfowl, loons, grebes, shorebirds, gulls, terns, and jaegers, is greatest within the Reserve.[1059]

The DSEIS also downplays the potential for impact to wintering and marine species. The statement that "[f]ew species winter on the [Arctic Coastal Plain]"[1060] is dismissive and reflects the lack of actual analyses performed regarding over-wintering species, which includes three Audubon Alaska WatchList species: the Snowy Owl, Rock Ptarmigan, and Willow Ptarmigan.[1061] Their inclusion in the WatchList is due to precipitous population declines due in large part to climate change. The importance of marine habitat to avian species in the proposed development area is not addressed. While there is a brief mention of Harrison Bay in the

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[1054] 1 *id.* at 187.
[1055] 6 *id.* App., E.11 at 7.
[1056] J.A. Johnson et al., Distribution of breeding shorebirds on the Arctic Coastal Plain of Alaska, 60 Arctic 277–93 (2007); J.R. Liebezeit et al., Breeding ecology of birds at Teshekpuk Lake: A key habitat site on the Arctic Coastal Plain of Alaska, 64 Arctic 32–44 (2011); M.A. SMITH ET AL., ECOLOGICAL ATLAS OF THE BERING, CHUKCHI, AND BEAUFORT SEAS (2d ed. 2017) [hereinafter ECOLOGICAL ATLAS].
[1057] B.A. Andres et al., Shorebirds breed in unusually high densities in the Teshekpuk Lake Special Area, Alaska, 65 Arctic 411–20 (2012).
[1058] *Id*.
[1059] J. Bart et al., Importance of the National Petroleum Reserve—Alaska for Aquatic Birds, 27 Conservation Biology 1304–12 (2013).
[1060] 1 DSEIS at 163.
[1061] N. Warnock, Audubon Alaska, The Alaska WatchList (2017).

DSEIS,[1062] there is no analysis of Harrison Bay's exceptional value for birds, especially sea ducks, loons, and shorebirds, or how those birds would be impacted by Willow.[1063]

The DSEIS does not accurately describe Spectacled Eider usage of the analysis area. The DSEIS states, "Low densities of spectacled eiders occur throughout most of the analysis area annually during pre-breeding . . . , but nesting is only known to occur near the coast."[1064] One study denotes areas of especially high importance to Spectacled Eiders.[1065] That study includes a substantial portion of the analysis area, which lies within the Western Beaufort Sea Important Area, which is defined by that study as areas "where [satellite-transmitted] locations occurred in greater density as defined by 95% Gaussian kernel density isopleths."[1066] Additionally, it is misleading to suggest that nesting has not been confirmed, when many recent studies have indeed confirmed nesting, including by implanting satellite transmitters on nesting Spectacled Eiders, surveying specifically for nesting Spectacled Eiders at Point Lonely and the Colville Delta, and in broader survey efforts across the Arctic Coastal Plain.[1067] Similarly, the statement that "[Spectacled Eider] nesting has not been confirmed" is misleading.[1068] That suggests that there are no known examples of breeding Spectacled Eiders, which is clearly not the position of the authors, as portions of Appendix E.11 attempt to quantify the impact of each alternative to Spectacled Eider nests.[1069] By underestimating and downplaying the potential impact of this development to Spectacled Eiders, substantial detriment to an Endangered Species Act-listed species is more likely.

The description of the importance of the analysis area to Steller's Eiders is similarly incomplete. Steller's Eiders are known to have regularly nested in the analysis area[1070] before substantial declines reduced their breeding population westward, warranting their listing as Threatened under the Endangered Species Act. Because the purpose of the Endangered Species

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[1062] *See* 1 DSEIS at 163.
[1063] Ecological Atlas, *supra*.
[1064] 1 DSEIS at 162.
[1065] M.G. Sexson et al, Bureau of Ocean Energy Management, Spatiotemporal Distribution and Migratory Patterns of Spectacled Eiders 14 (2014).
[1066] *Id*.
[1067] *See, e.g.*, C. Johnson et al., Spectacled eider monitoring at the CD–3 development, 2007: Annual report for ConocoPhillips Alaska, Inc., and Anadarko Petroleum Corporation, Anchorage, by ABR. Inc., Fairbanks, Alaska (2008); P.E. Seiser et al., Eider Nest Searches at the Cd-3 Pad, Ice Road, and Spill-Response Sites on the Colville River Delta (2011); P.E. Seiser & C.B. Johnson, Eider Nest Searches in the Alpine Area (2016); J. Bart et al., *Importance of the National Petroleum Reserve—Alaska for Aquatic Birds*, 27 Conservation Biology 1304–12 (2013).
[1068] 1 DSEIS at 164.
[1069] *See, e.g.*, 6 *id.,* App. E.11.
[1070] I.N. GABRIELSON ET AL., THE BIRDS OF ALASKA (1956); Notes on some birds and mammals of the Colville River, Alaska, 70 Canadian Field-Naturalist 130–36; P.E. Seiser & C.B. Johnson, Eider Nest Searches at the Cd-3 Pad, Ice Road, and Spill-Response Sites on the Colville River Delta (2011).

Act is to protect and recover imperiled species and the ecosystems upon which they depend, any development action that would further impede the ability of the Steller's Eider to recolonize previously used habitat is incongruous with its ESA designation.

The DSEIS also fails to address the conservation of the Arctic-nesting subspecies of Dunlin (*Calidris alpina articola*)—a U.S. Fish and Wildlife Bird of Conservation Concern—which has exhibited population declines in the last decade.[1071] The Willow development is in important nesting habitat for this subspecies population. The BLM-designated Teshekpuk Lake Special Area encompasses the lake and the wetland complex extending northeast to the coast, and *articola* Dunlin are one of the core nesting species. Liebezeit et al. (2011) describes shorebird nesting in the Teshekpuk Special Area by saying, "Overall nest densities at the Teshekpuk Lake site far exceeded those found at six other sites on the Arctic Coastal Plain, including the Prudhoe Bay oilfield site."[1072] A revised DSEIS should address this subspecies, analyze the impacts from the development, and articulate mitigation measures.

Finally, the temporal scale for analysis of impacts to birds is described as the life of the Project and reclamation. However, bird populations are likely to impacted for long after the Project and reclamation conclude. This is particularly true for long-lived species such as yellow-billed loon, which take a long time to recover from reduced productivity and/or survival.

B. The DSEIS Fails to Adequately Consider Impacts and Adequate Mitigation Measures for Birds and Special Status Species.

The data used to analyze impacts to yellow-billed loons appear inadequate, resulting in an inadequate impacts analysis. The nest location data and the associated lake/nest buffers in Figure 3.11.5 seem to be focused on areas of new development,[1073] but do not include a substantial portion of proposed ice road construction in the vicinity of Teshekpuk Lake. Ice roads are known to cause impacts that persist beyond the winter. Ice roads compress and can damage tundra vegetation, alter timing of snowmelt, and can block streams during critical times such as spring flooding. We therefore expect nonresident birds, including loons, to also be impacted by ice roads. Moreover, it is difficult to tell whether the relatively fewer loon nests near the proposed Willow development may be due to due to lower survey intensity, or another artifact of data collection. Without access to the ABR reports containing the referenced data, it is impossible to find more information. The DSEIS should be revised to explain these issues in its analysis and also provide the referenced studies in an appendix or on BLM's Willow eplanning website.

There are also numerous inconsistencies and omissions in the description of ROPs relating to yellow-billed loons. ROP B-2 fails to mention protection of fish-bearing lakes where yellow-billed loons are known to nest. While the proposed project appears to limit water withdrawal to only those lakes without sensitive fish or breeding yellow-billed loons, elsewhere

[1071] B.A. Andres et al., Shorebirds breed in unusually high densities in the Teshekpuk Lake Special Area, Alaska, 65 Arctic 411–20 (2012).
[1072] J.R. Liebezeit et al., Breeding ecology of birds at Teshekpuk Lake: A key habitat site on the Arctic Coastal Plain of Alaska, 64 Arctic 32–44 (2011).
[1073] 2 DSEIS App. A Figure 3.11.5.

the DSEIS also states, "Winter water withdrawals for ice infrastructure could occur from any permitted lake in the Willow area during construction."[1074] The DSEIS acknowledges that, "[b]ecause yellow-billed loons have high nest lake fidelity . . . , they could be impacted by withdrawals or human disturbance that occurs at nesting lakes."[1075] A revised DSEIS should explain this contradiction, and correct the ROP to protect loon lakes.

All alternatives waive the requirement to keep roads and infrastructure away from loon nests and nesting lakes and the DSEIS fails to provide any meaningful mitigation for this impact. ROP E-11 indicates that, "[i]f spectacled and/or Steller's eiders are determined to be present within the proposed development area, the applicant shall work with USFWS and BLM early in the design process to site roads and facilities in order to minimize impacts to nesting and brood-rearing eiders and their habitats."[1076] Spectacled Eiders have been documented within the proposed development area (Shook et al. 2019) and the FWS offered its biological opinion that the Project was likely to adversely affect Spectacled Eiders in the development region. Despite this, BLM has not incorporated mitigation efforts into the design process of site roads and facilities beforehand. BLM must uphold its role to assist in the recovery of federal-listed species. BLM is required under the Endangered Species Act to protect and restore the habitats upon which the listed species depend and to take action that will foster recovery of listed species. The Spectacled Eider has just three breeding populations globally and their populations have the capacity to crash quickly and significantly, as was evidenced by the 96% decline on the Y-K Delta between 1970 and 1992.[1077] Declines for the Arctic Coastal Plain population are also suspected to have occurred concurrently, and evidence suggests that this population has not recovered.[1078]

The ice road that is planned to run from the drill site to Point Lonely runs through the Teshekpuk Lake Special Area. The Biological Opinion for Coastal Plain Oil and Gas Leasing Program Arctic National Wildlife Refuge shows that one of the greatest breeding densities of Spectacled Eiders on the Arctic Coastal Plain occurs in the Kogru area through which the ice road runs.[1079] This area is also an important movement corridor for caribou, as discussed below. The Biological Opinion also states that long-term habitat loss, as a result of winter travel on ice roads, could "damage tundra vegetation and indirectly affect nesting habitat for spectacled eiders."[1080] The ice road has the potential to cause considerable habitat degradation in this region and should not be constructed.

[1074] 1 *id.* at 175.
[1075] *Id.* at 187.
[1076] *Id.* at 167.
[1077] R.A. Stehn et al., Decline of Spectacled Eiders nesting in Western Alaska, Arctic 46: 264 – 277 (1993).
[1078] K.D. Dunham et al., Assessing recovery of spectacled eiders using a Bayesian decision analysis, PLOS One 16: e0253895 (2021).
[1079] U.S. Fish & Wildlife Serv., Biological Opinion for Coastal Plain Oil and Gas Leasing Program Arctic National Wildlife Refuge 45 Figure 6.2 (2020), *available at* https://legacy-assets.eenews.net/open_files/assets/2020/06/05/document_ew_04.pdf.
[1080] *Id.* at 86.

ROP E-11 indicates infrastructure should adhere to a minimum 0.5-mile buffer around recorded yellow-billed loon nest sites and up to 1 mile, and there should be a minimum 1625-foot (500 m) buffer around the remaining shoreline of yellow-billed loon nest lakes.[1081] However, BLM waives these requirements: "All action alternatives would also cross the standard disturbance setback of 1 mile around recorded yellow-billed loon nest sites and 500-meters (1,625-feet) around the shoreline of nest lakes."[1082] These waivers come without any meaningful mitigation or added conservation for yellow-billed loons. By waiving ROPs intended to protect loons and failing to adopt or consider mitigation measures to address the impacts that will occur, the agency has failed to provide meaningful conservation for loons.

Even to the extent this provision might not be waived, the minimum buffer around recorded nesting sites should be 1 mile. The 0.5-mile buffer suggested here has not been determined to be an adequate distance for preventing disturbance of nesting loons in this region.[1083] One study found the mean median territory radius for yellow-billed loons in the Arctic Coastal Plain was 0.43 miles, which means the 0.5-mile buffer would allow construction activities to directly abut most loon territories and surpass the territory boundaries of many others.[1084] The buffer distance from a breeding lake should also be at least 1 mile in order to ensure disturbance to breeding yellow-billed loons is minimized, given their high nest-site and -lake fidelity.

It is critical that the breeding habitat of yellow-billed loons within the Reserve is preserved and is not degraded. The yellow-billed loon is among the 10 rarest bird species in the United States and more than 91% of the U.S. population breeds in the Reserve.[1085] The Willow Project development area, with a minimum disturbance area of 17,418 acres, lies in the heart of the yellow-billed loon's Alaskan breeding range. If this project is approved for construction and subsequent drilling operations, it will reduce the already-restricted breeding habitat available for yellow-billed loons and disrupt this population's nesting activities in what remains. Nesting yellow-billed loons are highly sensitive to all types of disturbance during the breeding season and disturbed nests have been found to have up to 30% lower nest survival compared to nests where adults are not disturbed.[1086] Disturbance levels described in the DSEIS will certainly have a negative impact on loon productivity in the region, particularly with the lack of mitigation measures incorporated into the document. High-quality breeding territories for yellow-billed loons are a limited resource on the Arctic Coastal Plain and a limiting factor for population

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[1081] 1 DSEIS at 168.
[1082] *Id*. at 188.
[1083] C.B. Johnson et al., Territory occupancy by breeding yellow-billed loons near oil development, J. of Wildlife Mgmt. 83:410–25 (2019).
[1084] J.A. Schmutz et al., Size and retention of breeding territories of Yellow-billed Loons (Gavia adamsii) in Alaska and Canada, Waterbirds 37: 53 – 63 (2014).
[1085] C.B. Johnson et al., *supra*; S.L. Earnst et al., *Population size and trend of Yellow-billed Loons in Northern Alaska*, The Condor 107: 289–304 (2005).
[1086] B.D. Uher-Koch et al., Nest visits and capture events affect breeding success of Yellow-billed and Pacific Loons, The Condor 117: 121 – 129 (2015).

growth in this region.[1087] Furthermore, unoccupied lakes with suitable nesting habitat are scarce in this region;[1088] therefore, there will be no opportunity for this population of yellow-billed loons to regain habitat lost to the Project elsewhere. Yellow-billed loons are a rare species with an estimated population of 16,000 – 32,000 individuals,[1089] with approximately 5,000 in Alaska.[1090] Breeding habitat in Alaska is concentrated in the Arctic Coastal Plain and must be protected from development to prevent population declines of this already scarce species.

ROP E-11 contains a requirement that BLM will require submittal of a minimum of 3 years of site-relevant survey data of lakes greater than 25 acres within 1 mile of the proposed infrastructure. This will vastly underestimate the number of nesting yellow-billed loons in the study area. It has been found that yellow-billed loon breeding lakes can be as small as 0.07ha for nesting and 1.3ha for brood-rearing on the Colville River Delta, and that 7% of nests they found within the region were on lakes less than 10ha.[1091] Additional survey data that is not limited to only yellow-billed loon nesting lakes that are greater than 25 acres should be required.

The analysis related to ROP E-18 is also inadequate. ROP E-18 is intended to "[a]void and reduce temporary impacts to productivity from disturbance near Steller's and/or spectacled eider nests."[1092] The provision indicates that "[c]onstruction of permanent facilities, placement of fill, alteration of habitat, and introduction of high noise levels within 656 feet of occupied Steller's and/or spectacled eider nests will be prohibited."[1093] The Recovery Plan for Spectacled Eiders uses a 200-meter buffer around nest sites and contains measures related to the "[i]ntroduction of high noise levels within 200m of nest sites (from activities at potentially greater distances), 20 May through 1 August" that "may include but are not limited to: airports, blasting, and compressor stations." There is no indication BLM evaluated the potential for disturbance to nesting Spectacled Eiders that may be associated with construction, aircraft, vehicle and drilling operations activities as is required under the recovery plan. The Recovery Plan states that the 200m buffer around nesting birds is a suggested distance that should be "reviewed on a case-by-case basis." Further, the 200m distance is a consensus among biologists and no formal studies have been conducted to determine the minimum distance at which the majority of birds do not flush their nests when disturbed by human activities within the area.

It is also unclear if this buffer zone refers to nest sites within the vicinity of the project's airstrips. The total area for the airstrip(s) ranges from 42.2 acres (Alternatives B and E) to 87.6 acres (Alternative C), and the FWS provided a larger buffer zone than the 200-meter buffer zone they recommended for other disturbance types. The FWS Biological Opinion estimated that

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[1087] Schmutz, *supra*.
[1088] T. Haynes et al., Occupancy of Yellow-billed and Pacific loons: Evidence for interspecific competition and habitat mediated co-occurrence, J. of Avian Biology 45:296–304 (2014).
[1089] B.D. Uher-Koch et al., *Yellow-billed Loon (*Gavia adamsii*), version 1.0*, *in* Birds of the World (2020).
[1090] Earnst, *supra*.
[1091] C.B. Johnson et al., *supra*.
[1092] 1 DSEIS at 168.
[1093] *Id.*

"potential effects of aircraft and human disturbance on spectacled eider nest success would occur within a 600-m radius, or 1.13km2 area, at each landing site." There needs to be a different, greater buffer zone for the planned airstrips and whatever location is selected should be designed in a way that impacts the least number of Spectacled Eider nests.

The impacts to molting geese are poorly described and mitigation of the impacts is unclear. ROP F-1 charges lessees to "[m]inimize the effects of low-flying aircraft on wildlife, subsistence activities, and local communities;" with an accompanying requirement to stating that "[a]ircraft use shall be restricted from June 15 through August 20."[1094] It is impossible to know from these measures whether flights over the Goose Molting Area are actually minimized, restricted, or prohibited; if there is a minimum altitude during these flyovers; and when they will or will not occur. This is concerning, as there is significant evidence that aircraft overflights have negative impacts on molting geese.[1095] The DSEIS should reconcile these contradictions and clearly describe the aircraft activity prohibited in the Goose Molting Area.

The DSEIS contains statements regarding habitat loss, abandonment, and reclamation that are questionable, vague, or contradictory. For example, the DSEIS states, "Abandonment and reclamation may involve removal of gravel pads and roads or leaving these in place for alternative uses."[1096] The DSEIS also states that, if reclamation does not occur, effects will be irreversible.[1097] However, ROP G-1 has this requirement of lessees: "Prior to final abandonment, land used for oil and gas infrastructure shall be reclaimed to ensure eventual restoration of ecosystem function."[1098] In addition, the already-inadequate reclamation and recovery strategies described in the report also reveal that some gravel infrastructure may be left in place for future, post-project uses. The DSEIS should be revised to accurately describe the difficulties of restoration and reclamation, and explain where these mitigation measures will or will not take place.

The DSEIS downplays habitat loss that would occur due to activities beyond construction. The DSEIS describes habitat loss due to gravel fill, but does not relate those losses to actual loss in avian productivity — an analysis that is particularly important for sensitive species.[1099] The DSEIS also states, "Habitat loss could displace 158 nests . . . ; most displaced

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[1094] *Id.* at 169.
[1095] D.V. Derksen et al., *Habitat ecology of Pacific Black Brant and other geese moulting near Teshekpuk Lake, Alaska*, 33 Wildfowl 39-57 (1982); M.W. Miller et al., A simulation model of helicopter disturbance of molting Pacific black brant, 73 Ecological Modelling 293–309 (1994); D.H. Ward et al., *Response of Geese to Aircraft Disturbances*, 2 Intstitute for Environmental Monitoring and Research 52–56 (2000); D.H. Ward et al., *Response of Fall-staging Brant and Canada Geese to aircraft overflights in southwestern Alaska*, 63 J. of Wildlife Management 373–81 (1999).
[1096] 1 DSEIS at 21.
[1097] *Id.* at 127.
[1098] *Id.* at 110.
[1099] *See, e.g.*, *id.* at 204.

birds could relocate to similar habitats available in the analysis area."[1100] There is no justification or citation supporting that assertion. Much of the habitat loss consequential to the proposed development actions would occur during the decades and centuries *following* construction, much of which is immitigable and effectively permanent. The DSEIS does not analyze this longer-term habitat loss concern. Once a site is operational, overflight-related disturbance may also displace birds (particularly molting waterfowl) from previously used habitat for the lifetime of the drilling pad. More long-term factors such as melted permafrost, impeded drainage patterns, and dust-covered vegetation cause geophysical damage that proves permanent in many cases.[1101] The DSEIS should accurately account for habitat loss in both the short-term and long-term.

Additionally, the SDEIS discusses the potential impacts of oil spills to birds.[1102] However, it only evaluates direct impacts of light or heavy oiling, which can cause mortality or reduce survival or reproduction. However, oil spills have sublethal impacts to birds that last long after spills have been contained and remediated. Following the Exxon Valdez spill in 1989, populations of fish-eating birds continued to experience chronic effects for over two decades. These long-term effects ultimately had a larger negative effect on population size and trend than the immediate impacts from direct contact with oil.[1103]

The DSEIS fails to accurately analyze the effects of the Modular Transport Island (MTI), which would include the use of screeding.[1104] In many instances, the DSEIS describes process of screeding as having a substantial impact on the sea floor, benthic and epibenthic species, and the species that rely on them for food. For example, the DSEIS states, "irreversible direct mortality to fish and benthic organisms would occur as a result of screeding for any action alternative or module delivery option and as a result of the gravel fill required for the MTI (Options 1 and 2). Both the fill footprint and the screeding footprint would be small in relation to the amount of available habitat of similar type and quality."[1105] On that basis, the DSEIS concludes those "irreversible impacts would be relatively small and would not impact the population viability of impacted species."[1106] But the DSEIS does not provide any quantification or reference for the claim that the impact would be relatively small. The DSEIS should quantify the impacts of terraforming and provide evidence that the impact is small.

The DSEIS is also contradictory as to whether the MTI would erode away over time. The DSEIS states, "The alteration of nearshore habitat would also be irreversible because even if the MTI is abandoned and reshaped, it would still exist."[1107] However, this statement contradicts the

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[1100] *Id.* at 174.
[1101] M.K. Raynolds et al., Cumulative geoecological effects of 62 years of infrastructure and climate change in ice-rich permafrost landscapes, Prudhoe Bay Oilfield, Alaska, 20 Global Change Biology 1211–24.
[1102] 1 SDEIS at 189.
[1103] *See, e.g.*, Esler et al. 2018, Fraser et al. 2022.
[1104] 1 DSEIS at 175.
[1105] *Id.* at 161.
[1106] *Id.*
[1107] *Id.*

reclamation requirements of ROP G-1. The DSEIS should more clearly explain what will happen to the MTI, if approved, after it is abandoned, and provide references or modeling that supports those claims.

Impacts on predator/prey relationships will be substantially changed by this development, though the DSEIS fails to describe those changes. For instance, there is little mention in the DSEIS of the potential for human development to attract increased numbers of predators, thereby impacting the breeding success of ground nesting birds.[1108] There is research that suggests a substantial increase in common ravens associated with infrastructure.[1109] An increase in Common Ravens can have disastrous effects on bird communities, as 19% of the common raven summer diet consists of birds. Additionally, the impact this development action will have on lemmings is poorly described, as is the effect this impact will have on breeding bird populations. There is substantial evidence that lemming populations are closely associated with many ground nesting bird species.[1110] This needs to be analyzed in more depth in a revised DSEIS.

X. THE DSEIS FAILS TO ACCURATELY ANALYZE THE IMPACTS TO CARIBOU.

Caribou (*Rangifer tarandus*) are a key species in northern Alaska both ecologically and for Alaska Native subsistence and culture. Given the importance of this species and the multitude of potential impacts from the Willow Project, we appreciate the attention caribou received in the DSEIS. However, there are several big picture issues regarding caribou that the DSEIS fails to address. While the calving period is indeed a critical time for caribou, it is not the only time the Willow Project will affect caribou. As the DSEIS cites, over half the Teshekpuk Caribou Herd (TCH) overwinters on or near proposed project grounds and uses the area for overwintering, migration, calving, post-calving, and insect relief. Because no other caribou herd overwinters on the coastal plain, where Arctic oil and gas development has historically occurred in Alaska, no herd has previously been exposed to intensive development in its year-round range.[1111]

[1108] *Id.* at 181.

[1109] S.A. Backensto, Common Ravens in Alaska's North Slope Oil Fields: An integrated study using local knowledge and science. Master's thesis, University of Alaska, Fairbanks, Fairbanks, Alaska (2010); J. Liebezeit & S. Zack, *Nesting success and nest predators of tundra-nesting birds in the Prudhoe Bay Oilfield – Long-term monitoring*, Wildlife Conservation Society (2007); J.R. Liebezeit et al., *Influence of human development and predators on nest survival of tundra birds, Arctic Coastal Plain, Alaska*, Ecological Applications 19:1628-1644 (2009); A.N. Powell & S. Backensto, Dep't of the Interior, Common ravens (Corvus corax) nesting on Alaska's North Slope Oil Fields, OCS Study MMS 2009-007 (2009).

[1110] J. Bêty et al., Are goose nesting success and lemming cycles linked? Interplay between nest density and predators, 93 Oikos 388–400 (2001); J. Bêty et al., Shared predators and indirect trophic interactions: Lemming cycles and arctic-nesting geese, Journal of Animal Ecology 71:88-98 (2002); R.A. Ims & E.V.A. Fuglei, Trophic interaction cycles in tundra ecosystems and the impact of climate change, BioScience 55:311-322 (2005); J.R. Liebezeit et al., Breeding ecology of birds at Teshekpuk Lake: A key habitat site on the Arctic Coastal Plain of Alaska, Arctic 64:32-44 (2011); P.A. Smith et al., Effects of nest habitat, food, and parental behavior on shorebird nest success, The Condor 109:15-31 (2007).

[1111] 1 2012 IAP FEIS at 4-198.

Consequently, impacts need to be considered across the full annual cycle of the TCH. The DSEIS also lacks nearly any assessment of how the enormous, compounding effects of climate disruption from this project will seriously and adversely impact caribou in the decades to come. These issues, along with additional areas for improvement and remaining items that need to be addressed, are discussed below.

The analysis area for terrestrial mammals is too small to adequately represent the full suite of potential impacts to caribou. The analysis area is defined as that "within 3.7 miles of construction or operation activities and structures…based on research that documented decreased density of maternal caribou within 0.6 to 3.7 miles (1 to 6 km) of active roads and pads during a 2- to 3-week calving period when cows are giving birth or have young calves with lower mobility."[1112] This distance is too small to reflect the full array of annual impacts on a highly mobile species that can travel up to 50 miles per day.[1113] For example, the DSEIS describes 3.7 miles as the distance in which there is decreased density of caribou, but there are also potential ecological effects of increased caribou density beyond this distance, such as forage depletion,[1114] or an increase in predation pressure via newly constructed roads, neither of which appears to be considered in the DSEIS. There may also be impacts at greater distances in other seasons. For example, studies of road responses by caribou have found winter effects at distances up to 15 kilometers.[1115] The DSEIS itself indicates the insufficiency of the analysis area when it states that development of the Willow Project would also increase road traffic along existing Alpine and Greater Mooses Tooth roads, such that "impacts related to roads would extend beyond the alternatives analysis area."[1116] Such statements raise questions as to why the analysis area was not defined to be larger. The analysis area should be expanded to encompass the full scope of potential impacts to caribou across all seasons.

Relatedly, the DSEIS aligns with current scientific understanding[1117] in acknowledging that hunter pressure could increase caribou displacement from roads beyond what is seen in places without hunting.[1118] However, it does not incorporate this recognition into calculation of acres and percentages of potential displacement,[1119] relying instead on studies from the Central

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[1112] 1 DSEIS at 190.
[1113] Alaska Dept. of Fish and Game, Caribou, https://www.adfg.alaska.gov/index.cfm?adfg=caribou.printerfriendly (last visited, Aug. 4, 2022).
[1114] E.g., Joly, K., Chapin III, F.S., Klein, D.R. 2010. Winter habitat selection by caribou in relation to lichen abundance, wildfires, grazing, and landscape characteristics in northwest Alaska. Ecoscience 17(3), 321–33.
[1115] Plante, S., Dussault, C., Richard, J.H., Côté, S.D. 2018. Human disturbance effects and cumulative habitat loss in endangered migratory caribou. Biological Conservation 224, 129–43.
[1116] 8 DSEIS App. G at 23; *see also* 1 DSEIS at 279 ("Air traffic could cause direct and indirect disturbance to caribou availability both within and outside of the Project footprint.").
[1117] Paton, D.G., Ciuti, S., Quinn, M., Boyce, M.S. 2017. Hunting exacerbates the response to human disturbance in large herbivores while migrating through a road network. Ecosphere 8, e01841.; Plante et al. 2018.
[1118] 1 DSEIS at 244.
[1119] *E.g.*, 3 DSEIS, App. E.12 at 15, Table E.12.7.

Arctic Herd (CAH) in Prudhoe Bay and Kuparuk where hunting is not allowed. At the least, the DSEIS should explicitly acknowledge that stated acreages are minimums and should take this into account when assessing potential impacts on the TCH. It further does not account for the increase in predation likely to befall caribou as temperatures warm and more roads can increase predator access to caribou calves. This is a severe oversight to herd survival as it is well documented that the primary cause of mortality in TCH calves is predation and predators (e.g., brown bears, wolves, and wolverines). Studies have documented that these types of predators take advantage of road infrastructure to use as an improved travel corridor.[1120]

There are also issues for caribou with the proposed options for the module transfer islands (MTIs). Option 2, which places the MTI near Point Lonely, is intended to reduce impacts to Nuiqsut's high subsistence use area.[1121] However, it is likely to have stronger impacts on caribou, affecting subsistence opportunities for Nuiqsut. As the DSEIS recognizes, TCH caribou pass repeatedly through narrow corridors on either side of Teshekpuk Lake to access critical insect relief and foraging habitat during the summer.[1122] While the ice road proposed to support Option 2 likely would be gone by this time, other activity would still take place, such as helicopter landings to support stick picking. These would occur at a crucial time for caribou, right in a highly trafficked, narrow, and essential movement corridor. More specific description is needed of these potential impacts and their expected effects, beyond just the recognition that "air traffic for Option 2 would cause markedly more disturbance of caribou than Option 1."[1123] In addition, greater emphasis is needed on the winter activity associated with the MTI and its potential impacts on caribou. The DSEIS states that "[p]eak ground traffic levels associated with the MTI would reach up to 8,900 trips daily."[1124] The statement that this "could have a high potential for disturbance"[1125] vastly underestimates the true magnitude of such levels of traffic on caribou. Such a traffic volume equates to just over six trips per minute. This would result in a constant stream of vehicles. There is no way caribou or other species, let alone subsistence hunters, could cross ice roads with such traffic levels. In addition, while it is true that reducing human activity can likely lessen the impact on caribou disturbance,[1126] limited data are available on the effectiveness of using vehicle convoying[1127] or traffic reduction to reduce responses of maternal caribou to inactive infrastructure during calving periods. Based on this lack of data, it is unclear why the DSEIS cites convoying as a viable mitigation measure for impacts to caribou. Ultimately, it appears that the roads will present themselves as major barriers to movement for

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[1120] Wielgus, R.B., Vernier, P.R. and Schivatcheva, T., 2002. Grizzly bear use of open, closed, and restricted forestry roads. Canadian Journal of Forest Research. 32, 1597–1606; Whittington, J., St. Clair, C.C. and Mercer, G., 2005. Spatial responses of wolves to roads and trails in mountain valleys. Ecological applications. 15, 543–53.
[1121] 1 DSEIS at ES-4.
[1122] *Id.* at 99.
[1123] *Id.* at 209.
[1124] 8 DSEIS, App. G at 50.
[1125] *Id*.
[1126] Skarin, A., 2006. Reindeer use of alpine summer habitats Vol. 2006, No. 2006: 73
[1127] Prichard, A.K., Welch, J.H. and Lawhead, B.E. 2022. The Effect of Traffic Levels on the Distribution and Behaviour of Calving Caribou in an Arctic Oilfield. ARCTIC 75, 1-19.

caribou.[1128] As roads (and activity) create habitat fragmentation to seasonal ranges, caribou will lose preferred habitat and be forced into suboptimal habitat.

Overall, populations of migratory caribou and wild reindeer have declined by 56% across the Arctic over the last two decades with climate change events cited as a plausible hypothesis for the overwhelming decline.[1129] For example, the Western Arctic Caribou Herd had a population estimate of 188,000 in 2021, which is down from 244,000 in 2019. The last time the herd was estimated to be this low was in the 1970s.[1130] Similarly, the TCH population is on the decline. This will only be exacerbated by impending climate change rapidly initiating landscape-level changes to their arctic habitat. Changing weather, as cited in the DSEIS, will bring increased rain-on-snow events; increased standing water duration, depth, and presence; more severe insect harassment; longer snow-free seasons; and changes in vegetation composition and availability. The DSEIS does not expound on this information, however; nor does it connect that these climatic changes will limit the options caribou have to adapt to their changing world, especially if these climatic issues are compounded all at once. This is especially noteworthy if caribou are forced into an already suboptimal habitat because of habitat-connectivity issues due to roads and infrastructure avoidance. BLM needs to assess if it is even possible for caribou to exist in the proposed future landscape of the Arctic, given expected changes resulting from climate change, and the added impacts of this project. This analysis is completely absent from the DSEIS.

Winter is a critical time for caribou. Anthropogenic and industrial disturbances further stress caribou activity budgets during a time when foraging opportunities are limited and caribou are already relying on body stores of energy for survival and gestation.[1131] Studies in other ungulate species of displacement and altered habitat use due to energy development have noted that fitness costs are often greater during winter, when individuals already exhibit a negative energy balance.[1132] Further energetic costs at such a time may lead to loss of body mass and depletion of vital energy reserves.[1133] There has been little study of winter responses by caribou to industrial development and activity in Alaska. Nonetheless, studies from Canada reveal that

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[1128] Prichard *et al*. 2022.
[1129] Russell, D.E., Gunn, A., and Kutz, S. 2019. Migratory tundra caribou and wild reindeer. In: Osborne, E., Richter-Menge, J., and Jeffries, M., eds. Arctic Report Card: Update for 2018. Effects of persistent Arctic warming continue to mount.
[1130] Russell *et al*. 2019.
[1131] Barboza, P.S., Parker, K.L. 2008. Allocating protein to reproduction in Arctic reindeer and caribou. Physiological and Biochemical Zoology 81(6), 835–55.; Taillon, J., Barboza, P.S., Côté, S.D. 2013. Nitrogen allocation to offspring and milk production in a captial breeder. Ecology 94(8), 1815–27.
[1132] Northrup, J.M., Anderson Jr., C.R., Wittemyer, G. 2015. Quantifying spatial habitat loss from hydrocarbon development through assessing habitat selection patterns of mule deer. Global Change Biology 21(11), 3961–70.
[1133] Bradshaw, C.J.A., Boutin, S., Hebert, D.M. 1998. Energetic implications of disturbance caused by petroleum exploration to woodland caribou. Canadian Journal of Zoology 76, 1319–24.

disturbances can lead to flight responses in caribou,[1134] causing them to expend additional energy reserves, and that caribou may avoid human infrastructure and disturbance in the winter.[1135] Such factors can have greater effects in years of high snow depth,[1136] when energetic costs of movement increase[1137] and foraging opportunities are reduced.[1138] Any extra expenditure of energy that caribou undertake as a result of interaction with oil and gas activity or developments is of concern as reproductive success in caribou is strongly correlated with nutritional stress.[1139] Late winter body mass of female caribou has been strongly linked to calf production and survival,[1140] potentially influencing population growth rates. In caribou, it has been documented that weight loss exceeding the norm of 10–15% during the winter effects maternal undernutrition and weight loss during pregnancy resulting in serious consequences to the developing fetus and ultimate survivorship of the calf. Studies of simulated petroleum exploration in the Arctic impacted caribou by an almost 21% increase in daily movement energy expenditure, resulting in a net loss to energy requirements.[1141] This does not include the stresses that will result from effects of climate change discussed above. It is thus crucial that BLM fully analyze the potential consequences to caribou of winter disturbances as intense as those described associated with the MTI.

In addition to the impacts of body condition on decreased parturition, the Alaska Department of Fish and Game (ADFG) has observed a notable increase in mortality in TCH caribou. They are documenting fully articulated skeletons curled up as though sleeping with little or no scavenging to the remains, suggesting starvation as the ultimate mechanism of death.[1142] While no body condition study has yet been performed, anecdotally, the TCH caribou population

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[1134] Bradshaw (1997) at 1127–33; Bradshaw (1998).
[1135] Johnson, C.J., Russell, D.E. 2014. Long-term distribution responses of a migratory caribou herd to human disturbance. Biological Conservation 177, 52–63.; Plante et al. 2018.
[1136] Bradshaw at 1319–24.
[1137] Fancy, S.G., White, R.G. 1987. Energy expenditures for locomotion by barren-ground caribou. Canadian Journal of Zoology 65, 122–28.
[1138] Fancy, S.G. 1986. Daily energy budgets of caribou: a simulation approach. PhD Thesis, University of Alaska, Fairbanks.; Hobbs, N.T. 1989. Linking energy balance to survival in mule deer: development and test of a simulation model. Wildlife Monographs 101, 1-39.; Bradshaw et al., at 1319–24.
[1139] Cameron, R.D., Smith, W.T., White, R.G., Griffith, B. 2005. Central Arctic caribou and petroleum development: distributional, nutritional, and reproductive implications. Arctic 58, 1-9.
[1140] Albon, S.D., Irvine, R.J., Halvorsen, O., Langvatn, R., Loe, L.E., Ropstad, E., Veiberg, V., Van der Wal, R., Bjørkvoll, E.M., Duff, E.I., Hansen, B.B., Lee, A.M., Tveraa, T., Stein, A. 2017. Contrasting effects of summer and winter warming on body mass explain population dynamics in a food-limited Arctic herbivore. Global Change Biology 23, 1374–89.; Cameron et al. 2005.; Veiberg, V., Loe, L.E., Albon, S.D., Irvine, R.J., Tveraa, T., Ropstad, E., Stien, A. 2017. Maternal winter body mass and not spring phenology determine annual calf production in an Arctic herbivore. Oikos 126, 980–87.
[1141] Webster, L. and Young, J. 1997. The effects of human related harassment on caribou (Rangifer tarandus). Ministry of Environment.
[1142] Pers. Comm. ADFG Biologist Shawna Karpovich. 28 July 2022.

has been on the decline. As a result, ADFG biologists consequently prioritized a photo census (previously performed 5 years ago in 2017[1143]) on the TCH. This photo census was completed in July 2022 and population estimates from the census should be available in September 2022. Once these updated population estimates are available, BLM must incorporate this pertinent new information into its NEPA analysis. The ultimate concern is that body condition is being affected by reduced forage quality as climate change continues to exacerbate forage timing and quality for TCH.

ADFG conducted a large, multiyear analysis of the TCH in 2014.[1144] The population was on the decline at the time, as it is now. The mechanisms for decline were cited as most likely related to poor summer and winter nutrition, high levels of calf predation in winter, and nutritionally mediated risk of predation. One proxy for body condition in caribou is neonate calf weight, which is "thought to be indicative of the body condition of cows coming out of winter. Caribou calf development peaks in the third trimester, and captive research has shown that caribou are somewhat dependent on protein intake in late winter to build that calf." In this analysis, the TCH had the lowest calf weights recorded in North America, and weights had been steadily decreasing from 2009 to 2014. These reduced calf weights put the TCH at a baseline disadvantage energetically as compared to other Alaskan herds and any threat to its food security is significant cause for concern that BLM must consider in the DSEIS.

When considering direct and indirect impacts, it is important that the potential for habituation to disturbance not be overstated, but that a realistic and science-based view be taken. Treatment of the potential for habituation by caribou to infrastructure and human activity was inadequate in the DSEIS. We appreciate BLM's recognition, in line with the best available science, that "except perhaps for a small proportion of the most tolerant females, maternal caribou with young calves do not habituate to road traffic."[1145] However, BLM insufficiently applies this information and asserts contradictory or unsupported statements at other points in the DSEIS. For example, the DSEIS states that "TCH animals have already been exposed to winter ice roads in this area and may have habituated to some degree."[1146] While it cannot be denied that TCH animals have been exposed to winter ice roads, there is currently no evidence of habituation. Notably, no citations are provided for this statement. Similarly, BLM asserts that "[t]he lack of subsistence hunter road access to infield roads between BT1 and BT4 may allow caribou to habituate to linear infrastructure more readily and allow caribou to establish a pattern of movement through (gravel) roadless corridor along Judy (Iqalliqpik) Creek. Ground traffic rates on these infield road would likely be reduced during the summer. . . . [T]he reduced ground traffic may allow caribou to habituate to linear infrastructure" without any citations provided to support this claim of potential habituation.[1147] This needs to be justified with references from

[1143] Klimstra, R. 2018. Summary of Teshekpuk Caribou Herd Photo Census Conducted July 14, 2017. Fairbanks, AK: ADF&G, Division of Wildlife Conservation.
[1144] Alaska Department of Fish and Game. 2014. Teshekpuk Caribou Herd Overview Board of Game, Kotzebue, AK.
[1145] 1 DSEIS at 200.
[1146] *Id*. at 208.
[1147] 8 DSEIS App. G at 34.

scientific literature or removed. There is not clear evidence for habituation of caribou to infrastructure. Recent work with migratory caribou in Canada showed that caribou continued to avoid even well-established infrastructure, leading the authors to suggest that long-term habituation was unlikely.[1148] Similarly, recent studies of the Central Arctic Herd, just to the east of the Reserve, found continued avoidance of infrastructure over a 40-year period, despite use of technology and infrastructure design intended to reduce impacts to caribou.[1149] This avoidance occurs not only during the calving and post-calving seasons, but also during mosquito harassment, when female caribou continue to avoid infrastructure more than expected by chance, despite insect effects.[1150] The DSEIS continues to misstate the potential habituation. For example, the analysis for all alternatives states that caribou may be attracted to gravel infrastructure to for oestrid fly relief and travel, suggesting that thousands of animals may use gravel roads and pads.[1151] This discussion needs to be updated to accurately reflect the science.

There is need for additional discussion and analysis in the DSEIS regarding caribou responses to aircraft activity associated with the Willow Project. One important addition would be further analysis of the tradeoffs between impacts of air traffic and road traffic on caribou. The ANILCA 810 Analysis in Appendix G states that, "The increase in air traffic [under Alternative D] would likely not be enough to outweigh the benefits of reduced deflection of caribou as they migrate toward Nuiqsut's core hunting grounds to the west of the community."[1152] This, however, is stated, not demonstrated. No citations or clear rationale for this statement are given. The tradeoff between aircraft and road activity seems to be a key tradeoff between alternatives B and D or E in terms of their impacts to caribou, and thus resulting impacts for subsistence hunters. Better support is needed for the statements that are given to align with the best-available science and to allow the public adequate opportunity to compare between alternatives. Additionally, there is no mention of the compounding effects that caribou may experience when exposed to the additive stimuli of road traffic, air traffic, and human activity simultaneously, if or when this could occur. BLM must analyze these impacts.

Questions also remain about the ability of proposed aircraft restrictions to protect caribou. BMP F-1 sets aircraft restrictions over caribou winter range from Dec 1 – May 1 and over the Teshekpuk Lake Caribou Habitat Area from May 20 – Aug 20.[1153] It is unclear whether any restrictions on aircraft altitude will exist from May 2 – 19 and Aug 21 – Nov 30 in these important caribou areas. Caribou can be present in the area throughout the entire year,[1154]

[1148] Plante, S., Dussault, C., Richard, J.H. and Côté, S.D., 2018. Human disturbance effects and cumulative habitat loss in endangered migratory caribou. Biological Conservation, 224 p.129-143.
[1149] Prichard, A.K., Lawhead, B.E., Lenart, E.A. and Welch, J.H., 2020. Caribou distribution and movements in a northern Alaska oilfield. The Journal of Wildlife Management, 84 p.1483-1499.
[1150] Prichard *et al.* 2020.
[1151] 1 DSEIS at 203.
[1152] 8 DSEIS App. G at 36.
[1153] *Id*. App. I at 16.
[1154] Person, B.T., Prichard, A.K., Carroll, G.M., Yokel, D.A., Suydam, R.S., George, J.C. 2007. Distribution and movements of the Teshekpuk Caribou Herd 1990-2005: Prior to oil and gas

making it important for protections from aircraft disturbance to likewise cover the whole year and all of the northeastern Reserve. BLM should expand upon existing BMPs to better protect caribou year-round. Further, it is unclear in the DSEIS whether proposed protections really will be effective for protecting caribou. While the DSEIS claims that "aircraft would maintain minimum altitudes consistent with best management practice ROP F-1, F-2, and F-3,"[1155] the project design features provided by ConocoPhillips say that they will comply with BMP F-1 "when feasible."[1156] Among the potential reasons for deviation, ConocoPhillips says "[s]ome air traffic would be required to support the Project," as well as for regulatory compliance and post-ice road cleanup. ConocoPhillips does not specify what 'Project support' elements would be included here, but this could be interpreted broadly, questioning whether impacts really will be avoided. Additionally, ROP F-1 states that the use of aircraft "should be kept to a minimum" with no clear definition of what this means in practice.[1157]

Another example of the lack of analysis of mitigation effectiveness is the failure of the DSEIS to quantify impacts of anticipated deviations to stipulations and BMPs. For example, the DSEIS lists that deviations to BMP E-7 about minimum distances between pipelines would be needed "where roads and pipelines converge on a drill site pad or at narrow land corridors between lakes where it is not possible to maintain 500 feet of separation between pipelines and roads without increasing potential impacts to waterbodies."[1158] To better demonstrate the potential impacts of such deviations, the DSEIS should quantify how often this will occur in terms of both number of expected deviations based on project design and miles of deviation out of total miles of pipeline for each alternative. Similar quantification should be done for other expected deviations. Quantification details are provided for other deviations to standard project infrastructure throughout the DSEIS (such as the total miles of pipeline without a parallel road, total number and types of water crossing (specifying bridges or types of culverts), total number of turnouts necessary on stretches roads, etc.[1159]), and is notably absent to deviations in the pipeline/road plans.

There are several other instances where the DSEIS is still internally inconsistent, erroneous, or lacks important information needed by the public to determine impacts. First, additional information is needed for Figure 3.12.4, which depicts seasonal movements of the TCH.[1160] The current figure does not give any description of what data or methods were used to produce the maps beyond reference to an industry report that does not appear to be publicly available online. This is insufficient to allow interpretation and public review of the DSEIS. Second, Figure E.12.2. depicts seasonal distributions of the CAH.[1161] However, it appears that the same kernel is shown for each season. This was most likely a simple error but should be

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development. Arctic 60, 238–50.
[1155] 1 DSEIS at 14.
[1156] 8 *id*. App. I at 24.
[1157] 1 *id*. at 95.
[1158] *Id*. at 316.
[1159] *Id*. at ES-8 and ES-9
[1160] 2 *id*., App. A. at 54.
[1161] 6 *id*., App. E.12 at 8.

corrected to provide an accurate picture of seasonal variability for the CAH. Third, multiple citations are given for Reimers and Colman 2009, however the appropriate year for this citation, given the information in the References section, is 2006 not 2009.[1162] Fourth, the ANILCA 810 Analysis cites displacement distances of between 0.6–3.1 miles from roads for maternal caribou, referencing Chapter 3.[1163] In reality, the text of Chapter 3 acknowledges a bigger range of displacement — up to 3.7 miles.[1164] Appendix G should be updated to conform to the range listed in Chapter 3. Fifth, shapefiles or other spatial data suitable for loading into a geographic information system that depict infrastructure locations under the various alternatives were not provided with the DSEIS. When we requested these data from BLM during the last DEIS process, we were informed that they were proprietary information belonging to ConocoPhillips and would not be shared. This is unacceptable if the public is to be able to evaluate the proposed alternatives and their potential impacts on Federal public lands and resources. Simply referring to the maps published with the DSEIS is insufficient to allow the public to consider other data or depictions of data and more meaningfully compare between proposed alternatives. Such a decision also does not align with prior practice by BLM with other EIS processes where shapefiles of proposed infrastructure, stipulation areas, etc., were provided along with the DSEIS for public review (e.g., Arctic National Wildlife Refuge Coastal Plain Oil and Gas Leasing DSEIS and FEIS,[1165] Ambler Mining District Industrial Access Project DSEIS[1166]). It is crucial that spatial data be provided for this and other future NEPA processes that will allow the public adequate opportunity to evaluate the proposed alternatives and their potential consequences.

XI. THE DSEIS UNDERSTATES IMPACTS TO POLAR BEARS.

The polar bear discussion should characterize the affected environment; estimate the habitat loss, injury/mortality and disturbance and displacement that the project would cause for bears, and then assess those impacts together with similar impacts caused by other existing stressors and reasonably foreseeable future ones. It fails to do most of these things.

The affected environment description understates the beleaguered condition of the Southern Beaufort Sea (SBS) bears that the project would impact and the significant risk of extirpation the population is already facing. It neglects to estimate how many bears use the project area and may be impacted by project activities. The injury/mortality analysis ignores the inescapable risk of den disturbance and potential mortality should that risk materialize, and appears to assume that existing protections imposed through other permitting processes, like FWS's one-mile protective buffer around detected bear dens, will prevent mortality. The text is ambiguous, and the analysis missing entirely, about the prospect of injury.

[1162] Reimers, E., Colman, J.E. 2006. Reindeer and caribou (*Rangifer tarandus*) response towards human activities. Rangifer 26(2), 55–71.
[1163] 8 DSEIS App. G at 23.
[1164] 1 *id*. at 190.
[1165] https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/about/alaska/coastal-plain-arctic-national-wildlife-refuge
[1166] https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=111135.

The disturbance/displacement analysis fails to clearly identify the relevant factors for analysis – sources, locations and intensity of disturbances; likelihood, temporal extent and number of disturbances; number of bears disturbed; and population-level effects. The analysis area is unclear and in any event, there isn't any meaningful analysis. Additionally, project impacts are not considered cumulatively with other existing and future impacts because BLM provides only an incomplete list of projects causing those other impacts and doesn't quantify or analyze any of them. Finally, the identified mitigation measures can't be expected to avoid significant impacts to polar bears.

A. The Affected Environment Section is Inadequate.

The DSEIS continues to understate the beleaguered condition of the SBS population.[1167] It does note the current abundance estimate of 907 animals but fails to disclose that this represents a dramatic decline of around 50% since the 1990s.[1168] This population is among the most imperiled, if not the most imperiled, of all polar bear populations worldwide.[1169] The bears are experiencing energetic stress, poor cub survival, and poor body condition.[1170] SBS bears are increasingly denning on land in Alaska as sea ice diminishes, with terrestrial denning animals now outnumbering those denning on sea ice each season.[1171] The distance that bears need to swim from shore to ice in the Beaufort Sea has increased markedly.[1172] The population is under extreme stress; additional injuries or metabolic costs are particularly significant when added to these precarious existing conditions. Rather than acknowledge these facts, the DSEIS simply states that polar bears spend much of their time in coastal areas and then move to pack ice offshore during the summer, citing a 2004 study for this proposition.[1173] This fails to accord proper weight to the increasing number of bears remaining on land due to drastic loss of sea ice.[1174]

[1167] We acknowledge that BLM has added some of this information to the Cumulative Effects discussion. But these are existing, dire conditions that bears are already facing, not effects of the Willow project combined with other RFFAs on bears and as such, belong in the Affected Environment section.

[1168] Bromaghin 2015.

[1169] *See, e.g.*, Polar Bear Specialist Group, "Scientific Report on Polar Bear Conservation Status and Research Efforts," Meeting of the Parties to the 1973 Agreement on the Conservation of Polar Bears Longyearbyen, Svalbard, Norway March 4-6, 2020, at p.4 (Status Table showing SBS bears with the greatest population decline, worst sea ice metrics, and highest ratio of human-caused removals:population); available at https://polarbearagreement.org/index.php/resources/meeting-documents/2020-polar-bear-mop/presentations.

[1170] Rode 2010; Rode 2014.

[1171] E.g., Fischbach 2007.

[1172] N.W. Pilfold et al., Migratory Response of Polar Bears to Sea Ice Loss: to Swim or Not to Swim, 40 ECOGRAPHY 189 (2017).

[1173] 1 DSEIS at 215.

[1174] J.F. Bromaghin et al., Polar Bear Population Dynamics in the Southern Beaufort Sea During

Some additional information further illuminates the affected environment. The MMPA defines "Potential Biological Removal" (PBR) 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 level (OSP).[1175] OSP, in turn, refers to "the number of animals which will result in the maximum productivity of the population or the species, keeping in mind the carrying capacity of the habitat and the health of the ecosystem of which they form a constituent element."[1176]

The FWS has calculated a PBR from this population of 14 animals annually, but the actual number of removals has been far greater than that for many years. The annual subsistence take alone from 2006–2015 was over 33 bears, far in excess of PBR.[1177] As FWS and U.S. Geological Survey researchers recently noted, "[g]iven that the subsistence take already exceeds PBR, any additional takes related to seismic surveys would not be able to be authorized without impacting the ability of SBS bears to achieve or maintain its optimum sustainable population."[1178]

There is a voluntary agreement between the U.S. and Canada which sets a voluntary quota – currently 33 bears. Even if this quota is adhered to, it represents more than twice the mortality level consistent with reaching OSP and thus impedes the recovery of the population.

Other non-natural mortalities, such as those resulting from negative human-bear interactions,[1179] further limit the ability for the stock to reach or maintain its OSP – or to recover from its threatened status. The DSEIS does not estimate non-industry related polar bear mortality but should do so.

The DSEIS also notes that "approximately 3,126.6 acres of mapped potential terrestrial denning habitat" are present in Willow's analysis area, though "[s]ome parts of the southeast analysis area are not mapped for potential terrestrial denning habitat.[1180] This is a significant amount of acreage of potential denning habitat that is vulnerable to impacts from Willow, and highlights why BLM's insufficient analysis of potential impacts is a significant oversight that

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a Period of Sea Ice Decline, 25 ECOLOGICAL APPLICATIONS 634 (2015).

[1175] 16 U.S.C. § 1362(20).

[1176] 16 U.S.C. § 1362(9).

[1177] U.S. Fish and Wildlife Service, Draft Southern Beaufort Sea Polar Bear Stock Assessment (2017) at 11-13 (noting average number of bears taken for subsistence from 2006-2015 was 33.2).

[1178] Wilson and Durner (2019) at 6, Seismic survey design and impacts to maternal polar bear dens (2019) at 6. The quote references seismic surveys because those were the focus of the study, but the same point holds true for any additional lethal take of bears from the SBS population: it cannot be authorized without impacting the ability of SBS bears to achieve OSP.

[1179] *E.g.*, "Man charged in Alaska for killing a polar bear and burning the body after letting it rot for 5 months,"https://www.cnn.com/2019/07/12/us/polar-bear-alaska-killing-trnd (regarding a bear killed in December 2018).

[1180] 1 DSEIS at 215.

must be remedied. Moreover, BLM should explain whether this southeast area is likely to remain unmapped due to distance from the coast, or whether this is simply a gap in data that remains to be filled. "Potential terrestrial denning habitat is defined as a topographic feature at least 4.3 feet in height and having at least an 8-degree slope, which provides conditions for drifting snow."[1181] Thus, terrestrial denning habitat mostly occurs in areas of linear features following rivers and drainage courses, lake shores, and coastal banks.

The final EIS should add all of this information to the "Affected Environment" section as it brings much greater clarity to the grave challenges facing SBS bears and punctuates the need for a very careful assessment of the impacts of pioneering new industrialization and fragmentation of designated polar bear critical habitat and adjacent or nearby habitat areas.

B. BLM's Impacts Analysis is Deficient

The DSEIS underestimates the threat of injury or mortality to polar bears in several ways; the discussion of the topic covers less than one page.[1182] It fails to estimate the risk of injury or mortality to denning mother bears or cubs by failing to consider key factors bearing on that risk: the estimated number of dens and denning bears in the project area; likelihood of detecting those dens in advance of project activities each winter; and ultimately the foreseeable injuries and mortalities that will flow from authorizing 30 years of industrialization in polar bear habitat. Also, it acknowledges that construction noise could cause injury but fails to quantify the sources and locations of that noise and probability of impacting a denning or active bear. Regarding disturbance and displacement, BLM appears to have dramatically decreased the noise-impacted area for analysis purposes without explanation in the text, though the maps still show the very large areas previously identified. In any event, the analysis is lacking because there is ultimately no estimate of bears potentially disturbed or assessment of the impact of aggregate project disturbance to individual bears or to the SBS population.

1. Impacts to denning bears.

The DSEIS neglects to mention the risk of mortality due to disturbance of denning bears and otherwise fails to adequately address non-lethal impacts to denning maternal bears and cubs. It fails to estimate the number of bears and cubs that may den within one mile of various project activities. Disturbance that causes a mother bear to leave the den will be highly detrimental to the

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[1181] *Id*. at 215. We note that polar bear expert and former U.S. Geological Survey polar bear lead Dr. Steven Amstrup has explained that "[t]o be consistent with [a] precautionary approach, which is necessary given the imperiled nature of this polar bear population, any habitats showing a difference of 1m in elevation and a slope of 8 degrees or greater should be considered potential denning habitat, and should be avoided by activities." *See* Letter from Dr. Steven C. Amstrup, Chief Scientist for Polar Bears International, to U.S. Fish and Wildlife Service re: Proposed Incidental Harassment Authorization at 85 Fed. Reg. 79,082 (Dec. 8, 2020) at ¶ 70.

[1182] 1 DSEIS at 231, 233. There is some additional mention in the context of specific module delivery options but this doesn't address the analytical shortcomings raised here.

mother and fatal to the cubs. To fully disclose potential impacts to polar bears from the project, BLM must acknowledge and estimate the potential for injury or mortality.

In December 2019, FWS and 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 Arctic National Wildlife Refuge Coastal Plain (Wilson and Durner).[1183] The study provided a method for quantitatively calculating take while considering mitigation measures such as temporal and geographic restrictions and den-locating technologies (aerial Forward Looking Infrared (FLIR or AIR) detection surveys).[1184] Iterations of this model have been used by DOI agencies in other settings as well, including estimating take of polar bears from ConocoPhillips' first Willow proposal. FWS relied on this modeling protocol in the biological opinion produced in that prior process for purposes of its quantitative take estimates.[1185] BLM should employ this and/or other scientifically sound models to estimate impacts to denning bears for NEPA purposes.

There are a significant number of known dens in and around the project area, particularly near Oliktok Dock on nearby barrier islands, near the Kuparuk gravel road, and near the ice road that would connect the gravel mine to the drill pads.[1186] Indeed, BLM recognizes in the "affected environment" section that "[t]he nearest known polar bear maternal dens are approximately 3 miles from proposed gravel and ice infrastructure (in this case, the HDD pads) for all action alternatives and less than 0.1 mile from the proposed ice road for module delivery options 1 and 2…"[1187] Known dens almost certainly represent only a portion of total dens occupied in the project area because dens are difficult to detect and the project area generally has not been the subject of extensive den detection efforts. So many more dens in the project area are entirely possible. As a first step in estimating the potential for den disturbance, BLM must estimate the number of dens that may be present in the analysis area in a given year, i.e., within one mile of any wintertime project activity.

A next step would be to estimate the likelihood that ConocoPhillips would be able to successfully detect the dens estimated to be present, year after year, for 30 years. Dens are difficult to detect, and even the best available technology will likely fail to detect them more often than not.[1188] The DSEIS does not mention this fact, or den detection at all, beyond ROP C-1's directive to "make efforts to locate occupied polar bear dens" for activities located in known or suspected denning habitat between November and April.[1189]

[1183] Ryan R. Wilson & George M. Durner, *Seismic Survey Design and Effects on Maternal Polar Bear Dens*, J. OF WILDLIFE MGMT. (2020) (attached).
[1184] *Id*.
[1185] U.S. Fish & Wildlife Serv., Biological Opinion for the Willow Master Development Plan (2020).
[1186] 3 DSEIS at Figure 3.13.4.
[1187] 1 DSEIS at 215.
[1188] Smith et al. (2020) estimated that the detection rate for actual polar bear dens in northern Alaska was 0.45.
[1189] 1 DSEIS at 219.

The best available technology for detecting dens over large areas such as the Willow project area is aerial infrared surveys (AIR).[1190] Recent studies have illuminated that AIR technology is only able to detect less than 50% of actual dens and is prone to "false positives" that detect some other heat source.[1191] Weather conditions significantly impact the efficacy of AIR surveys, and the optimal conditions for conducting them rarely exist.[1192] One way to increase the effectiveness of AIR surveys is to perform multiple surveys over a longer time period, but that may not be possible given ConocoPhillips' potential start dates for annual construction.[1193] Surveys are confined to December and January because they need to be done after bears den but before they give birth to cubs.

In response to previous comments on the 2019 draft EIS pointing out the limitations of den detection via AIR, BLM conceded nothing and changed no text in the analysis.[1194] It did not, however, contest the comments that 1) AIR surveys detect less than 50% of actual dens; and 2) weather conditions significantly impact the efficacy of AIR surveys.[1195]

Instead, BLM raised these related but non-responsive arguments about the Wilson and Durner (2019) and Smith (2020) studies of AIR efficacy: 1) AIR surveys are effective outside of the weather windows reported in both (citing unnamed "recent industry studies and results of annual AIR surveys"; 2) dens with ceiling thickness greater than 100 cm have been detected in several industry studies; 3) it was only handheld infrared surveys that couldn't detect dens with more than 100 cm ceiling thickness, not aerial surveys.[1196] We address these in turn.

First, it remains undisputed that weather conditions significantly impact AIR efficacy. BLM should provide any studies showing anything to the contrary. Second, it should also provide any industry studies detecting dens with ceiling thickness greater than 100cm – but even if that is the case, it is the overall successful den detection rate that counts, and BLM has not disputed the >50% figure. The third statement is simply incorrect; AIR surveys, not just handheld surveys, failed to detect dens with ceiling thickness greater than 100cm.

[1190] This is also referred to as Forward-looking Infrared (FLIR), an acronym that appears in various studies, comment letters and BLM responses. The prevailing term now seems to be AIR so we use that herein, but it is interchangeable with FLIR.
[1191] E.g., Smith 2020.
[1192] E.g., Wilson and Durner (2019) at 14 (estimating that optimal conditions exist 4.4% of the time).
[1193] The 2020 DSEIS indicated that the "winter season is from approximately December 15 through April 25 (132 days) to account for time to construct ice roads and the usable ice road season (from approximately January 25 through April 25). 1 2020 SDEIS at 8, Table 2.3.2, note b. The current DSEIS confirms that the ice-road season is expected to be 90 days (January 25 through April 25) so it appears that ice road construction would likely begin approximately December 15 of Year 1.
[1194] 4 2020 Willow final EIS, App. B-3 at 48.
[1195] *Id*.
[1196] *Id*.

In any event, BLM failed to incorporate even its own, apparently more optimistic, view of AIR efficacy into its analysis of potential harm to denning bears. Since this is the best technology and most likely to be used during the Willow project, BLM must address the likelihood of the presence of denning bears within one mile of any winter activities throughout the life of the project, and the likelihood of successfully detecting those dens in advance of the activities so that den disturbance can be avoided. Indeed, BLM recognizes that some dens have historically occurred within 0.1 miles of ice infrastructure for certain module delivery options.

The new Beaufort Sea ITR requires holders of a Letter of Authorization (LOA) to conduct at least two AIR surveys – the first between November 25 and December 15, and the second between December 5 and December 31. As discussed below, it is unclear whether ConocoPhillips will seek and obtain a LOA. In any event, because AIR provides far from reliable results, successful den detection cannot be assumed and the risk of injury or mortality to denning bears cannot be eliminated. Bears in an undetected den could be disturbed by many project activities and related noise, including ice or gravel road construction and use, gravel mining (blasting), heavy equipment operation, camp movements, and any of the extensive ground and air transportation actions described for the action alternatives and module transport options. Some of these actions could also make physical contact with a den and/or the bears within, presenting an additive risk of injury or death.

Additionally, BLM recognizes that all three module delivery options risk disturbing denning bears but again doesn't quantify that risk. Option 1 (Atigaru Point MTI) would require two 10-acre multi-season ice pads, one housing a 100-person camp, located in terrestrial denning critical habitat for multiple winters.[1197] Option 2 (Point Lonely MTI) presents similar significant human uses and industrial presence in terrestrial denning critical habitat, with double the amount of ice roads compared to Option 1.[1198] Option 3 involves a 100-person camp on a 15-acre ice pad in two winters and would heavily impact denning habitat and offshore critical sea ice and barrier island habitat, due to the extensive additional traffic and activity that would occur around the Oliktok Point area. As noted below, the analysis area for Option 3 includes part of the Barrier Island No Disturbance Zone near Oliktok Point – so this Option would by definition cause disturbance and adversely impact that critical habitat feature. None of this threat of injury is quantified. BLM must estimate the risk of injury or mortality to polar bears associated with the different module transport options, as well as all the action alternatives. Moreover, impacts from module transport highlight the fact that BLM should consider an alternative without modules being delivered via barge, to compare tradeoffs and assess potential benefits to polar bears and other marine mammals.

2. Injurious noise impacts.

BLM notes that "Noise from construction activities, such as pile driving or blasting at the mine site, may result in Level A harassment (Appendix E.13, Table E.13.2)."[1199] That table shows the thresholds at which noise is known to cause Level B (disturbance, or non-injurious

[1197] 1 DSEIS at 233.
[1198] *Id*. at 234.
[1199] 1 DSEIS at 231.

harassment) and Level A (injurious) impacts to different marine mammals.[1200] BLM adds that "Because mining would be one of the closest activities to the coast (8 miles), would occur in the winter when bears would be denning, and would be one of the loudest noise sources of the Project, it could have a larger impact on bears than other activities."[1201]

Table E.13.3 summarizes the noise that some project activities would create, but notably omits the mining (and associated blasting and pile driving) that BLM says would be the loudest and most impactful noises for polar bears.[1202]A short list of unobtrusive noise sources and associated short distances to disturbance thresholds are then depicted in Table E.13.4.[1203] Based on this table, the reader would conclude that, other than vessels (7,067 feet), there is no noise source associated with the Willow project that creates any significant distance to disturbance threshold for any wildlife species.

BLM must add mining/blasting to the list of project activities, characterize the noise profile of this most-impactful activity and estimate the distance to disturbance thresholds for it, as it has done for other noise sources. It should also quantify the duration and frequency of blasting necessary to extract the gravel that would be needed for the project, to add a temporal component to the disturbance analysis. It should estimate the likelihood and number of bears that may be exposed to injurious noise levels. In short, BLM must provide the data and analysis to quantify its statement that mining could have a larger impact on bears than other activities. As it stands, any conclusion that mining/blasting or other project noises not listed in Table E.13.4 will not impact polar bears is unsupported by the evidence.

3. Disturbance and displacement impacts to denning and surface bears.

i. Project activities may significantly disturb and displace polar bears.

Non-denning bears, especially females and females with cubs, have demonstrated sensitivity and strong avoidance reactions to the noise produced by snowmachines and tundra vehicles at a distance of over two miles.[1204] In general, disruption of an animal's activity has associated energetic costs, and thus polar bear behavioral responses of vigilance and flee could potentially interrupt rest and feeding opportunities, potentially increasing polar bear energy expenditure.[1205] Further, in the open-water environment polar bears have been found to respond

[1200] 6 *id*., App. E.13 at 11.
[1201] 1 *id*., at 231.
[1202] 6 *id*., App. E.13 at 12.
[1203] I*d*., at 13.
[1204] Anderson & Aars (2007).
[1205] Watts, P. D., Ferguson, K. L., & Draper, B. A. (1991). Energetic output of subadult polar bears (Ursus maritimus): resting, disturbance and locomotion. *Comparative biochemistry and physiology. A, Comparative physiology*, *98*(2), 191-193; Dyck, M. G., & Baydack, R. K. (2004). Vigilance behaviour of polar bears (Ursus maritimus) in the context of wildlife-viewing activities at Churchill, Manitoba, Canada. *Biological Conservation*, *116*(3), 343-350.

to vessel presence through vigilance, walking or swimming away, fleeing, and in some cases, approach.[1206,1207,1208,1209] A study on behavioral response to vessel presence in the Chukchi and southern Beaufort Seas found that mothers with cub(s) were much more likely to flee or to be vigilant than were single adults.[1210]

While disturbance to non-denning bears is much less likely to be lethal compared to denning bears, it is very likely to increase energetic stress and displace bears from preferred habitat and travel routes. For a population suffering from nutritional stress, poor body condition and reduced cub survival, more energetic stress and disturbance is not a prescription for recovery and could create or exacerbate population-level impacts. Indeed, minimizing the impacts of any human development on polar bears is a clear recovery strategy identified in the FWS's Polar Bear Conservation Management Plan.[1211]

ii. BLM fails to clearly define the disturbance analysis areas for polar bears.

As an initial matter, the DSEIS makes conflicting statements about the disturbance analysis areas for polar bears, sometimes indicating an indefensibly small area in which polar bears may be disturbed by project activities. BLM needs to clarify the applicable disturbance areas for polar bears and then analyze project impacts accordingly.

BLM indicates a marine mammal disturbance analysis area with a one-mile buffer around all project activities in Figure 3.13.1. But the marine mammals impact section includes no text or tables that clearly define the analysis area for disturbance impacts, and as noted below, prior descriptions of analysis areas for disturbance have vanished and new, inconsistent statements have appeared.

In the first SDEIS, BLM identified a disturbance zone for polar bears related to Option 3, the Colville River crossing, of over 53,000 acres from construction and use of ice roads, and over

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[1206] Smultea, M. A., Brueggeman, J., Robertson, F., Fertl, D., Bacon, C., Rowlett, R. A., & Green, G. A. (2016). Polar bear (*Ursus maritimus*) behavior near icebreaker operations in the Chukchi Sea, 1991. *Arctic*, 177-184.
[1207] Lomac-MacNair, K., Pedro Andrade, J., & Esteves, E. (2019). Seal and polar bear behavioral response to an icebreaker vessel in northwest Greenland. *Human–Wildlife Interactions*, *13*(2), 13
[1208] Lomac-MacNair, K., Wisdom, S., De Andrade, J. P., Stepanuk, J. E., & Esteves, E. (2021). Polar bear behavioral response to vessel surveys in northeastern Chukchi Sea, 2008–2014. *Ursus*, *2021*(32e8), 1-14.
[1209] Stirling, I. (1988). Attraction of polar bears Ursus maritimus to offshore drilling sites in the eastern Beaufort Sea. *Polar Record*, *24* (148), 1-8.
[1210] Op. cit., Lomac-MacNair et al. (2021).
[1211] *See* U.S. Fish and Wildlife Service, Polar Bear Conservation Management Plan (December 20, 2016) at 47.

55,000 additional acres from the increased use of existing gravel roads.[1212] These areas were calculated by mapping a one-mile buffer area around the road construction and use areas, based on FWS's typical one-mile buffer typically used to protect polar bear dens.

ConocoPhillips argued in its comments that the FWS's one-mile buffer is for dens and shouldn't be applied to the road areas because there are only 527 acres of denning habitat around those areas.[1213] BLM stated that "disturbance calculations are based on the USFWS polar bear den disturbance zone, which is 1 mile. This was calculated for all Project activities in winter, not only where a den has been previously located, because there is no other available information on a disturbance threshold for polar bears not in dens."[1214]

So BLM defended its use of a one-mile buffer to protect both denning and non-denning bears because FWS uses one mile to protect denning bears, and BLM claims there is no other information available for non-denning bears so it uses one mile for those as well.[1215]

Despite defending its use of the one-mile buffer for both denning and non-denning bears, BLM inexplicably deleted the reference to the 50,000+ acre disturbance area and its impacts analysis does not account for bears potentially disturbed within that area. Instead, regarding "inland disturbance or displacement," BLM claims that "using the disturbance buffer of 1 mile commonly used by USFWS for identified polar bear dens, 75.2 acres would potentially be disturbed" by the action alternatives (presumably not including the module transport options).[1216] This must be a typo as 75 acres is far less than even the direct habitat loss from the project, let alone a one-mile buffer around all project activities.

In Table 3.13.3, BLM estimates between 4,026 and 7,164 acres of disturbance area due to ice infrastructure and noise from its construction and use, depending on the project alternative.[1217] This is orders of magnitude less than prior estimates, without explanation. In the "onshore traffic" project component category, the table identifies no disturbance area associated with traffic on gravel roads, instead just listing the total number of "trips."[1218] For the summation of impacts, in the "all" project component category, the table inexplicably changes the onshore disturbance metric to terrestrial denning habitat and identifies 1,277 and 655 acres of such habitat within 0.5 miles of water work and 1 mile of onshore work, respectively. Why the offshore disturbance distance is 0.5 miles instead of either the 1.5 miles or 7,067 feet distances ascribed to vessels is just another mystery.

[1212]1 2020 Willow draft SEIS at 49.
[1213] 1 2020 final EIS, App. B.3 at 46.
[1214] *Id*.
[1215] *See* 3 DSEIS, App. A.2, Figure 3.13.1 (showing an analysis area that includes a one-mile buffer around roads and other project components).
[1216] 1 DSEIS at 226.
[1217] 1 DSEIS, Table 3.13.3 at 228.
[1218] *Id*. at 229.

This is all confounding and prevents the identification of disturbance areas that BLM is using to assess impacts, and the agency must clarify this section. As previously pointed out, moreover, there is other available information indicating a disturbance threshold for some non-denning bears in excess of two miles.[1219] BLM still does not address this information when identifying the appropriate disturbance area for waking bears. When revising its analysis, BLM should consider a two-mile distance to disturbance for non-denning bears or explain why using that distance would not be appropriate.

iii. BLM fails to analyze the extent or consequences of project disturbance to polar bears.

After clarifying the what the analysis area is, BLM should then actually do the analysis: estimate the number of bears that may be disturbed or displaced by introducing 30 years of construction and operation activities for a large new oilfield sprawling across hundreds of miles in polar bear habitat, and the effect of those disturbance impacts on a beleaguered population already suffering grave survival challenges. Those disturbance impacts could even prove injurious or fatal by increasing metabolic costs for which individual bears don't have a sufficient budget, and could have population-level consequences for an imperiled population. BLM must enlarge the analysis area, estimate the number of bears that may be impacted by various project activities, and assess the population-level implications of those impacts.

iv. Ground transportation impacts.

The project would entail millions of ground transportation trips through areas where polar bears may be present, including designated critical habitat and identified potential denning habitat. The most impactful time for this activity would be the construction period, which would take ten years. BLM acknowledges that the "duration and frequency of impacts from construction would be continuous during construction."[1220] There would be 30,248 to 237,297 ground traffic trips per winter throughout the ten-year construction period (15.5 to 81.7 trips per hour).[1221]

As discussed above, those trips pose a risk of injury or mortality to denning bears as well as significant disturbance that could affect rates of recruitment and thus have population-level impacts. These many trips, plus the additional hundreds of thousands of non-winter ground transportation, also have the potential to disturb and displace non-denning bears at potentially significant metabolic costs. But BLM merely notes that operational traffic would be mostly south of polar bear habitat and therefore less impactful for bears than construction traffic.[1222] BLM must define the disturbance zones associated with ground transportation and estimate the likely impacts on bears, and number and nature of disturbances that millions of continuous ground traffic trips through polar bear critical habitat for 10 years will cause.

[1219] Anderson & Aars (2007); Dyck, M. G., & Baydack, R. K. (2004).
[1220] 1 DSEIS at 226.
[1221] *Id*.
[1222] *Id*.

v. Impacts specific to module transport option 3.

The 2020 SDEIS indicated that construction and use of the ice and gravel roads needed for module transport under Option 3 would create polar bear disturbance zones of 53,251.2 acres and 55,613.3 acres, respectively.[1223] That totals 83.2 and 86.9 square miles, respectively, or a total disturbance zone of over 170 square miles, just from the module transport activity. The ice bridge across the Colville River impacts potential denning habitat and would create additional winter disturbance areas for two winter seasons.[1224]

Winter season is from approximately December 15 through April 25 (132 days) to account for time to construct ice roads and the usable ice road season (from approximately January 25 through April 25).[1225] That indicates that the ice road would be constructed from about December 15–January 25. Construction is planned to occur from the two end points and converge at the Colville River, so noise disturbance will always impact two areas simultaneously. That timeframe means that both AIR surveys required by the Beaufort Sea ITR need to occur between November 25 and December 15.[1226] Having cooperative weather conditions at the time is unlikely so survey efficacy will likely suffer.[1227] BLM should delay the commencement of construction activities until December 31, the last date that the Beaufort Sea ITR allows a second AIR survey to occur, if weather conditions do not allow for two reliable surveys to occur by December 15.

Known past polar bear dens exist within 2.8 and 10.3 miles of the gravel and ice roads through this portion of the project area, respectively, and although polar bears don't necessarily return to the same denning locations, impacts to denning bears are a foreseeable consequence of the project.[1228] It is likely that a den in the gravel and ice road disturbance areas will not be detected prior to road construction and use. This project component alone thus runs the risk of disturbing denning bears, or immediate post-denning mother bears and cubs, across a huge area encompassing substantial denning habitat, every day during the winter season for the entire 10-year construction phase.

The DSEIS does not explore the likely impacts to denning or non-denning polar bears from the continuous winter construction activities occurring across this enormous disturbance

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[1223] 1 2020 Willow draft SEIS at 49.
[1224] 1 2020 Willow draft SEIS, Table 3.13.2. at 48.
[1225] 1 DSEIS Table 2.3.2, at 8.
[1226] 86 Fed. Reg. at 43072 (August 5, 2021).
[1227] *See* Wilson and Durner (2019) (optimal conditions – surface wind speeds < 11km/hr; dew point-ambient temperature spread of >3 degrees C; no visible moisture such as fog or precipitation – found present an average of 4.4% of the time during December and January 2013-2017). The cited weather data is from Barter Island, east of the Willow project area, but BLM does not suggest that weather conditions in the project area are any more conducive to successful AIR surveys.
[1228] 1 DSEIS at 49.

area. It doesn't estimate the number of denning or non-denning bears expected to occur, the number expected to be disturbed or potentially injured, or the population-level implications of those impacts.

Finally, the offshore analysis area map indicates that Option 3 will impact the barrier islands no disturbance zone for polar bears.[1229] Polar bear critical habitat includes a one-mile no disturbance buffer around the barrier islands because of their particular importance for denning, resting, and movement along the coast.[1230] Bears may not use the barrier islands if they are disturbed by human activity.[1231] The DSEIS does not discuss this fact, and BLM must address the impacts of authorizing an activity that will inherently fail to comply with the critical habitat designation for polar bears and risk displacement of bears from the barrier islands near Oliktok Point.

vi. barge and support vessel traffic.

All action alternatives involve significant levels of nearshore barge and support vessel traffic, in addition to 24 barge and 37 tugboat roundtrips between Dutch Harbor and Harrison Bay. In Option 3, nearshore traffic would include 258 support vessels operating between Oliktok Point and the barge lightering area. In Table 3.13.3, BLM flags the potential for injury or mortality due to vessel strikes associated with this traffic, as well as for disturbance and displacement.[1232] But this is the extent of the associated impacts analysis:

> Support vessels may disturb polar bears, bearded and ringed seals, and, potentially, bowhead and beluga whales migrating in the spring and fall along the coastline. As described above, seals in this area are known to be tolerant of industrial activity. Potential effects on seals would be temporary during the activity and would not result in population-level effects.[1233]

This falls well short of any reasoned analysis of impacts. The frequency and duration of trips that the 258 support vessels would make is not identified. The lightering area is within the distance-to-disturbance zone to a No Disturbance barrier island critical habitat area for polar bears, but the likelihood and impact of the unspecified number of vessel trips impacting bears in this protected area is not addressed. Also, as noted in the comments regarding marine mammals below, BLM has incorrectly stated that bowhead and beluga whales do not use the shallow waters of the project area. It must also revise this analysis to include the potential for disturbance and vessel strikes to whales in the lightering area, in addition to potentially deflecting their migration route. Finally, BLM should undertake the same analysis for support vessels employed under Module Transport Options 1 and 2; these options would use the same number of vessels

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[1229] 3 *id*., App. A.2, Figure 3.13.1.
[1230] 75 Fed. Reg. 76093, 76096 (December 7, 2010).
[1231] *Id*.
[1232] 1 DSEIS at 230. Table note "c" states that traffic details are available in section 5 of Appendix D.1, but those tables do not include vessel traffic. Vessel traffic details are never presented. See 5 DSEIS App. D.1 at 209-230.
[1233] 1 DSEIS at 227.

but they would occur well to the west and cover a much larger area, so their associated impacts to polar bears and other marine mammals would be different than in Option 1.

vii. Reservoir and boat ramps.

The DSEIS underestimates the impact of the proposed water reservoir and boat ramps on both denning and non-denning bears. In the 2020 SDEIS, using the one-mile disturbance buffer often employed by FWS to protect polar bear dens BLM calculated a disturbance area associated with construction of these project components of 9469.8 acres, or almost 15 square miles.[1234] But as with the disturbance area for roads and other infrastructure noted above, that table and any analysis of a disturbance area created by the construction and use of the water reservoir and boat ramps for 30 years has since disappeared. BLM must include the estimated extent and impacts of polar bear disturbance and displacement due to construction and use of these facilities in its assessment of project-related disturbance overall.

C. BLM's Cumulative Effects Analysis to Polar Bears Is Deficient.

BLM states that "marine mammals would be cumulatively affected by other RFFAs in the analysis area" and Willow project impacts would add to those RFFA impacts.[1235] But it identifies no such RFFAs or associated impacts to consider cumulatively with Willow project impacts. Elsewhere, for example, BLM refers to the Nanushuk and Liberty projects as RFFAs that could accomplish wondrous cumulative economic outcomes with many "positive effects to community health."[1236] But to assess cumulative impacts to marine mammals, there is no mention of the Nanushuk or Liberty projects. Those projects occur in habitat used by marine mammals, including designated polar bear critical habitat, and their omission is a fatal flaw in the cumulative effects analysis for marine mammals.

The DSEIS fails to assess cumulative impacts in other ways as well. For example, it states

> As sea ice cover diminishes with warming climate, polar bears may spend more time on land and fast more, which would reduce access to prey and negatively affect energy levels, respectively (Molnár, Derocher et al. 2010). It may also mean a higher likelihood of bears encountering human infrastructure and activities on land. The impacts of onshore development would likely affect polar bears through disturbance in coastal barrier-island and denning habitats, especially during construction, but those would be mitigated through the Incidental Take Regulations and Letters of Authorization issued by USFWS (which stipulate mitigation and minimization measures).[1237]

[1234] 1 2020 draft SEIS Table 3.13.1, at 46.
[1235] 1 DSEIS at 333.
[1236] *Id*. at 335.
[1237] *Id*. at 334.

But polar bears are already spending more time on land[1238] and the energetic cost of doing so is already a concern,[1239]so these are known, present impacts, not future potential ones.. Also, increases in both industrial development and polar bear terrestrial uses will create a higher likelihood of encounters and disturbance, and this section should be assessing the extent of Willow project disturbance together with existing and projected disturbance from RFFAs rather than simply noting that it is likely. It is insufficient under NEPA to punt this cumulative impacts analysis to ITRs/LOAs which may or may not be applied for or issued for Willow or other projects.

The ITR/LOA process itself does not evaluate cumulative impacts,[1240] so the analysis foregone now will not be salvaged at some later time. The DSEIS cumulative impacts section fails to actually assess reasonably foreseeable future impacts, and otherwise notes that past and present impacts are discussed in section 3.13. That section, however, simply lists some of the infrastructure already in place near the project area due to other oil and gas projects.[1241] It doesn't quantify these projects in terms of impacts to polar bears, marine mammals or habitat and thus provides no baseline of impact information for the cumulative effects analysis to consider and build on. [1242] Simple mention of the existence of other project infrastructure near the analysis area is insufficient to support the cumulative impacts assessment for Willow.

The Nanushuk project is comparable in scale to Willow and just across the Colville River from Nuiqsut. It will entail 190-280 miles of seasonal ice roads in the area and over 20 miles of new permanent gravel roads, in addition to a new Central Processing Facility, over 20 miles of infield pipelines, and a 22-mile export pipeline to the Kuparuk CPF, among other infrastructure that will impact polar bears.[1243] The Liberty project would connect many of the same types of infrastructure six miles offshore, to an artificial island, where drilling, production, and production support facilities including another seawater treatment plant would be constructed.[1244] And while the polar bear discussion in the Willow DSEIS does not mention the Alaska Strategic Transportation and Resources project (ASTAR), BLM elsewhere notes that it "could include additional road construction . . . north and east of Teshekpuk Lake."[1245] Among other ambitions, the ASTAR effort seeks to connect communities located in the Reserve,

[1238] Fischbach 2007.
[1239] Pagano 2020.
[1240] 50 Fed. Reg. at 40339 (September 29, 1989).
[1241] 1 DSEIS at 212.
[1242] *Id*.
[1243] U.S. Army Corps of Engineers, Nanushuk Project Final EIS (November 2018) at 2-92.
[1244] Bureau of Ocean Energy Management, Liberty DPP Final EIS (August 2018) at 2-9 – 2-15.
[1245] 1 DSEIS at 331.

including Nuiqsut, Utqiagvik and Wainwright, by road.[1246] This would involve well over 100 miles of new road construction.[1247]

All of these actions impact polar bears and critical habitat, and the extraction projects collectively represent the industrialization of a substantial percentage of designated polar bear denning habitat, as well as other critical habitat. Indeed, considered together with the Arctic Refuge coastal plain oil and gas program and the Reserve's Integrated Activity Plan, which allow infrastructure to be placed in hundreds of miles of polar bear terrestrial denning critical habitat, they are part of a planned transformation of Alaska's Arctic coast, from Utqiaġvik to the Canadian border, to an industrial development zone. BLM must quantify and assess the impact of RFFAs on polar bears and their habitat, together with the hundreds of square miles of polar bear critical habitat impacted by the Willow proposal, in its cumulative effects analysis for the Willow project.

Finally, BLM briefly mentions that increased access due to these large development projects, including access for subsistence activities, "could kill more polar bears, or displace them to other habitats to avoid harvest."[1248] As noted above, increased mortality for SBS bears is not consistent with recovery of this depleted and vulnerable population. BLM must estimate the cumulative disturbance and mortality due to vastly increasing access to polar bear habitat via the Willow project and the RFFAs noted.

D. BLM Fails to Consider Adequate Mitigation.

As discussed below, the STIPs and ROPs applicable to polar bears don't ensure that impacts will be mitigated. Additionally, BLM states that it will apply the requirements of the current Beaufort Sea ITR to the Willow project.[1249] The ITR itself doesn't authorize any take. Instead, operators seeking an authorization are directed to apply for a Letter of Authorization (LOA); that application must include a number of site-specific components.[1250] FWS retains the right to grant or deny the application or add further conditions thereto.[1251] Holder of LOAs must comply with all listed mitigation, monitoring, reporting, and information collection

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[1246] *See, e.g.*, https://storymaps.arcgis.com/collections/b014760f7395481092afa454ab020d1c?item=1 (ASTAR storymap); Alaska Dept. of Natural Resources, Geological and Geophysical Surveys ASTAR Project ID 1557 ("Evaluate sand and gravel resources along a corridor approximately between Nuiqsut, Atqasuk and Barrow, AK"); ASRC Energy Services, "Road Network for Utqiaġvik, Atqasuk, and Wainwright Arctic Strategic Transportation and Resources Project North Slope, Alaska (April 2020), available at https://www.north-slope.org/wp-content/uploads/2022/02/ASTAR-Triangle-Road-Study.pdf.

[1247] ASRC Energy Services (April 2020) at Figure 2.1-1.

[1248] 1 DSEIS at 334.

[1249] *Id*. at 223.

[1250] 50 C.F.R. § 18.122.

[1251] *Id*. § 18.123.

requirements.[1252] But operators are not required to apply for an LOA. BLM should clarify whether it will require ConocoPhillips to obtain a LOA before commencing project activities. If not, then it should clarify whether it will apply the ITR requirements listed above to the company anyway, including requiring the detailed information that an LOA applicant would need to submit.

Because ITRs have a limited five-year life, BLM should list those requirements along with the others to ensure they are an enforceable requirement over Willow's 30+ year life, and allow only for any adjustments to reflect potentially more stringent requirements of future ITRs. In other words, the current ITR's requirements should be a floor — not a ceiling — for mitigating Willow's effects to SBS bears.

The Beaufort Sea ITR authorizes no Level A take – no injury or mortality – by oil and gas operators.[1253] But as noted above, BLM anticipates Level A take from the Willow project, which would not comply with the ITR. The MMPA prohibits the authorization of take from an activity when it will cause other, unauthorized take.[1254] So if Conoco does seek a LOA from FWS as BLM anticipates, then it may not be able to obtain it because the Level A take associated with the project would represent other, unauthorized take. This is a further indication why reliance on uncertain future LOAs is problematic.

Finally, regardless of whether FWS issues future LOAs, BLM must fulfill its own statutory obligation to provide maximum protection for areas with significant subsistence, recreational, or fish and wildlife values of the Reserve.[1255] It cannot simply leave it to FWS or NMFS to authorize harassment for specific species under their jurisdiction pursuant to their statutory mandates like the ESA and MMPA. The analytical shortcomings of the DSEIS result in an inadequate basis to determine the overall impacts to the SBS polar bear population, and as detailed in the next section, the applicable lease stipulations and required operating procedures fail to assure maximum protections for polar bears.

Lease Stipulations and Required Operating Procedures

LS K-5 (p. 96 eg) has a coastal setback of one mile ostensibly to "protect the summer and winter shoreline habitat for polar bears." But the evidence indicates that polar bears actively use much more than the land just one mile from the coast in summer and winter. Terrestrial denning critical habitat extends inland five miles from the coast, and bears travel between their dens and the coast. Post-denning emergence is a sensitive time for bears when disturbance is particularly impactful; disturbances caused by facilities constructed and used between the two can be expected to cause significant metabolic impacts.[1256]

[1252] *Id*. §§ 18.126-18.129.
[1253] *Id*. § 18.125(a).
[1254] *E.g*., *Kokechik Fishermen's Ass'n v. Secretary of Commerce*, 839 F.2d 795, 801-02 (D.C. Cir. 1988).
[1255] National Petroleum Reserve Production Act, 42 U.S.C. § 6504(b).
[1256] Smith, Tom S., et al. "Post-Den Emergence Behavior of Polar Bears (Ursus Maritimus) in Northern Alaska." *Arctic*, vol. 60, no. 2, 2007, pp. 187–94. *JSTOR*,

While 95% of known terrestrial dens are within 5 miles of the coast,[1257] BLM does not mention how many of those dens are within the 0-1 mile range from the coast versus 1-5 miles. It recites that 90% of industry observations of bears were within 7.7 miles from the coast and 95% of observations were 9.6 miles from the coast, but again there is no distinction between observations made within versus beyond one mile of the coast. Given the significant denning and non-denning use of coastal areas much farther than one mile inland, the one-mile coastal setback is arbitrary and cannot be expected to protect the summer and winter shoreline habitat polar bears. BLM should use the designated terrestrial denning critical habitat area along the coast to protect winter and summer shoreline habitat for bears in a manner consistent with the available information about that shoreline habitat use.

Moreover, BLM indicates that ConocoPhillips would seek and receive a "deviation" from stipulation K-5, as well as K-1, which requires setbacks from rivers. As described herein, rivers provide terrestrial denning habitat in the project area. BLM's brief and cursory description of these waivers is as follows:

> Deviations that would affect marine mammals would include LSs K-1 and K-5. All action alternatives include road and pipeline crossings of fishbearing waterbodies (including one or more of the waterbodies protected in LS K-1) (Figure 3.10.2). As a result, it is not possible in all instances to avoid encroachment within 500 feet of every waterbody. All action alternatives would intake and discharge ballast water to ground barges at Oliktok Dock and the barge lightering area; Options 1 and 2 would intake and discharge ballast water at the MTIs and the lightering areas. These ballast water exchanges would occur within 3 miles of the coastline (see LS K-5), but intake and discharge would occur in the same location and ballast water would not be transported.

This summary of why ConocoPhillips would like to deviate from BLM's existing mitigation measures does not explain or address the potential impacts from granting such a deviation, or explain how the measure's objectives would otherwise be met. BLM's analysis points to the fact that bears tend to den near the coast for purposes of assessing impacts from construction and vehicle traffic but does not adequately describe impacts from tundra travel and ice road use, particularly where ConocoPhillips would be encroaching into river setbacks and coastal areas to construct infrastructure. This is a significant shortcoming that must be rectified.

ROP A-4: Prior to project initiation, this measure requires a spill prevention, control, and countermeasure plan that must "consider" various items but no particular content is actually required.[1258] BLM should require that the spill plan meet the requirements listed, not just consider them, and clarify that project initiation must await BLM approval of the spill plan. It should also post the approved plan on its website for public review as soon as possible.

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http://www.jstor.org/stable/40513134. Accessed 12 Aug. 2022.

[1257] 1 DSEIS at 215.

[1258] *Id*. at 217.

ROP C-1: This states that "onshore activities in known or suspected polar bear denning habitat during the denning season (approximately November to April) must make efforts to locate occupied polar bear dens." This fails to adequately protect denning bears because 1) it should not be limited to onshore activities and should include offshore, since bears also den offshore; 2) fails to ensure that den location efforts reflect the best available science regarding den detection efficacy. As discussed above, if BLM plans to apply the Beaufort Sea ITR requirements to the Willow project, then it should include those requirements here, including the need for two AIR surveys before commencing any operations in denning habitat.

XII. THE DRAFT SEIS DOES NOT ADEQUATELY CONSIDER IMPACTS TO MARINE MAMMALS.

Comments submitted to BLM in 2019[1259] and 2020[1260] explained the inadequacies of the agency's Willow Project marine mammal analysis and requested that BLM address the identified shortcomings. BLM fails to do so in the DSEIS. BLM's DSEIS still neglects to discuss in sufficient detail the direct, indirect, and cumulative impacts of the Willow Project on marine pinnipeds including ice seals, Pacific walruses, Steller sea lions and whales. The agency failed to properly define the analysis area for marine mammals and failed to adequately consider the impacts of noise, oil spills, and climate change on affected pinniped and whale species.

A. BLM Mischaracterizes Marine Mammal Occurrences, Particularly Whales, in the Analysis Area.

BLM fails to properly analyze the occurrence of marine mammals in the project area — in both the nearshore area and offshore. This renders its analysis arbitrary and unlawful.

1. BLM mischaracterizes marine mammals in the nearshore area.

BLM fails to acknowledge that a thorough literature review of relevant published reports and marine mammal occurrence data from the CRD and near Oliktok Point was conducted. Multiple studies that are relevant due to proximity to the project area are missing, resulting in BLM's inaccurate analysis that many species of marine mammals would not be found in the analysis area, specifically near Oliktok Point.

The 2014 marine mammal monitoring and mitigation program associated with the Colville River Delta Seismic Survey collected marine mammal visual sightings data and acoustics detections from Ecological Acoustic Recorders (EARs) deployed in the CRD during summer and fall.[1261] Species visually observed included the bearded, ringed, spotted seals,

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[1259] 2019 AWL Comments.

[1260] Letter from Alaska Wilderness League *et al.*, to Racheal Jones, Project Lead, Alaska State Office, Bureau of Land Management, Re: Comments on the Willow Master Development Plan Supplemental Draft Environmental Impact Statement (May 4, 2020).

[1261] Lomac-MacNair, K. S., Smultea, M. A., Yack, T., Lammers, M., Norris, T., Green, G., ... & James, V. (2019). Marine mammal visual and acoustic surveys near the Alaskan Colville River Delta. *Polar Biology*, *42*(2), 441-448.

beluga whale and polar bear. Species acoustically detected include the bowhead whale, beluga whale, bearded seal, and ringed seal. Beluga whales were both visually sighted and acoustically detected across all three deployed EARS on nearly all days of the acoustic recording period. These results suggest that beluga whales are indeed in the CRD and Oliktok Point area, contradicting the DSEIS that "beluga whales generally transit outside of the barrier islands and are not observed in the shallow waters near Oliktok Dock."[1262] BLM stated that bearded and ringed seals are uncommon in the CRD region, but both were visually sighted and acoustically detected during the 2014 CRD seismic survey.

Sightings data from the Aerial Surveys of Arctic Marine Mammals (ASAMM) project are not included in the analysis of the DSEIS.[1263] ASAMM was a continuation of the Bowhead Whale Aerial Survey Project (BWASP, conducted from 1979 to 2010) and has targeted the autumn migration of bowhead whales through the western Beaufort Sea as well as collected line transect data on all marine mammals sighted. ASAMM reports are publicly available for years 2006 to 2019 and contain relevant marine mammal sighting data including bowhead, beluga, humpback, fin, and gray whale sightings in Harrison Bay, the CRD and near Oliktok Point.

For example, in some years (e.g. 2014, 2018) ASAMM reported high numbers of bowhead whales extremely close to shore in very shallow (<20 m depth) nearshore waters of the CRD and large numbers near Oliktok Point, contradicting BLM's statement that bowhead whales are rare in the analysis area. In addition, beluga whales are clearly depicted inside the barrier islands near Oliktok Point, the CRD, and Harrison Bay in the ASAMM reports (e.g. see 2018 report Fig. 36 and 2019 report Fig. 38), contradicting the analysis that beluga whales are not found inside the barrier islands. It is unclear why these extensive, multi-year, and extremely relevant agency-produced marine mammal reports are not included in the analysis for occurrence of marine mammals in the project area. BLM should analyze the ASAMM reports for marine mammal, specifically bowhead and beluga whale, occurrence in Harrison Bay, the CRD, and near Oliktok Point.

2. BLM mischaracterizes marine mammals in the offshore and vessel transit route.

As previously noted in our DEIS comments, BLM inaccurately concluded low potential occurrence of marine mammals, specifically bowhead and beluga whales in the project area due to incomplete analysis of available data (e.g., ASAMM reports). BLM's analysis of potential vessel impacts must consider previous marine mammal sightings data for the region and seasonal trends (i.e., bowhead and beluga migration) in the project area. BLM states "the barge transit route would traverse through the Bering, Chukchi, and Beaufort seas, generally 10 to 40 miles offshore, depending on weather, safety, and accepted transit routes. The barge lightering area and Oliktok Dock would be in the very shallow waters of Harrison Bay."[1264]

[1262] 1 DSEIS at 227.

[1263] *See* https://www.fisheries.noaa.gov/alaska/marine-mammal-protection/aerial-surveys-arctic-marine-mammals for access to ASAMM reports 2006-2019

[1264] 1 DSEIS at 227.

In the analysis of potential impacts to bowhead whales this should be addressed since the barge transit route overlaps with the bowhead whale migration path (i.e. 10-40 miles offshore) as well as overlaps where potential fin, gray, humpback and minke whales would be present. ASAMM reports show bowhead whale migratory paths from 2006-2019 that should be analyzed in comparison to the barge transit route (see previous comments on ASAMM reports and findings not included in DSEIS). Figures 3.13.1 and 3.13.2 are labeled as marine mammal analysis but only includes data on polar bears and Steller sea lions and does not depict any data related to the bowhead migration. Further it states that the action area encompasses a 1.5-mile radius around the barge route; it is unclear why this buffer was chosen as the action area. In the Measures for Transiting Vessels (Section 1.4.2 in Appendix E.13) the DSEIS states that vessels will maintain 1.6 km (1 mile) distance from whales and will only reduce speed when within 900 ft, it is unclear why these distances were chosen and why the 1.5-mile radius is not proposed for the setback and speed reduction zones.[1265]

In addition, the DSEIS states the transit periods are after July 1 and returning mid-to late October or early November, depending on ice conditions. Bowhead whales of the Bering-Chukchi-Beaufort (BCB) stock are known to summer in the Beaufort Sea and start their fall migration westward during August to October. The BCB bowhead whales migrate along the Alaska coast, back to Point Barrow, through the Chukchi Sea to the Bering Sea for the winter. In general, the fall migration of bowhead whales occurs across the Alaskan Beaufort Sea in nearshore waters.[1266] The barge transit route and timing overlaps both spatially and temporally with the bowhead migration and should be considered both in the analysis and in the measures to avoid and minimize effects on marine mammals.

3. BLM failed to property define the marine mammal analysis area for arctic pinnipeds.

BLM artificially truncates the analysis area and thus fails to consider the full suite of impacts the Willow Project will have on marine pinnipeds. The DSEIS describes the analysis area for marine mammals as follows:

> The analysis area for onshore activities for marine mammals is the area within 1 mile of onshore construction and operation activities and for offshore activities it is the area within 1.5 miles of construction, screeding, and the estimated vessel route during construction (Figure 3.13.1). This area represents the maximum distance that underwater or airborne noise or vibration could affect marine mammals and their habitats (based on the USFWS polar bear den disturbance zone). Because the distance from which polar bears may be attracted to facilities (e.g., food, waste) is unknown, it is not used to define the analysis area or quantify

[1265] *See* 6 DSEIS App. E.13 at 14.

[1266] Olnes, J., Citta, J. J., Quakenbush, L. T., George, J. C., Harwood, L. A., Lea, E. V., & Heide-Jørgensen, M. P. (2020). Use of the Alaskan Beaufort Sea by bowhead whales (Balaena mysticetus) tagged with satellite transmitters, 2006–18. *Arctic*, *73*(3), 278-291.

potential effects.[1267]

With the exception of the last sentence, this passage essentially is verbatim of the analysis area defined in the DEIS—a deficiency that was highlighted in earlier comments.[1268] The analysis area as defined falls short of providing an adequate assessment of impacts to pinnipeds for the following reasons.

First, the 1.0-mile onshore and 1.5-mile offshore buffer fail to capture the entire zone of project-related impacts to pinniped species. Sound (e.g., from aircraft) may travel more than one mile from construction activities, and sound and can travel up to thousands of kilometers underwater.[1269] In certain circumstances, industrial noise can impact seals at distances of up to 3.7 miles[1270] and walruses up to 3 miles.[1271] Under certain conditions, loud vessels are audible at distances greater than 62 miles; depending on vessel type, this noise could affect marine mammal behavior at distances up to 32 miles.[1272]

Second, the referenced Figure 3.13.1 fails to demarcate the "estimated vessel route during construction,"[1273] so it is impossible to determine the full extent of vessel impacts to affected pinniped species. Pinnipeds are known to be affected by vessel traffic, exhibiting increased alertness, head-raising, flushing from haul-out sites, and changes in diving behavior.[1274] Inuit people report that walruses are frightened by large ships.[1275] Vessel noise also can mask or alter underwater communication of pinnipeds.[1276]

Vessels pose a direct strike risk to walruses and other marine mammals.[1277] BLM cannot simply dismiss the possibility of a vessel trike because vessels will supposedly maintain "slow speeds in the presence of marine mammals," particularly without disclosing what those speeds will be, whether such speeds are mandatory, and how effective they will be at ensuring a vessel strike will not occur.[1278] Such disclosures are particularly important considering that it appears

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[1267] 1 DSEIS at 212.
[1268] *See* 2019 AWL Comments at 137.
[1269] Nabi, Ghulam et al., The possible effects of anthropogenic acoustic pollution on marine mammals' reproduction: an emerging threat to animal extinction, 25 ENVT'L SCI. & POLLUTION RESEARCH 19,338 (2018).
[1270] Bureau of Land Management, Coastal Plain Oil and Gas Leasing Program Draft Environmental Impact Statement 3-139 (2019).
[1271] Born, Erik W., Øystein Wiig & Morten Tange Olsen, *Ch. 12: Anthropogenic impacts on the Atlantic walrus*, at 276, *in* KEIGHLEY, XÉNIA *ET AL.* (EDS.), THE ATLANTIC WALRUS (2021).
[1272] Halliday, William D. et al., Potential impacts of shipping noise on marine mammals in the western Canadian Arctic, 123 MARINE POLLUTION BULL. 73 (2017).
[1273] 3 DSEIS, App. A Figure 3.13.1. at 212.
[1274] Erbe, Christine *et al.*, *The effects of ship noise on marine mammals—a review*, 6 FRONTIERS MARINE SCI. 606, at 8-9 (2019).
[1275] Born, Wiig & Olsen (2021) at 275.
[1276] Erbe *et al.* (2019) at 9.
[1277] Born, Wiig & Olsen (2021) at 274.
[1278] 1 DSEIS at 231.

the "slow speed" will occur only upon the sighting of a marine mammal, which can be difficult to see even under ideal conditions.[1279]

Vessels also may impact pinniped species through the introduction of invasive species via ballast water or the contamination of benthic prey.[1280] And they can also emit carbon dioxide (CO_2) and black carbon into the atmosphere, enhancing sea ice melt.[1281]

BLM must provide a description of support vessels that will be utilized and a map delineating the routes those vessels will traverse. BLM must include the full vessel transit route, not just areas in the immediate vicinity of proposed construction. The agency must establish an offshore analysis area based on distances from which those marine mammals may be impacted by those vessels (including by noise and strikes), and discuss possible impacts more thoroughly. Until BLM expands the analysis area as just described, the agency will fall short of a full and complete analysis of impacts to pinnipeds.

B. BLM Failed to Accurately Assess Impacts to Arctic Pinnipeds.

1. BLM fails to adequately examine noise impacts to pinnipeds.

BLM fails to adequately assess the noise impacts of the Willow Project on marine mammals including pinnipeds. Construction- and operation-related noises whose frequency overlaps with the hearing range of marine mammals will occur on land, in air, and in water.[1282] Sound propagates quickly underwater and travels great distances, and marine mammals use sound to communicate, navigate, and forage.[1283] They use vocal communications for various social functions including mating, rearing of young, group cohesion.[1284] Pinnipeds, in particular, "produce sounds both in air and under water that are associated with territorial and mating behavior, particularly during the breeding season."[1285] For example, a major component of springtime Arctic soundscapes are bearded seals' frequency-modulated trills.[1286]

Anthropogenic noise disturbance associated with industrialization can cause behavioral disturbance (including behaviors related to foraging, traveling, socializing, communicating, and resting), auditory masking, hearing damage, stress, and death in marine mammals.[1287] Duarte *et*

[1279] *See, e.g.*, *NRDC v. Pritzker*, 828 F.3d 1125, 1133 (9th Cir. 2016) (recognizing limitations of visual observations); *see also* Marc O. Lammers, et al., 2013. Passive acoustic monitoring of Cook Inlet beluga whales (Delphinapterus leucas). J. Acoust. Soc. Am. 134 (3), Pt. 2 (noting weather can impede visual-based monitoring).
[1280] Born, Wiig & Olsen (2021), *supra*, at 274.
[1281] *Id*. *See also* discussion of climate change on pinniped species.
[1282] Duarte, Carlos M. *et al.*, *The soundscape of the Anthropocene ocean*, 371 SCI. eaba4658, at 5 (2021).
[1283] *See generally* Duarte *et al.* (2021).
[1284] Nabi *et al.* (2018) at 2; Duarte (2021) at 2.
[1285] Duarte (2021) at 2.
[1286] *Id*.
[1287] Erbe *et al.*, at 1; Halliday, William D., Matthew K. Pine & Stephen J. Insley, *Underwater*

al. (2021) reviewed the available evidence and found that 85-94% of quantitative studies demonstrated significant negative effects of anthropogenic noise on marine mammals.[1288] Across all marine animals, noise from vessels (94.9% of studies) and construction infrastructure (82.3%) resulted in negative effects.[1289] Noise pollution compromises hearing ability (90.6% of studies reporting significant impacts), induces physiological changes (91.2%), and results in evasive maneuvers or displacement (83.9%).[1290]

While BLM acknowledges that noise may harm marine mammals, it suggests that wildlife in the Willow Project region has been habituated and thus may fail to detect incremental increases in disturbance or may exhibit "a less novel response from marine mammals than in areas with no human development or activity."[1291] This characterization improperly minimizes the potential significant impacts of anthropogenic noise on marine mammals in the region.[1292] Historically, anthropogenic noise levels have been lower in the Arctic compared to other parts of the ocean due to the presence of sea ice.[1293] Scientists thus believe that underwater noise in the Arctic "may have more severe impacts … compared to non-polar regions due to a combination of lower ambient sound levels and increased sensitivity of Arctic marine mammals to underwater noise."[1294] They have issued a warning that increases in anthropogenic noise in the region, whether due to increased shipping or industrialization, will have large impacts on both the soundscape and regional biota.[1295] Further, as Duarte *et al.* (2021) note, while "[i]n some situations, habituation may be considered a reduced response to stimuli that have no biological importance on the individual being observed, … disturbance involving a sensory modality that is so fundamental [as sound] to most marine animals would not often be considered inconsequential."[1296] This caution bears out in research on walruses, which in some cases have not habituated to sounds even after exposures of over 20 years.[1297]

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noise and Arctic marine mammals: review and policy recommendation, ENVT'L REVIEWS (manuscript) (2020); Duarte (2021) at 5.

[1288] Duarte (2021) at 6.

[1289] *Id*.

[1290] *Id*.

[1291] 1 DSEIS at 225-26.

[1292] *See* Duarte (2021) at 7 (noting that "Marine mammals may adapt to anthrophony, but the long life span and large home ranges of many marine mammals render assessment of adaptations to noise challenging.").

[1293] Halliday, Pine & Insley (2020); Duarte (2021) at 5.

[1294] Halliday, Pine & Insley (2020).

[1295] Halliday *et al.* (2017).

[1296] Duarte (2021) at 7.

[1297] Born, Wiig & Olsen (2021) at 278.

Bearded seals are known to be particularly sensitive to noise,[1298] and NMFS has recognized the importance of acoustic habitat for the species.[1299] Bearded seal reproductive behavior, in particular, relies on effective underwater communication.[1300] Bearded seals also may use soundscape clues for under-ice orientation and navigation.[1301] Anthropogenic noise could interfere with such communication, as could increasing intraspecific competition in shrinking areas of suitable habitat.[1302]

Scientists are identifying seasonal areas of (and features associated with) bearded seal communication using passive acoustic monitoring.[1303] Some studies have even identified

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[1298] As noted by Charles Saccheus Sr., "those *ugruk* are real sensitive to noise. Man … you can't even walk on the ice. They could hear you walking. Just your footsteps … and they'll be gone ...." OCEANA, BERING STRAIT: MARINE LIFE AND SUBSISTENCE USE DATA SYNTHESIS (2014).
[1299] Nat'l Oceanic & Atmospheric Admin., Dep't of Commerce, Endangered and Threatened Species; Designation of Critical Habitat for the Beringia Distinct Population Segment of the Bearded Seal, 86 Fed. Reg. 1433, 1438 (Jan. 8, 2021).
[1300] *See id*. at 1435,1438; *see also* Halliday et al. (2020); Fournet, Michelle E.H. et al., Limited vocal compensation for elevated ambient noise in bearded seals: implications for an industrializing Arctic Ocean, 288 PROC. ROYAL SOC'Y B 2002712 (2021).
[1301] Miksis-Olds, Jennifer L. & Laura E. Madden, *Environmental predictors of ice seal presence in the Bering Sea*, 9 PLoS ONE e106998 (2014).
[1302] 86 Fed. Reg. at 1438; *see also* Halliday *et al.* (2017); Fournet *et al.* (2021); Andersen, Magnus, Kit M. Kovacs & Christian Lydersen, *Svalbard's Ringed Seals in a Changing Climate: Harvest-Based Sampling Programme 2012-2017*, Norwegian Polar Institute; Boucher, Nicole, *Monitoring ecosystem dynamics in the Beaufort Sea using stable isotopes in polar bears* (Ursus maritimus) *and ringed seals* (Pusa hispida), Master of Science Thesis, Dep't of Biological Sciences, Univ. of Alberta (2018); Boucher, Nicole P. *et al.*, *Spatial and temporal variability in ringed seal* (Pusa hispida) *stable isotopes in the Beaufort Sea*, 10 ECOLOGY & EVOLUTION 4178 (2020); Fauchald, Per *et al.*, *Transitions of social-ecological subsistence systems in the Arctic*, 11 INTL J. COMMONS 275 (2017); Hezel, P.J. *et al.*, *Projected decline in spring snow depth on Arctic sea ice caused by progressively later autumn open ocean freeze-up this century*, 39 GEOPHYSICAL RESEARCH LETTERS L17505 (2012).
[1303] *See* Moore, Sue E. et al*., Comparing marine mammal acoustic habitats in Atlantic and Pacific sectors of the High Arctic: year-long records from Fram Strait and the Chukchi Plateau*, 35 POLAR BIOLOGY 475 (2012); MacIntyre, Kalyn Q. et al., *Year-round acoustic detection of bearded seals (Erignathus barbatus) in the Beaufort Sea relative to changing environmental conditions*, 2008-2010, 36 POLAR BIOLOGY 1161 (2013); Jones, Joshua M et al., *Ringed, bearded, and ribbon seal vocalizations north of Barrow, Alaska: seasonal presence and relationship with sea ice*, 67 ARCTIC 203 (2014); Miksis-Olds & Madden (2014), *supra*; MacIntyre, Kalyn Q. et al., *The relationship between sea ice concentration and the spatio-temporal distribution of vocalizing bearded seals (Erignathus barbatus) in the Bering, Chukchi, and Beaufort Seas from 2008 to 2011*, 136 PROGRESS IN OCEANOGRAPHY 241 (2015); Frouin-Mouy, Heloise et al., *Underwater acoustic behavior of bearded seals (Erignathus barbatus) in the northeastern Chukchi Sea, 2007-2010*, 32 MARINE MAMMAL SCI. 141 (2016); Jimbo, Mina et al., *Seasonal variations in the call presence of bearded seals in relation to sea ice in the southern*

thresholds indicative of bearded seal presence. For example, Miksis-Olds & Madden (2014) found that "as 10 kHz (and to a lesser extent 40 kHz) sound levels increased, the detection of ice seal vocalizations decreased." Fournet *et al.* (2021) investigated whether male bearded seals modify call amplitudes in response to changing ambient noise levels. They found that call amplitudes would increase only up to an observable threshold (~100-105 dB) and concluded that "[t]he presence of a threshold indicates limited noise compensation for seals, which still renders them vulnerable to acoustic masking of vocal signals."[1304] They conclude that an increasingly noisy environment may have fitness implications for bearded seals.[1305]

Walruses also produce a rich array of sounds both on land and in water.[1306] These sounds are used for mating, mother-calf communication, and other social interactions.[1307] Walrus sounds, which range from 0.1 to 4-8 kHz in frequency, overlap with noise frequencies from vessels and aircraft.[1308] Walruses are known to be sensitive to noise disturbance including airplane overflights, particularly when they are hauled out.[1309] Even small changes in behavior, such as shift in body position, may result in increased energy expenditure and stress; more substantial responses such as fleeing may interrupt nursing of calves or impair thermoregulation.[1310] Walruses may abandon haul-out sites for several days following disturbance.[1311] In Alaska, aircraft flying overhead at 30,000 feet led to a walrus stampede, and aircraft-induced stampedes in Russia have led to calf deaths.[1312] As climate change leads to higher concentrations of walruses in land-based haul-outs, such disturbance-induced stampedes may become a more common cause of mortality.[1313] Helicopters, too, lead to behavioral responses in walruses, even when they are nearly 5 miles away.[1314] Some researchers have suggested that air traffic not approach closer than 3 miles to haul-out sites.[1315]

Chukchi Sea, 42 POLAR BIOLOGY 1953 (2019); Chou, Emily et al., *Seasonal variation in Arctic marine mammal acoustic detection in the northern Bering Sea*, 36 MARINE MAMMAL SCI. 522 (2020); Southall, Brandon L. et al., *Seasonal trends in underwater noise near St. Lawrence Island and the Bering Strait*, 157 MARINE POLLUTION BULL. 111283 (2020).

[1304] Fournet *et al.* (2021).

[1305] *Id*.

[1306] Born, Wiig & Olsen (2021) at 273.

[1307] *Id*. at 273, 276.

[1308] *Id*. at 273.

[1309] *See* Øren, Kine *et al.*, *Assessing site-use and sources of disturbance at walrus haul-outs using monitoring cameras*, 41 Polar Biology 1737, 1744 (2018) (internal citations omitted); Born, Wiig & Olsen (2021) at 277.

[1310] Born, Wiig & Olsen (2021) at 265.

[1311] *Id*. at 278.

[1312] *Id*. at 277.

[1313] *Id*.

[1314] *Id*. at 277-78.

[1315] Born, Wiig & Olsen (2021) at 278, *citing* Born, E.W. & L.Ø. Knutsen, *Satellite tracking and behavioural observations of Atlantic walrus* (Odobenus rosmarus rosmarus) *in NE Greenland in 1989,* Grønlands Hjemmestyres Miljø – og Naturforvaltning, Tech. Rept. No. 20 (1990).

BLM's noise analysis is inadequate. It does not draw on the best available science regarding the impacts of terrestrial, airborne, and underwater noise on affected pinniped species. The agency must remedy this analysis and not rely on vague notions of "habituation" to write off the significant effects that noise from the Willow Project will have on marine mammal species in the region.

2. BLM fails to discuss how the willow project's contributions to climate change will affect arctic pinnipeds.

Climate change poses an existential threat to Arctic pinnipeds.[1316] BLM fails discuss both the Willow Project's contributions to climate change and the myriad ways in which climate change will affect pinnipeds in the Project's vicinity.

Arctic ecosystems are particularly vulnerable to climate change.[1317] While the Earth has warmed by approximately 0.8°C since the late 19th century, the Arctic has warmed by 2-3°C over the same time frame.[1318] This warming has led to a rapid and substantial loss of Arctic sea ice, particularly along Alaska's coast.[1319] Arctic summer sea ice extent and thickness have decreased by 40% during the past several decades,[1320] with each metric ton of CO_2 emissions causing a sustained loss of three square meters of summer sea ice area.[1321] The current scientific understanding of the detailed relationships between carbon dioxide emissions and discrete, measurable climate-related changes like sea ice melt refutes BLM's assertion that "the ability of federal agencies to influence the processes thought to be responsible for climate change (such as GHG emissions) is extremely limited at present, absent effective worldwide response to the problem."[1322] Federal agency action on projects like Willow directly influence CO_2 emissions; agencies like BLM have substantial control over whether and how such projects proceed.

[1316] *See generally* Kovacs, Kit M. et al., *Impacts of changing sea-ice conditions on Arctic marine mammals*, 41 MARINE BIODIVERSITY 181 (2011).
[1317] See generally Sarmiento, J.L. et al., *Response of ocean ecosystems to climate warming*, 18 GLOBAL BIOGEOCHEMICAL CYCLES 1 (2004); Overland, James et al., *The urgency of Arctic climate change*, 21 POLAR SCI. 6 (2019).
[1318] Post, Eric et al., *The polar regions in a 2°C warmer world*, 5 SCI. ADVANCES 1 (2019).
[1319] U.S. Global Change Research Program (USGCRP), Climate Science Special Report: Fourth National Climate Assessment, Vol. I (2017).
[1320] Meier, Walter N. et al., *Arctic sea ice in transformation: A review of recent observed changes and impacts on biology and human activity*, 51 REVIEWS OF GEOPHYSICS 185 (2014); USGCRP (2017); U.S. GLOBAL CHANGE RESEARCH PROGRAM, IMPACTS, RISKS, AND ADAPTATION IN THE UNITED STATES: FOURTH NATIONAL CLIMATE ASSESSMENT, VOL. II (2018); Intergovernmental Panel on Climate Change (IPCC), *Summary for Policymakers In: Climate Change 2021: The Physical Science Basis*, Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (2021).
[1321] Notz, Dirk & Julienne Stroeve, *Observed Arctic sea-ice loss directly follows anthropogenic CO_2 emission*, 354 SCI. 747 (2016).
[1322] 1 DSEIS at 334.

Emissions from the Willow Project will directly contribute to the threats that climate change poses to Arctic pinnipeds. A primary threat "stems from the likelihood that … sea ice habitat has been modified by the warming climate and, more so, that the scientific consensus projections are for continued and perhaps accelerated warming in the foreseeable future."[1323] Kovacs *et al.* (2011) published the following table, which describes how various marine mammal species are impacted by sea ice melt:

Table 1 Ice-associated marine mammals, their primary linkages to sea ice and their key sensitivity to changing sea-ice conditions

Species	Relationship to sea ice	Key sensitivity to changing sea-ice conditions
Pinnipeds		
Walrus	Walruses give birth and mate on sea ice and use it seasonally to reach bivalve beds too far from shore	Sea ice broadens the feeding distribution of this species markedly, which permits greater overall walrus abundances
Ringed seal	Ice-associated year round, requires stable ice for several months (with good snow cover) for raising pups, breeding and moulting as well as summer ice for resting, also dependent to some extent on ice-associated prey	Ice formation must occur in time to accumulate sufficient snow for the construction of lairs and must remain stable for several months to accommodate lactation (and breeding and moulting)
Bearded seal	Ice-associated year round, requires stable FYI pans late in spring for raising pups and moulting as well as summer ice for resting	Sea ice must be available over shallow water that has a rich benthic community (especially during the nursing period)
Ribbon seal	Breeds on pack ice	Pack ice must be available in late-winter/early spring for pupping in regions where food will subsequently be available for the weaned young
Spotted seal	Breeds on pack ice	
Harp seal	Breeds on pack ice	
Hooded seal	Breeds on heavy, large floes of pack ice late in the ice season	
Cetaceans		
Bowhead	Highly ice adapted, lives in the Arctic year round, usually in association with ice	The key ice related sensitivity for the ice adapted whales is likely how the sea-ice structures the ecosystem and influences prey availability
White whale (beluga)	Most populations live in association with sea ice much of the year	
Narwhal	Lives in association with sea ice much of the year and feeds intensively in pack-ice regions during the winter (on benthic fauna)	
Polar bear	Ice is the principle hunting platform and an important transportation corridor (especially for females with young cubs)	Shortened ice season means a longer period of fasting

Ocean warming is expected to negatively affect ringed seals, which are extremely depending on sea ice.[1324] Ringed seals rely on sea ice and snow cover for pupping, nursing, molting, and resting; indeed, sea ice is their exclusive breeding and haul-out platform.[1325] Snow

[1323] 77 Fed. Reg. at 76,742; 77 Fed. Reg. at 76,716; *see also* Fauchald, Per et al., *Transitions of social-ecological subsistence systems in the Arctic*, 11 INTL J. COMMONS 275 (2017); Hezel, P.J. et al., *Projected decline in spring snow depth on Arctic sea ice caused by progressively later autumn open ocean freeze-up this century*, 39 GEOPHYSICAL RESEARCH LETTERS L17505 (2012).
[1324] Kovacs *et al.* (2011) at 183.
[1325] *Id*. at 184; Endangered and Threatened Species; Threatened Status for the Arctic, Okhotsk, and Baltic Subspecies of the Ringed Seal and Endangered Status for the Ladoga Subspecies of the Ringed Seal, 77 Fed. Reg. 76,706, 76,709 76,716 (Dec. 28, 2012); *see also* Andersen, Magnus, Kit M. Kovacs & Christian Lydersen, *Svalbard's Ringed Seals in a Changing Climate: Harvest-Based Sampling Programme 2012-2017*, Norwegian Polar Institute; Anderson, Randi

on the ice surface is essential for lair construction.[1326] In addition to good snow cover, ringed seals—which have the longest lactation period of any true northern seal—need stable ice throughout the neonatal period.[1327] These lairs provide pups necessary warmth as well as protection from polar bear and fox predation.[1328] Climate change impacts to ice conditions have

A., *Ringed seal* (Phoca hispida) *blubber cortisol concentration as an indication of chronic stress*, Master of Science Thesis, Dep't of Biological Sciences, Univ. of Manitoba (2016); Crain, Danielle D. *et al.*, *Using claws to compare reproduction, stress and diet of female bearded and ringed seals in the Bering and Chukchi seas, Alaska, between 1953-1968 and 1998-2014*, 9 CONSERVATION PHYSIOLOGY 1 (2021); Crawford, Justin A. *et al.*, *Seasonal and diel differences in dive and haul-out behavior of adult and subadult ringed seals (Pusa hispida) in the Bering and Chukchi seas*, 42 POLAR BIOLOGY 65 (2019); Ferguson, Steven H. *et al., Demographic, ecological, and physiological responses of ringed seals to an abrupt decline in sea ice availability*, 5 PEERJ e2957 (2017); Ferguson, Steven H. *et al.*, *Comparing temporal patterns in body condition of ringed seals living within their core geographic range with those living at the edge*, 43 ECOGRAPHY 1521 (2020); Hamilton, Chairmain D. *et al.*, *Predictions replaced by facts: a keystone species' behavioral responses to declining arctic sea-ice*, 11 BIOLOGY LETTERS 20150803 (2015); Hamilton, Charmain D. *et al.*, *Haul-out behaviour of Arctic ringed seals* (Pusa hispida): *inter-annual patterns and impacts of current environmental change*, 41 POLAR BIOLOGY 1063 (2018); Hamilton, Charmain D. *et al.*, *Contrasting changes in space use induced by climate change in two Arctic marine mammal species*, 15 BIOLOGY LETTERS 20180834 (2019); Hamilton, Charmain D., Kit M. Kovacs & Christian Lydersen, *Sympatric seals use different habitats in an Arctic glacial fjord*, 615 MARINE ECOLOGY PROGRESS SERIES 205 (2019); Harwood, Lois A. *et al.*, *Long-term, harvest-based monitoring of ringed seal body condition and reproduction in Canada's western Arctic: an update through 2019*, 73 ARCTIC 206 (2020); Karpovich, Shawna A., Larissa Horstmann & Lori K. Polasek, *Validation of a novel method to create temporal records of hormone concentrations from the claws of ringed and bearded seals*, 8 CONSERVATION PHYSIOLOGY (2020); Lone, Karen *et al.*, *Summer habitat selection by ringed seals (Pusa hispida) in the drifting sea ice of the northern Barents Sea*, 38 POLAR RESEARCH (2019); Lydersen, Christian *et al.*, *Novel terrestrial haul-out behaviour by ringed* seals (Pusa hispida) *in Svalbard, in association with harbour seals (Phoca vitulina)*, 36 POLAR RESEARCH 1374124 (2017); Martinez-Bakker, Micaela E. *et al.*, *Combined genetic and telemetry data reveal high rates of gene flow, migration, and long-distance dispersal potential in Arctic ringed seals* (Pusa hispida), 8 PLoS ONE e77125 (2013); Reimer, Jody R. *et al.*, *Ringed seal demography in a changing climate*, 29 ECOLOGICAL APPLICATIONS e01855 (2019); Ritchie, Kyle Cornell William, *Ringed seal* (Pusa hispida) *population trends inferred from genetics*, Master of Sci. Thesis, Dep't of Biological Sciences, Univ. of Manitoba (2018); Von Duyke, Andrew L. *et al.*, *Ringed seal* (Pusa hispida) *seasonal movements, diving, and haul-out behavior in the Beaufort, Chukchi, and Bering Seas (2011-2017)*, 10 ECOLOGY & EVOLUTION 5595 (2020); Yurkowski, David J. *et al.*, *Abundance and species diversity hotspots of tracked marine predators across the North American Arctic*, 25 DIVERSITY & DISTRIBUTIONS 328 (2019).

[1326] Kovacs *et al.* (2011) at 184.

[1327] *Id*.

[1328] *Id*.

been linked to major declines in ringed seal abundance in Hudson Bay.[1329] Low body condition and low ovulation rates in female ringed seals also have been correlated with low ice years.[1330]

Bearded seals likewise rely on sea ice habitat that is shifting and being reduced due to climate change.[1331] They reside on drifting pack ice that provides them ready access to benthic prey organisms.[1332] Spotted seals (*Phoca largha*) and ribbon seals (*Histriophoca fasciata*) also rely on sea for much of their lives and are found in association with it whenever it is available.[1333] These species are sensitive to the availability of late winter/early spring pack ice, on which they give birth and nurse.[1334]

Pacific walruses also are impacted by climate changes including melting sea ice.[1335] The species' distribution is restricted to a narrow ecological niche; they "depend on shallow water (≤ 100 m) with suitable bottom substrate to support high bivalve abundances,[1336] reliable open water over rich feeding areas, and haul-out platforms … near feeding areas."[1337] Pacific walruses depend on broken pack ice for foraging, breeding, nursing, molting, and resting.[1338] Sea ice

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[1329] *Id.* at 186.
[1330] *Id*.
[1331] *Id*. at 188; Fink, Sheryl, *Chapter 14: Loss of Habitat: Impacts on Pinnipeds and Their Welfare*, *in* Butterworth, Andy (ed.), Marine Mammal Welfare: Human Induced Change in the Marine Environment and its Impacts on Marine Mammal Welfare (2017); Breed, Greg A. *et al.*, *Seasonal ice dynamics drive movement and migration of juvenile bearded seals* Erignathus barbatus, 600 MARINE ECOLOGY PROGRESS SERIES 223 (2018); Cameron, Michael F. *et al.*, *Habitat selection and seasonal movements of young bearded seals* (Erignathus barbatus) *in the Bering Sea*, 13 PLoS ONE e0192743 (2018); Macias-Fauria, Marc & Eric Post, *Effects of sea ice on Arctic biota: an emerging crisis discipline*, 14 BIOLOGY LETTERS 20170702 (2018); *see also* Citta, John J. *et al.*, *A multi-species synthesis of satellite telemetry data in the Pacific Arctic (1987-2015): overlap of marine mammal distributions and core use areas*, 152 DEEP-SEA RESEARCH PART II 132 (2018).
[1332] Kovacs *et al.* (2011) at 184.
[1333] *Id*.
[1334] *Id*.
[1335] *Id*. at 186; Øren, Kine et al., *Assessing site-use and sources of disturbance at walrus haul-outs using monitoring cameras*, 41 POLAR BIOLOGY 1737 (2018).
[1336] With melting ice, there is some indication that Pacific walruses may be integrating seals in their diet to a greater degree. Kovacs *et al.* (2011) at 186.
[1337] Kovacs *et al.* (2011), *supra* at 183; Born, Wiig & Olsen at 264.
[1338] *See generally* AR 69, 77, 150, 193, 891; Fay, Francis H., *The role of ice in the ecology of marine mammals of the Bering Sea*, *in* OCEANOGRAPHY OF THE BERING SEA, WITH EMPHASIS ON RENEWABLE RESOURCES (HOOD, D.W., ED. 1972); FAY (1982); FAY, FRANCIS H. *ET AL.*, TIME AND LOCATION OF MATING AND ASSOCIATED BEHAVIOR OF THE PACIFIC WALRUS, *ODOBENUS ROSMARUS DIVERGENS* ILLIGER 97 (1984); Kelly, Brendan P., *Climate change and ice breeding pinnipeds*, *in* "FINGERPRINTS" OF CLIMATE CHANGE (WALTHER *ET AL.*, EDS. 2001); Ray, G. Carleton *et al.*, *Pacific walrus: benthic bioturbator of Beringia*, 330 J. EXPERIMENTAL MARINE BIOLOGY & ECOLOGY 403 (2006); Ray (2016).

provides a critical foraging platform, allowing walruses to move passively throughout their foraging grounds. This allows them continual access to high-quality food patches, some of which otherwise would be prohibitively far from shore.[1339] As sea ice melts, it becomes more difficult for Pacific walruses to access critical food resources—resources that are themselves undergoing shifts from climate change.[1340]

Sea ice provides particularly important habitat for female and juvenile walruses.[1341] These cohorts embark on shorter foraging bouts closer to sea ice, whereas adult males may venture further afield.[1342] While females and juveniles may use terrestrial haul-outs when sea ice is not available, land is not a functional equivalent. First, land-based walruses must swim farther to feed, increasing energy expenditure and reducing body condition.[1343] This can lead to nutritional stress, reduced reproductive capacity, and calf abandonment in breeding females.[1344]

[1339] Laidre, Kristin L. *et al.*, *Quantifying the sensitivity of Arctic marine mammals to climate-induced habitat change*, 18 ECOLOGICAL APPLICATIONS S97 (2008); Ray *et al.* (2006); GAY, CHADWICK V. & ANTHONY S. FISCHBACH, PACIFIC WALRUS RESPONSE TO ARCTIC SEA ICE LOSSES (Grillo, Debra ed. 2008); Kovacs, Kit M. *et al.*, *Impacts of changing sea-ice conditions on Arctic marine mammals*, 41 MARINE BIODIVERSITY 181 (2011).

[1340] Ray et al. (2006); Post, Eric, *Ecological consequences of sea-ice decline*, 341 SCI. 519 (2013); Post, Eric, *Implications of earlier sea ice melt for phenological cascades in Arctic marine food webs*, 13 FOOD WEBS 60 (2017); Maniscalco, John M. et al., *Contemporary diets of walruses in Bristol Bay, Alaska suggest temporal variability in benthic community structure*, DOI 10.7717/peerj.8735 (2020); Koch, Chelsea W. et al., *Female Pacific walruses (Odobenus rosmarus divergens) show greater partitioning of sea ice organic carbon than males: evidence from ice algae trophic markers*, 16 PLoS ONE e0255686 (2021).

[1341] Koch *et al.* (2021).

[1342] Taylor & Udevitz (2015).

[1343] Jay *et al.* (2011).

[1344] Kelly (2001); Cooper, Lee W. *et al.*, *Rapid seasonal sea-ice retreat in the Arctic could be affecting Pacific walrus* (Odobenus rosmarus divergens) *recruitment*, 32 AQUATIC MAMMALS 98 (2006); Laidre *et al.* (2008); Jay *et al.* (2011); Kovacs *et al.* (2011) at 186; MacCracken, James G., *Pacific walrus and climate change: observations and predictions*, 2 ECOLOGY & EVOLUTION 2072 (2012); MacCracken, James E., *Trend in Pacific walrus* (Odobenus rosmarus divergens) *tusk asymmetry, 1990-2014*, 32 MARINE MAMMAL SCI. (2016); Larsen Tempel, Jenell T. & Shannon Atkinson, *Pacific walrus* (Odobenus rosmarus divergens) *reproductive capacity changes in three time frames during 1975-2010*, 43 POLAR BIOLOGY 861 (2020); Born, Wiig & Olsen (2021) at 276.

Walruses crowded in shoreline haul-outs also are more exposed to human-caused disturbance, death by trampling, disease transmission,[1345] and predation by polar bears.[1346]

Ocean warming and acidification are expected to alter ecosystem dynamics important to Arctic pinnipeds including benthic and pelagic prey populations and distribution.[1347] Climate-

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[1345] In addition to disease, the increase of harmful algal bloom toxicosis is increasing in the Arctic as sea ice melts and ocean temperatures warm. Lefebvre, Kathi A. *et al.*, *Prevalence of algal toxins in Alaskan marine mammals foraging in a changing arctic and subarctic environment*, 55 HARMFUL ALGAE 13 (2016). Walruses exhibited the highest concentrations of both domoic acid and saxitoxin of 13 marine mammal species sampled by Lefebvre *et al.* (2016), with domoic acid concentrations similar to those known to produce clinical signs of domoic acid toxicosis in California sea lions (*id.*). *See also* Lefebvre, Kathi A. *et al.*, *Paralytic shellfish toxins in Alaskan Arctic food webs during the anomalously warm ocean conditions of 2019 and estimated toxin doses to Pacific walruses and bowhead whales*, 114 HARMFUL ALGAE 102205 (2022) (high levels of saxitoxin detected in Pacific walruses).

[1346] Jay *et al.* (2011); Kovacs *et al.* (2011); Nat'l Oceanic & Atmospheric Admin., *2011 Arctic seal disease outbreak fact sheet* (Nov. 10, 2011); MacCracken (2012); Laidre, Kristin L. *et al.*, *Arctic marine mammal population status, sea ice habitat loss, and conservation recommendations for the 21st century*, 29 CONSERVATION BIOLOGY 724 (2015); Lowry (2016); *see also* Fischbach, A.S., D.H. Monson & C.V. Jay, *Enumeration of Pacific walrus carcasses on beaches of the Chukchi Sea in Alaska following a mortality event, September 2009*, U.S. Geological Survey Open-File Report 2009-1291 (2009).

[1347] *See* Beltran *et al.* (2016) (discussing how species-specific trophic discrimination factors may allow researchers to assess how climate-mediated alterations in prey species are affecting species including the bearded seal); 77 Fed. Reg. at 76,708, 76,710-11; 77 Fed. Reg. at 76,742; Hindell, Mark A. *et al.*, *Pre-partum diet of adult female bearded seals in years of contrasting ice conditions*, 7 PLos ONE e38307 (2012); Bryan, Anna Laura, *Identifying bearded and ringed seal diet—a comparison of stomach contents, stable isotopes, fatty acids, and fecal dna*, Master of Sci. Thesis, Univ. of Alaska, Fairbanks (2014); Divine, Lauren M., Katrin Iken & Bodil A. Bluhm, *Regional benthic food web structure on the Alaska Beaufort Sea shelf*, 531 MARINE ECOLOGY PROGRESS SERIES 15 (2015); Wang, Shiway W., Kathryn J. Frost & Alex V. Whiting, *Foraging ecology of ice seals in Kotzebue Sound, Alaska: insights from fatty acid markers*, 32 MARINE MAMMAL SCI. 765 (2016); Fink (2017); Goethel, Christina L. *et al.*, *Implications of ocean acidification in the Pacific Arctic: experimental responses of three Arctic bivalves to decreased pH and food availability,* 144 DEEP SEA RESEARCH PART II 112 (2017); Oxtoby, L.E. *et al.*, *Resource partitioning between Pacific walruses and bearded seals in the Alaska Arctic and sub-Arctic*, 184 OECOLOGIA 385 (2017); Szpak, Paul *et al.*, *Long-term ecological changes in marine mammals driven by recent warming in northwestern Alaska*, 24 GLOBAL CHANGE BIOLOGY 490 (2017); Macias-Fauria & Post (2018); Gryba, R.D. *et al.*, *Inferring foraging locations and water masses preferred by spotted seals* Phoca largha *and bearded seals* Erignathus barbatus, 631 MARINE ECOLOGY PROGRESS SERIES 209 (2019). *See also* Andersen, Magnus, Kit M. Kovacs & Christian Lydersen, *Svalbard's Ringed Seals in a Changing Climate: Harvest-Based Sampling Programme 2012-2017*, Norwegian Polar Institute; Beltran, Roxanne S. *et al.*, *Seals and sea lions are what they eat, plus what? Determination of trophic discrimination*

related changes in key prey species appear to be linked to survival of Steller sea lions (including pup survival).[1348] Ribbon and harbor seals likewise have been impacted by rapid environmental changes.[1349] The 2019 unusual mortality event that affected ringed seals and other marine mammals may offer a glimpse into how climate change will affect these ice seals in the coming years.[1350] The vulnerability of bearded seals to climate change already is playing out and has been observed by subsistence hunters and others living in Arctic communities.[1351]

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factors for seven pinniped species, 30 RAPID COMMUNICATION MASS SPECTROMETRY 1115 (2016); Boucher, Nicole, *Monitoring ecosystem dynamics in the Beaufort Sea using stable isotopes in polar bears (Ursus maritimus) and ringed seals (Pusa hispida)*, Master of Science Thesis, Dep't of Biological Sciences, Univ. of Alberta (2018); Hamilton, Charmain D. *et al.*, *Coastal habitat use by ringed seals Pusa hispida following a regional sea-ice collapse: importance of glacial refugia in a changing Arctic*, 545 MARINE ECOLOGY PROGRESS SERIES 261 (2016); Lowther, Andrew D. *et al.*, *Interdecadal changes in the marine food web along the west Spitsbergen coast detected in the stable isotope composition of ringed seal (Pusa hispida) whiskers*, 40 POLAR BIOLOGY 2027 (2017); Matley, Jordan K., Aaron T. Fisk & Terry A. Dick, *Foraging ecology of ringed seals (Pusa hispida), beluga whale* (Delphinapterus leucas) *and narwhals (Monodon monoceros) in the Canadian High Arctic determined by stomach content and stable isotope analysis*, 34 POLAR RESEARCH 24,295 (2015); Wang, Shiway W. *et al.*, *Carbon sources and trophic relationships of ice seals during recent environmental shifts in the Bering Sea*, 26 ECOLOGICAL APPLICATIONS 830 (2016a); Wang, Shiway W., Kathryn J. Frost & Alex V. Whiting, *Foraging ecology of ice seals in Kotzebue Sound, Alaska: insights from fatty acid markers*, 32 MARINE MAMMAL SCI. 765 (2016b); Young, B.G. & S.H. Ferguson, *Seasons of the ringed seal: pelagic open-water hyperphagy, benthic feeding over winter and spring fasting during molt*, 40 WILDLIFE RESEARCH 52 (2013); Young, Brent G. & Steven H. Ferguson, *Using stable isotopes to understand changes in ringed seal foraging ecology as a response to a warming environment*, 30 MARINE MAMMAL SCI. 706 (2014).

[1348] Miller, Arthur M., Andrew W. Trites & Herbert D.G. Maschner, *Ocean Climate Changes and the Steller Sea Lion Decline* (2005); Suryan, Robert M. *et al.*, *Ecosystem response persists after a prolonged marine heatwave*, 11 SCI. REPTS. 6235 (2021).

[1349] *See generally* Boveng, Peter L. et al., Body condition of phocid seals during a period of rapid environmental change in the Bering Sea and Aleutian Islands, Alaska, 181-182 DEEP-SEA RESEARCH II 104904 (2020); *See also* Frouin-Mouy, Héloïse et al., *Acoustic occurrence and behavior of ribbon seals (Histriophoca fasciata) in the Bering, Chukchi, and Beaufort Seas*, 42 POLAR BIOLOGY 657 (2019).

[1350] Siddon, Elizabeth C., Stephani G. Zador & George L. Hunt Jr., *Ecological responses to climate perturbations and minimal sea ice in the northern Bering Sea*, 181-182 DEEP-SEA RESEARCH PART II 104914 (2020).

[1351] Oceana (2014); Olsen, Patrick M., Crystal A. Kolden & Lily Gadamus, *Developing theoretical marine habitat suitability models from remotely-sensed data and traditional ecological knowledge*, 7 REMOTE SENSING 11863 (2015).

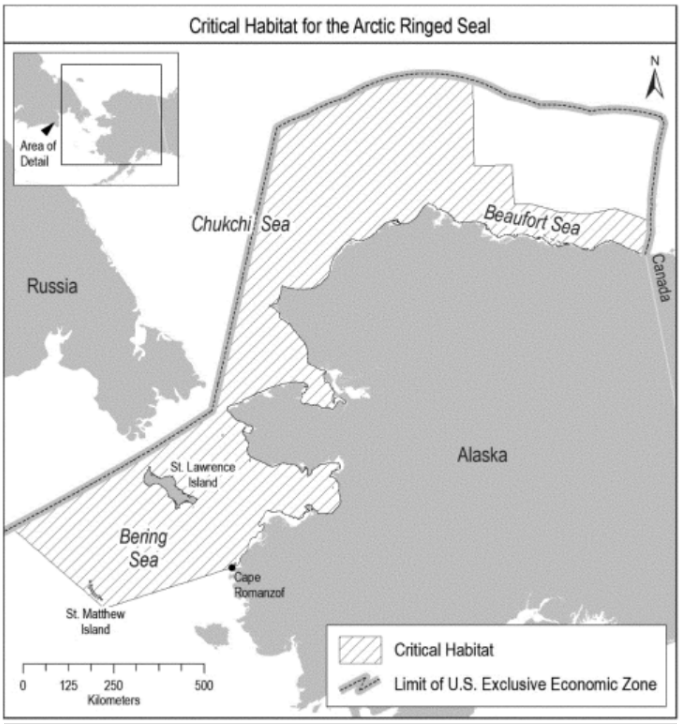
Climate change additionally may facilitate the spread of disease in Arctic pinnipeds, increasing their risk over time.[1352] Predation risk, too, may increase alongside climate change.[1353]

The risks posed by climate change to Arctic pinnipeds are hard to understate. Many of these species rely heavily on sea ice for feeding, mating, nursing, resting, molting, and avoiding predators. Climate change also is impacting key prey species for Arctic pinnipeds. The Willow Project will contribute to climate change and the BLM must describe in more detail all the impacts expected to occur.

3. The BLM fails to describe how the Willow project will impact bearded seal & ringed seal critical habitat.

BLM states that at the time the DSEIS was being prepared, critical habitat had not yet been designated for the ringed seal or bearded seal.[1354] Critical habitat has now been designated for both species (see Figs. below).[1355] BLM must describe how the Willow Project will affect designated critical habitat for ringed and bearded seals, including how climate change impacts flowing from the Willow Project will adversely modify sea ice critical habitat.

[1352] *See* Andersen, Kovacs & Lydersen; VanWormer, E. et al., *Viral emergence in marine mammals in the North Pacific may be linked to Arctic sea ice reduction*, 9 NATURE SCIENTIFIC REPORTS 15,569 (2019).
[1353] *See* Andersen, Kovacs & Lydersen.
[1354] 1 DSEIS at 215.
[1355] Endangered and Threatened Species; Designation of Critical Habitat for the Arctic Subspecies of the Ringed Seal, 87 Fed. Reg. 19,232 (Apr. 1, 2022); Endangered and Threatened Species; Designation of Critical Habitat for the Beringia Distinct Population Segment of the Bearded Seal, 87 Fed. Reg. 19,180 (Apr. 1, 2022).



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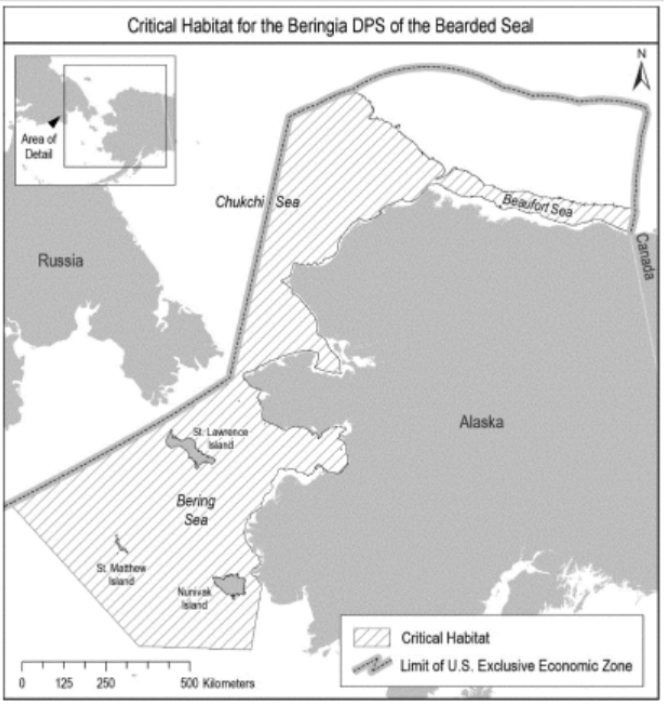

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1356 87 Fed. Reg. at 19,287.
1357 87 Fed. Reg. at 19,230.

C. BLM Fails to Adequately Analyze Impacts on Bowhead and Beluga Whales.

BLM's analysis of impacts from disturbance or displacement from underwater noise and increased vessel presence on bowhead and beluga whales is deficient. There are many well-known studies conducted over the last 40 years demonstrating bowhead whale sensitivity and disturbance to industrial activities including drilling, dredging, seismic activity and ship traffic,[1358,1359,1360,1361,1362,1363,1364,1365,1366] Disturbances include displacement, change in dive behavior and change in migration patterns. However, none of the aforementioned studies are referenced in the DSEIS. More recently studies such as Blackwell and Thode (2021) have found that with rising noise levels (natural or anthropogenic), bowhead whales increase call volume and frequency to compensate against a potential decreased detectability of their calls, in other words their communication space is decreased by increasing background noise. Similar acoustic behavioral response has been noted for beluga whales in the presence of increased anthropogenic noise (e.g., seismic and shipping). The 2014 Colville River Delta seismic survey marine mammal monitoring acoustic results showed that whales increased vocalization rates in response to seismic activity (i.e., a 'noisier environment').[1367] In the St. Lawrence River Scheifele et al.,

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[1358] Blackwell, S. B., Nations, C. S., McDonald, T. L., Greene Jr, C. R., Thode, A. M., Guerra, M., & Michael Macrander, A. (2013). *Effects of airgun sounds on bowhead whale calling rates in the Alaskan Beaufort Sea*, MARINE MAMMAL SCIENCE, 29(4), E342-E365.

[1359] Blackwell, S.B., Nations, C.S., McDonald, T.L., Thode, A.M., Mathias, D., Kim, K.H., Greene Jr, C.R. and Macrander, A.M. (2015). *Effects of airgun sounds on bowhead whale calling rates: evidence for two behavioral thresholds*, *PLOS ONE*, 10(6), e0125720.

[1360] Blackwell, S. B., & Thode, A. M. (2021). Effects of noise. In *The Bowhead Whale* (pp. 565-576). Academic Press.

[1361] Richardson, W. J., Fraker, M. A., Würsig, B., & Wells, R. S. (1985*). Behaviour of bowhead whales Balaena mysticetus summering in the Beaufort Sea: Reactions to industrial activities*. Biological Conservation, 32(3), 195-230.

[1362] Richardson, William John. Behavior, disturbance responses, and distribution of bowhead whales Balaena mysticetus in the eastern Beaufort Sea. 1980-84. Final report. No. PB-87-124376/XAB. LGL Ecological Research Associates, Inc., Bryan, TX (USA), 1985.

[1363] Richardson, W. John, Bernd Würsig, and Charles R. Greene Jr. "Reactions of bowhead whales, Balaena mysticetus, to drilling and dredging noise in the Canadian Beaufort Sea." *Marine Environmental Research* 29, no. 2 (1990): 135-160.

[1364] Blackwell, S. B., Nations, C. S., McDonald, T. L., Thode, A. M., Mathias, D., Kim, K. H., ... & Macrander, A. M. (2015). Effects of airgun sounds on bowhead whale calling rates: evidence for two behavioral thresholds. *PloS one*, *10*(6), e0125720.

[1365] Ljungblad, D. K., Würsig, B., Swartz, S. L., & Keene, J. M. (1988). Observations on the behavioral responses of bowhead whales (Balaena mysticetus) to active geophysical vessels in the Alaskan Beaufort Sea. *Arctic*, 183-194.

[1366] Robertson, F. C., Koski, W. R., Thomas, T. A., Richardson, W. J., Würsig, B., & Trites, A. W. (2013). Seismic operations have variable effects on dive-cycle behavior of bowhead whales in the Beaufort Sea. *Endangered Species Research*, *21*(2), 143-160.

[1367] Lomac-MacNair, K. S., Smultea, M. A., Yack, T., Lammers, M., Norris, T., Green, G., ... & James, V. (2019). Marine mammal visual and acoustic surveys near the Alaskan Colville River Delta. *Polar Biology*, *42*(2), 441-448.

(2005) found beluga whales increased call source level in the presence of elevated levels of shipping noise.[1368] BLM needs to analyze the potential impacts of increased vessel presence, barge transit routes and underwater noise on bowhead and beluga whales, as well as propose mitigation measures to reduce potential disturbance.

BLM also fails to adequately analyze impacts of disturbance or displacement from aircraft on bowhead and beluga whales. A behavioral response study of aircraft (helicopter and small fixed-wing [Twin Otter]) was conducted near Point Barrow on bowhead and beluga whales.[1369] Both species were found to elicit behavioral responses to aircraft including short surfacings, immediate dives or turns, changes in behavior state, vigorous swimming, and breaching. Further authors state that bowheads reacted to aircraft frequently at <305 m altitude which is the altitude BLM states both fixed-wing and helicopters will fly; 1000 ft (~305 m). BLM needs to analyze the potential impacts of aircraft flights on bowhead and beluga whales, as well as propose mitigation measures to reduce potential disturbance.

D. BLM Fails to Consider Impacts of Oil Spills on Marine Mammals.

BLM improperly downplays the risk of oil spills related to the Willow Project and fails to assess adequately the impacts of spill events on marine wildlife species.[1370] For example, BLM attempts to minimize the risk of oil spills by stating that marine spills from vessels would be "small to very small, limited to refined products …, localized …, and short in duration."[1371] Yet oil spills—even small ones—are likely to have significant adverse effects on pinniped species. The agency must disclose and discuss the likely impacts of spills of various magnitudes from the Willow Project and its associated vessel and barge supply routes.[1372]

Oil spills can be lethal—killing marine wildlife directly. Other impacts of oil exposure include behavioral alteration, suppressed growth, reduced immunity to disease and parasites, and histopathological lesions.[1373] In addition to these more immediate consequences, oil spills can

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[1367] 1 DSEIS at 227

[1368] Scheifele, P. M., Andrew, S., Cooper, R. A., Darre, M., Musiek, F. E., & Max, L. (2005). Indication of a Lombard vocal response in the St. Lawrence River beluga. *The Journal of the Acoustical Society of America*, *117*(3), 1486-1492.

[1369] Patenaude, N. J., Richardson, W. J., Smultea, M. A., Koski, W. R., Miller, G. W., Würsig, B., & Greene Jr, C. R. (2002). Aircraft sound and disturbance to bowhead and beluga whales during spring migration in the Alaskan Beaufort Sea. *Marine Mammal Science*, *18*(2), 309-335.

[1370] *See* 1 DSEIS, §§ 3.13, 4.0.

[1371] *See* 1 DSEIS at 238.

[1372] *See* Peterson, Charles H. et al., Long-term ecosystem response to the Exxon Valdez oil spill, 302 SCI. 2082 (2003).

[1373] Moore, S.F. & R.L. Dwyer, *Effects of oil on marine organisms: a critical assessment of published data*, 8 WATER RESEARCH 819 (1974); NEFF, J.M. & J.W. ANDERSON, RESPONSE OF MARINE ANIMALS TO PETROLEUM AND SPECIFIC PETROLEUM HYDROCARBONS (1981); Holdway, D. A., *The acute and chronic effects of wastes associated with offshore oil and gas production on temperate and tropical marine ecological processes*, 44 MARINE POLLUTION BULL. 185 (2002); GERACI, JOSEPH R. & DAVID J. ST. AUBIN (EDS), SEA MAMMALS AND OIL: CONFRONTING THE

produce insidious, lingering effects such as impaired reproduction. Chronic exposure to oil, even at sublethal levels, can impact wildlife species and ecosystems for decades.[1374]

Wildlife and fisheries species exposed to oil spills encounter hundreds of different compounds.[1375] In addition to petroleum hydrocarbons (gas and oil), spills can release n-alkanes, branched alkanes, monoaromatic hydrocarbons (including benzene, toluene, and xylene) and significant quantities of polycyclic aromatic hydrocarbons ("PAHs").[1376] Among the most toxic of these substances, PAHs have significant negative impacts on humans and wildlife.[1377] PAHs

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RISKS (2012); Almeda, Rodrigo, Cammie Hyatt & Edward J. Buskey, *Toxicity of dispersant Corexit 9500A and crude oil to marine microzooplankton*, 106 ECOTOXICOLOGY & ENVIRONMENTAL SAFETY 76 (2014).

[1374] Peterson, C. H et al., Long-term ecosystem response to the Exxon Valdez oil spill, 302 SCI. 2082 (2003); Peterson, Charles H. et al., A tale of two spills: novel science and policy implications of an emerging new oil spill model, 62 BIOSCIENCE 61 (2012); LOUGHLIN, THOMAS R. (ED.), MARINE MAMMALS AND THE EXXON VALDEZ (2013); WALKER, COLIN H. & DAVID R. LIVINGSTONE (EDS.), Persistent pollutants in marine ecosystems (2013).

[1375] Ruberg, E.J., J.E. Elliott & T.D. Williams, Review of petroleum toxicity and identifying common endpoints for future research on diluted bitumen toxicity in marine mammals, 30 ECOTOXICOLOGY 537 (2021).

[1376] Collier, Tracy K. et al., Effects on fish of polycyclic aromatic hydrocarbons (PAHs) and naphthenic acid exposures, 33 ORGANIC CHEMICAL TOXICOLOGY OF FISHES 195 (2014); Venn-Watson, Stephanie et al., Adrenal Gland and Lung Lesions in Gulf of Mexico Common Bottlenose Dolphins (Tursiops truncatus) Found Dead following the Deepwater Horizon Oil Spill, 10 PLoS ONE e0126538 (2015); Negri, Andrew P. et al., Acute ecotoxicology of natural oil and gas condensate to coral reef larvae, 6 NATURE SCI. REPTS. 21153 (2016); Smith, Cynthia R. et al., Slow recovery of Barataria Bay dolphin health following the Deepwater Horizon oil spill (2013-2014) with evidence of persistent lung disease and impaired stress response, 33 ENDANGERED SPECIES RESEARCH 127 (2017).

[1377] Eisler, Ronald, *Polycyclic aromatic hydrocarbon hazards to fish, wildlife, and invertebrates: a synoptic review*. U.S. Fish & Wildlife Serv. Biological Report 85(1.11) (1987); Hawkins, W.E. *et al.*, *Carcinogenic effects of some polycyclic aromatic hydrocarbons on the Japanese medaka and guppy in waterborne exposures*, 94 SCI. TOTAL ENV'T 155 (1990); Meador, J.P. *et al.*, *Bioaccumulation of Polycyclic Aromatic Hydrocarbons by Marine Organisms*, 143 REV. ENVT'L CONTAMINATION & TOXICOLOGY 79 (1995); Arfsten, Darryl P., David J. Schaeffer & Daniel C. Mulveny, *The effects of near ultraviolet radiation on the toxic effects of polycyclic aromatic hydrocarbons in animals and plants: a review*, 33 ECOTOXICOLOGY & ENVIRONMENTAL SAFETY 1 (1996); Reynaud, S. & P. Deschaux, *The effects of polycyclic aromatic hydrocarbons on the immune system of fish: a review*, 77 AQUATIC TOXICOLOGY 229 (2006); Allan, Sarah E., Brian W. Smith & Kim A. Anderson, *Impact of the Deepwater Horizon oil spill on bioavailable polycyclic aromatic hydrocarbons in Gulf of Mexico waters*, 46 ENVT'L SCI. & TECH. 2033 (2012); Almeida, Joana R., Carlos Gravato & Lúcia Guilhermino, *Biological parameters towards polycyclic aromatic hydrocarbons pollution: a study with* Dicentrarchus labrax *L. exposed to the model compound benzo(a)pyrene*, 223 WATER, AIR & SOIL POLLUTION 4709 (2012); Cox, Oliver N. & William H. Clements, *An integrated*

induce a wide variety of detrimental effects in aquatic organisms including reproductive harm, compromised immune system function, cancer, and death from acute toxicity. These harms impact species across taxa, from bacteria to invertebrates, fish to reptiles, birds to mammals.

The toxicity of PAHs has long been known.[1378] A 1987 U.S. Fish and Wildlife Service Biological Report describes the effects of PAHs on humans and wildlife as follows:

> Several polycyclic aromatic hydrocarbons (PAHs) are among the most potent carcinogens known to exist, producing tumors in some organisms through single exposures to microgram quantities. PAHs act at both the site of application and at organs distant to the site of absorption; their effects have been demonstrated in nearly every tissue and species tested, regardless of the route of administration. The evidence implicating PAHs as an inducer of cancerous and precancerous lesions is becoming overwhelming, and this class of substances is probably a major contributor to the recent increase in cancer rates reported for industrialized nations. PAHs were the first compounds known to be associated with carcinogenesis. … PAH-induced cancers in laboratory animals is [sic] well documented. … Teratogenic or carcinogenic responses have been induced in sponges, planarians, echinoderm larvae, teleosts, amphibians, and plants by exposure to carcinogenic PAHs. An unusually high prevalence of oral, dermal, and hepatic neoplasms have been observed in bottom-dwelling fish from polluted sediments containing grossly-elevated PAH levels. PAH compounds have damaged chromosomes in cytogenetic tests, have produced mutations in mammalian cell culture systems, and have induced DNA repair synthesis in human fibroblast cultures.[1379]

The potential of PAHs to harm organisms across the animal kingdom is overwhelming.[1380]

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assessment of polycyclic aromatic hydrocarbons (PAHs) and benthic macroinvertebrate communities in Isle Royale National Park, 39 J. GREAT LAKES RESEARCH 74 (2013); Paruk, James D. *et al*., *Polycyclic aromatic hydrocarbons detected in common loons* (Gavia immer) *wintering off coastal Louisiana*, 37 WATERBIRDS 85 (2014); Peña, Edwin A. *et al.*, *Detection of polycyclic aromatic hydrocarbons (PAHs) in raw menhaden fish oil using fluorescence spectroscopy: method development*, 34 ENVT'L TOXICOLOGY & CHEMISTRY 1946 (2015); Ruberg, Elliott & Williams (2021) at 538.

[1378] Albers, Peter, *Ch. 14: Petroleum and Individual Polycyclic Aromatic Hydrocarbons*, *in* DAVID J. HOFFMAN *ET AL.* (EDS.), HANDBOOK OF ECOTOXICOLOGY (2D) (2002) (noting that the scientific community identified the carcinogenic nature of benzo(*a*)pyrene in 1918).

[1379] Eisler (1987).

[1380] Albers (2002).

In addition to being carcinogenic, PAHs can increase inflammation and suppress immune system function.[1381] PAHs also can be teratogenic (i.e., toxic to embryos).[1382] They fall into the class of endocrine disrupting chemicals, *i.e.*, chemicals that interfere with hormone systems.[1383] PAHs may disrupt hormone systems in a number of ways: by influencing steroid production and metabolism; by interacting with receptors and other elements that play a role in hormone processes; by altering enzyme expression; by suppressing hormone (e.g., estrogen) synthesis; by influencing neurotransmitters; and by altering hormone metabolism.[1384]

Documented effects of PAHs on marine mammals include carcinogenesis; dermal irritation; conjunctivitis and lacrimation; thermoregulatory effects; hepatic, hypothalamic, and neurological lesions; hepatic necrosis; and reduced survival of young.[1385] PAHs also have shown strong cytotoxic effects on marine mammal testis and likely contribute to adrenal gland lesions.[1386] While mammals readily metabolize PAHs, this can be problematic when metabolized byproducts prove more harmful than the parent PAH.[1387]

Marine mammals uptake PAHs, heavy metals,[1388] and other harmful oil spill-related compounds through various mechanisms including dermal contact/adsorption, inhalation, aspiration, and ingestion (either directly or of contaminated prey or sediment).[1389] Toxicants can

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[1381] Rengarajan, Thamaraiselvan *et al.*, *Exposure to polycyclic aromatic hydrocarbons with special focus on cancer*, 5 ASIAN PACIFIC J. TROPICAL BIOMEDICINE 182 (2015); Abdel-Shafy, Hussein I. & Mona S.M. Mansour, *A review on polycyclic aromatic hydrocarbons: source, environmental impact, effect on human health and remediation*, 25 EGYPTIAN J. PETROLEUM 107 (2016).

[1382] Rengarajan *et al.* (2015).

[1383] Kannan, Kurunthachalam & Emily Perrotta, *Polycyclic aromatic hydrocarbons (PAHs) in livers of California sea otters*, 71 CHEMOSPHERE 649 (2008) (noting weak estrogenic responses induced by four-ring and higher PAHs); Kabir, Eva Rahman, Monica Sharfin Rahman & Imon Rahman, *A review on endocrine disruptors and their possible impacts on human health*, 40 ENVTL. TOXICOLOGY & PHARMACOLOGY 241 (2015); Troisi, G., S. Barton & S. Bexton, *Impacts of oil spills on seabirds: unsustainable impacts of non-renewable energy*, 41 INT'L J. HYDROGEN ENERGY 16,549 (2016) (discussing PAH effects on thyroid function in seabirds).

[1384] Collier *et al.* (2014).

[1385] Reynolds, John & Dana Wetzel, Presentation: Polycyclic Aromatic Hydrocarbon (PAH) Contamination in Cook Inlet Belugas; Ruberg, Elliott & Williams at 539.

[1386] Collier *et al.* (2014); Venn-Watson *et al.* (2015).

[1387] Albers (2002).

[1388] Heavy metals like mercury can have negative effects on seal reproductive, immunological, and neurological systems. McHuron, Elizabeth A. *et al.*, *Selenium and mercury concentrations in harbor seals* (Phoca vitulina) *from central California: health implications in an urbanized estuary*, 83 MARINE POLLUTION BULL. 48 (2014). Metals bioaccumulate in animal tissues and can remobilize during periods of physiological stress, so exposure to and effects from these metals will likely persist for years.

[1389] Nat'l Oceanic & Atmospheric Admin. (NOAA), Effects of Oil on Marine Mammals and Sea Turtles, NOAA's Oil Spill Response (2010); Collier et al. (2014); Schwacke, Lori H. et al.,

be adsorbed through dermal contact, especially through sensitive areas like the eyes and mouth, as well as abrasions or other lesions.[1390] Direct contact with petroleum products can cause irritation to eyes and mucous membranes.[1391] For some pinnipeds, particularly the very young, thermoregulation may be compromised with oiling of the pelage.[1392] In extreme cases, oiling of pinnipeds can reduce locomotion and cause drowning if flippers become adhered to the body.[1393]

In addition to coming into direct contact with oil, pinnipeds may inhale spill-related compounds. Oil often persists at breathing holes, ice edges, and leads used by seals and walruses.[1394] Inhalation of toxic hydrocarbons can cause respiratory irritation, inflammation, emphysema, and pneumonia, and increase blood and tissue levels of these compounds.[1395] If absorbed into the lungs and bloodstream, toxic hydrocarbons can accumulate in tissues like the brain and liver. Toxic inhalation poses a significant risk particularly in the early hours of a spill during volatilization, and for refined petroleum products.[1396] Effects may include lethargy, neurological disorders, organ damage, anemia, immune suppression, reproductive failure, or death.[1397]

Pinnipeds also may be exposed to spill-related compounds through aspiration. Aspiration can occur if these animals incidentally draw contaminated seawater into their lungs, or if they ingest oil and, succumbing to nausea, aspirate contaminated vomit.[1398] Aspiration can cause

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Health of common bottlenose dolphins (Tursiops truncatus) in Barataria Bay, Louisiana, following the Deepwater Horizon oil spill, 48 ENVT'L SCI. & TECH. 93 (2014); Van Dolah, Frances M. et al., Seasonal variation in the skin transcriptome of common bottlenose dolphins (Tursiops truncatus) from the Northern Gulf of Mexico, 10 PLoS ONE e0130934 (2015); Abdel-Shafy & Mansour (2016); Takeshita, Ryan et al., The Deepwater Horizon oil spill marine mammal injury assessment, 33 ENDANGERED SPECIES RESEARCH 95 (2017).

[1390] Takeshita *et al.* (2017); Michel, Jacqueline & Marv Fingas, *Ch. 7: Oil Spills: Causes, Consequences, Prevention, and Countermeasures*, at 177.

[1391] Nat'l Marine Fisheries Serv., Conservation Plan for the Eastern Pacific Stock of Northern Fur Seal (*Callorhinus ursinus*) (Dec. 2007) [NMFS 2007].

[1392] NMFS 2007.

[1393] Ruberg, Elliott & Williams at 539.

[1394] *Id.* at 540.

[1395] Geraci, J. R. & D. J. St. Aubin (eds.), *Synthesis of effects of oil on marine mammals*, U.S. Dep't Interior, Minerals Management Service, Atlantic OCS Region (1988); NMFS 2007; NOAA (2010); Sullivan, Laurie *et al.*, *Guidelines for assessing exposure and impacts of oil spills on marine mammals*, NOAA Tech. Memo. NMFS-OPR-62, at 24 (Oct. 2019). Inhalation of additional harmful compounds can occur when surface oil is burned as part of clean-up efforts. Frasier, Kaitlin E., *Ch. 25: Evaluating impacts of deep oil spills on oceanic marine mammals*, *in* STEVEN A. MURAWSKI *ET AL.* (EDS.), SCENARIOS AND RESPONSES TO FUTURE DEEP OIL SPILLS: FIGHTING THE NEXT WAR (2019).

[1396] NMFS (2007).

[1397] Geraci & St. Aubin (1988); NMFS (2007); NOAA (2010).

[1398] Venn-Watson *et al.* (2015); Takeshita *et al.* (2017).

physical injury, including severe inflammatory response and lung disease (pneumonia, fibrosis, abscesses, infection, and pulmonary dysfunction).[1399]

Ingestion of oil can occur incidentally through feeding behaviors or through intake of contaminated prey.[1400] Prey impacts begin at the base of the food chain; for example, Arctic plankton species including the copepod *Calanus hyperboreus* exposed to oil experience significant reductions in the ability to graze, reproduce, and metabolize.[1401] Oil can accumulate in bottom sediments, impacting benthic prey species relied upon by walruses and bearded seals.[1402] Ingestion of prey contaminated with chemicals including organochlorine compounds and polycyclic aromatic hydrocarbons can lead to immunosuppression, endocrine disruption, developmental irregularities, digestive dysfunction, increased tumor incidence, and decreased reproductive success in pinnipeds.[1403]

Long-lived, high trophic level species with large fat stores, such as seals, are particularly vulnerable to high levels of lipophilic contaminants.[1404] These contaminants build up early in life

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[1399] Takeshita *et al.* (2017).
[1400] *Id*.
[1401] Nørregaard, Rasmus Dyrmose *et al.*, *Evaluating pyrene toxicity on Arctic key copepod species* Calanus hyperboreus, 23 ECOTOXICOLOGY 163 (2014).
[1402] Michel & Fingas at 173-74.
[1403] Beckmen, Kimberlee Beth, Blood Organochlorines, immune function and health of free-ranging northern fur seal pups (Callorhinus ursinus), Ph.D. Thesis, Univ. Alaska Fairbanks (Aug. 1999); Beckmen, Kimberlee B. et al., Mercury concentrations in the fur of Steller sea lions and northern fur seals from Alaska, 44 MARINE POLLUTION BULL. 1130 (2002); NOAA Fisheries, Northern Fur Seal: Conservation & Management (2021); *see also* Reijnders, Peter J.H., Reproductive failure in common seals feeding on fish from polluted coastal waters, 324 NATURE 456 (1986); Brouwer, A., P.J.H. Reijnders & J.H. Koeman, Polychlorinated biphenyl (PCB)-contaminated fish induces vitamin A and thyroid hormone deficiency in the common seal (Phoca vitulina), 15 AQUATIC TOXICOLOGY 99 (1989); de Swart, R.L. et al., Impaired cellular immune response in harbour seals (Phoca vitulina) feeding on environmentally contaminated herring, 101 CLIN. EXP. IMMUNOL. 480 (1995); de Swart, Rik L. et al., Impaired immunity in harbour seals (Phoca vitulina) exposed to bioaccumulated environmental contaminants: review of a long-term feeding study, 104 ENVT'L HEALTH PERSPECTIVES 823 (1996); de Guise, Sylvain, Kimberlee B. Beckmen & Steven D. Holladay, Ch. 2: Contaminants and marine mammal immunotoxicology and pathology, in VOS, JOSPEH G. ET AL. (EDS.), TOXICOLOGY OF MARINE MAMMALS (2003); Ross, Peter S., Joseph G. Vos & Albert D.M.E. Osterhaus, Ch. 20: The immune system, environmental contaminants, and virus-associated mass mortalities among pinnipeds, in VOS, JOSPEH G. ET AL. (EDS.), TOXICOLOGY OF MARINE MAMMALS (2003); see generally in VOS, JOSPEH G. ET AL. (EDS.), TOXICOLOGY OF MARINE MAMMALS (2003); Neale, J.C.C. et al., Contaminant loads and hematological correlates in the harbor seal (Phoca vitulina) of San Francisco Bay, California, 68 J. TOXICOLOGY & ENVT'L HEALTH 617 (2005); Mos, Lizzy et al., Chemical and biological pollution contribute to the immunological profiles of free-ranging harbor seals, 25 ENVT'L TOXICOLOGY & CHEMISTRY 2110 (2006).
[1404] Neale *et al.* (2005).

and are offloaded by young mother seals to their pups.[1405] Pups' exposure to high levels of these contaminants may lead to impaired neurological and immune system development.[1406] Seal pups also depend on scent to establish mother-pup bonds, and oil can interfere with mothers' ability to recognize their pups.[1407] Oiled pups may be abandoned, reducing their chances of survival.[1408] Oiling also may reduce pups' survival abilities because it reduces their ability to thermoregulate.[1409]

Bearded seals are known to utilize waters in or near oil and gas lease sale areas.[1410] Large oil spills or blowouts could pose an immediate, substantial threat to bearded seals (as well as ringed seals, particularly pups), as such contamination is difficult to contain and clean up in harsh Arctic conditions.[1411] Bearded seals also forage on benthic invertebrates, which have a high risk of petroleum contamination in the event of a spill.[1412] Nursing pups enter the water several times a day, increasing their chances of contact with oil.[1413] Activities associated with oil spill cleanup likewise have the potential to negatively affect pinnipeds.[1414]

Seals, sea lions, and walruses also are vulnerable to oil spills because of their tendency to haul out in large numbers in small areas.[1415] Walruses are particularly susceptible to this

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[1405] Tanabe, S. et al., Persistent organochlorine residues in northern fur seal from the Pacific Coast of Japan since 1971, 85 ENVT'L POLLUTION 305 (1994); Beckmen et al. (1999).
[1406] Beckmen *et al.* (1999); *see also* Boertmann, David & Peter Aastrup, *Ch. 8: Impacts on mammals*, at 113, *in* Nat'l Envt'l Research Inst., *Potential environmental impacts of oil spills in Greenland*, NERI Tech. Rept. No. 415 (2002) (noting that oils are often conveyed to pups via nursing by oiled mothers).
[1407] Geraci, Joseph & David Aubin, Sea Mammals and Oil: Confronting the Risks.
[1408] Michel & Fingas (2016) at 176.
[1409] Boertmann & Aastrup (2002); Michel & Fingas at 176.
[1410] Boveng, Peter L. & Michael F. Cameron, Pinniped movements and foraging: seasonal movements, habitat selection, foraging and haul-out behavior of adult bearded seals in the Chukchi Sea, Final Report, BOEM Report 2013-01150 (2013); Lomac-MacNair, Kate et al., Marine mammal visual and acoustic surveys near the Alaskan Colville River Delta, 42 POLAR BIOLOGY 441 (2019).
[1411] Endangered and Threatened Species; Threatened Status for the Arctic, Okhotsk, and Baltic Subspecies of the Ringed Seal and Endangered Status for the Ladoga Subspecies of the Ringed Seal, 77 Fed. Reg. 76,706, 76,712-13 (Dec. 28, 2012); 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. 76,740, 76,746 (Dec. 28, 2012); Halliday *et al.* (2017); Von Duyke, Andrew L. *et al.*, *Poster: Ringed seal* (Pusa hispida) *spatial use, dives, and haul-out behavior in the Beaufort, Chukchi, and Bering Seas (2011-2016)* (2019).
[1412] Boertmann & Aastrup (2002) at 113.
[1413] *See* Christian Jørgensen et. al., *Diving Development in Nursing Harbour Seal Pups*, 204 J. OF EXPERIMENTAL BIOLOGY 3993 (2001).
[1414] NMFS (2007).
[1415] Boertmann & Aastrup (2002), at 113 (citing Born *et al.* (1995)); Michel & Fingas at 176. *See also* Helle, Inari *et al.*, *Impacts of oil spills on Arctic marine ecosystems: a quantitative and*

behavior-related spill risk, as they are gregarious and tend to have contact with one another while hauled out; they could inadvertently spread oil among themselves in this way.[1416] Walruses also consume benthic invertebrates, which accumulate oil from the water column and sediments; not only are walruses at risk of consuming these oil-coasted prey, they also stand to suffer long-term losses of prey beds in the aftermath of a spill.[1417] In terms of habitat, walruses prefer loose pack ice and coastal areas where oil is likely to accumulate.[1418] Finally, the walrus's relatively low reproductive rate makes populations more vulnerable to oil spill effects.[1419]

In sum, oil spills from the Willow Project pose a grave risk to Arctic pinnipeds. BLM's attempt to downplay those impacts is disingenuous, and the agency's discussion of oil spill impacts on Arctic pinnipeds is wholly inadequate.

E. BLM Fails to Sufficiently Describe the Cumulative Effects of the Willow Project on Marine Mammals

BLM's cumulative effects analysis is wholly inadequate. The cumulative effects of anthropogenic sound, ocean warming, acidification, habitat loss, and overfishing are pervasive, providing an unprecedented level of stress to Arctic marine mammals.[1420] Yet BLM fails to properly disclose, let alone analyze, these impacts.

As courts have explained, "in considering cumulative impact, an agency must provide some quantified or detailed information; . . .general 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."[1421] BLM failed to comply with these requirements. Indeed, its "analysis" of cumulative impacts amounts to nothing more than general descriptions of activities and projects that also impact marine mammals on the North Slope. This is insufficient.

For example, while "[a] calculation of the total number of acres to be harvested in [a] watershed is a necessary component of a cumulative effects analysis, but it is not a sufficient description of the actual environmental effects that can be expected from logging those acres."[1422] Similarly, a tally of the total road construction anticipated in [an area] is definitely a good start to an analysis [but] it is not a description of *actual* environmental effects." *Id*. The same is true for the various stressors that would occur because of Willow. While mentioning

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probabilistic risk assessment perspective, 54 Envt'l Sci. & Tech. 2112 (2020) (using a semiquantitative, probabilistic analysis framework to assess oil spill risks to walruses, ringed seals, and polar bears).

[1416] Boertmann & Aastrup (2002) at 113; Born, Wiig & Olsen (2021) at 282.

[1417] Boertmann & Aastrup (2002) at 113; Born, Wiig & Olsen (2021) at 282.

[1418] Born, Wiig & Olsen (2021) at 282.

[1419] *Id*.

[1420] Duarte *et al.* (2021) at 8.

[1421] *Ocean Advocates v. U.S. Army Corps of Eng'rs*, 361 F.3d 1108, 1128 (9th Cir. 2004) (citation omitted).

[1422] *Klamath-Siskiyou Wildlands Ctr. v. U.S. Bureau of Land Mgmt.*, 387 F.3d 989, 995 (9th Cir. 2004).

those stressors, and the other projects that will impact marine mammals, is a necessary start to an analysis, it is no analysis in itself. Rather, the analysis must explain "how [] individual impacts might combine or synergistically interact with each other to affect the [] environment."[1423] BLM's DSEIS fails to do so.

XIII. THE DRAFT SEIS DOES NOT ADEQUATELY CONSIDER IMPACTS TO ECONOMICS.

The economics analysis of the Willow project in the DSEIS includes large omissions and outdated statistics, with zero transparency regarding the economic benefits to the project proponent, ConocoPhillips. As a result of the flawed approach, the DSEIS fails to analyze a true range of alternatives, misrepresents the benefits and needs of local and state governments, does not truly analyze the job potential of the project, and paints a highly incomplete picture of the economic landscape for the Willow project. BLM should address these errors and provide its updated analysis in a revised EIS.

The bulk of the statistics in the economics section of the DSEIS focus on reports and figures from the mid-2010s, despite the fact that new data is easily available to the public from government sources, including the U.S. Census Bureau, State of Alaska, and North Slope Borough (NSB). A prime example of this is entirety of section 3.15.1.3 reviewing Alaska's economy where every document cited was published in 2016 and 2017,[1424] and conclusions are inferred about the role of oil and gas in Alaska based on an analysis of those years. While a focus on 2016 and 2017 may have been appropriate for an EIS published in 2018, a review of the past decade of Alaska North Slope West Coast Spot Prices shows that these two years — with an average price per barrel of $43 in 2016, and $54 in 2017 — are outlier years in the past decade, when the average from 2012–2021 is $72 per barrel.[1425] The result of the DSEIS focus on these "lower price" years is the painting of a more dire picture of state finances versus what is being realized in Alaska today, and likely in the future as legacy fields continue to produce oil.

The DSEIS analyzes data and highlights unique oil revenue of local, regional, and state governments, but does not do so consistently, and it presents an incomplete picture of how oil and gas development affect each level of government. The analysis was correct to point out that approximately 40% of the workforce for North Slope oil and gas jobs are travelers to Alaska from out-of-state,[1426] yet it does not provide U.S. Census job statistics for the United States in a manner similar to how it presents job data about local governments and Alaska. The DSEIS noted how the North Slope Borough has an investment fund to lessen reliance on future oil and gas revenue declines,[1427] but fails to mention the State of Alaska's $79 billion Permanent

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[1423] *Id*. at 997; *see id.* at 994 (a "close read" revealed no assessment of "combined environmental impacts.").
[1424] 1 DSEIS at 251–52.
[1425] Alaska Department of Revenue Tax Division ANS West Coast Average Spot Price, data recovered 8/5/22 http://www.tax.alaska.gov/programs/oil/prevailing/ans.aspx.
[1426] 1 DSEIS at 251.
[1427] *Id*. at 250.

Fund,[1428] which was established for the same purpose. The DSEIS finds that "The State owns and maintains an airport in Utqiaġvik and Deadhorse, but most other infrastructure and services on the North Slope are provided by the NSB."[1429] This finding fails to recognize the Dalton Highway — a critical state road used by the oil and gas industry — arguably of more importance to the oil and gas industry than those airports combined. These errors and omissions demonstrate the flawed factual foundation for how the DSEIS considers the economic lay of the land surrounding the Willow project.

The DSEIS failed to holistically consider the role that project construction could play for job creation, both in the United States but also internationally, as it fails to meaningfully analyze a range of construction methods that could be used to build the project. The DSEIS was correct in concluding that "none of [the module delivery] options would change the alternatives' economics impacts significantly"[1430] but this conclusion highlights the error of only analyzing one method of construction — prefabricated modules — for the Willow project. Oil and gas modules are often built overseas and deployed remotely, leaving few employment benefits to communities most impacted by project construction and operations. The agency should have analyzed and considered national and foreign job creation as a result of any action alternative in the draft being selected, and compared that to job creation if other construction methods were used. In evaluating a true range of alternatives, such construction methods should have also been analyzed for the full spectrum of benefits and drawbacks, not only for job creation and economics, but also impacts to the environment as well.

On this flawed foundation for considering economic effects of Willow, the No Action alternative analyzes the Willow project in a vacuum and makes definitive statements about the state of oil and gas industry in Alaska without Willow. It claims that, *"Under Alternative A, the Project would not be developed and there would be no increase in employment or wages in Nuiqsut, the NSB, or the state. Employment opportunities in Nuiqsut and the NSB would remain at current levels and oil sector employment in the state would likely decrease. New property tax revenues would not be generated for the NSB, and no new oil and gas tax revenues would be added to the Alaska general fund or the NPR-A Impact Grant Program."*[1431] This claim is made unequivocally as a statement of fact and is not supported when other activity in the Reserve - including development of Alpine satellite fields – is considered. The State of Alaska estimates an increase in oil and gas production on Alaska's North Slope through its Fiscal Year 2031, even when the entire production from the Reserve is subtracted from total oil development.[1432] Furthermore, the DSEIS fails to consider the shifting economic landscape over the next few decades. For example, the analysis fails to consider the role that the trend towards renewable energy will have on the project and on economy.

[1428] Fund value as of May 31, 2022 – www.apfc.org.
[1429] 1 DSEIS at 251.
[1430] *Id*. at 256
[1431] *Id*. at 252.
[1432] Alaska Department of Revenue, Revenue Sources Book (Fall 2021) at 106.

While the DSEIS speculates about the drawbacks of selecting the No Action alternative, it also speculates about benefits to the action alternatives that may not come to fruition, and are subject completely to the decisions of ConocoPhillips. The agency states that, "*if local oil industry support companies, such as those owned by Kuukpik or ASRC, earn revenues on the Project, this would indirectly affect local incomes through increased dividends.*"[1433] Such speculation about specific contractors that may or may not be hired by the leaseholder does not belong in an objective analysis of whether a project should move forward.

Finally, the agency failed to consider the profitability of developing the Willow project to the leaseholder. This omission would have likely revealed that a different version Willow project, such as one with stronger protections for surface values of the Reserve, could still be developed by the project proponent while better fulfilling the agency's responsibility of fulfilling conservation focused objectives of the Reserve.

Alaska oil and gas has proven to be highly lucrative to multinational oil and gas corporations. ConocoPhillips Alaska's net income in Alaska was nearly $1.4 billion in 2021 alone, with total production just shy of 72 million barrels of oil equivalent for the time period. Crude oil — averaging $69.81 per barrel —accounted for over 90% of the company's total Alaska production on an energy basis, with natural gas and natural gas liquids accounting for the rest of hydrocarbons extracted from the state. With natural gas averaging $2.81 per mcf, it is fair to say that this net income was largely driven by crude oil production, which totaled 65 million barrels in 2021.[1434] Furthermore, through the first two quarters of 2022 this income trend for ConocoPhillips continued, with the company bringing in over $1 billion from Alaska oil and gas production alone.[1435]

On roughly 10% of the total oil projected to be produced in the lifetime of the Willow project, ConocoPhillips — after subtracting the year's operations costs and federal, state, and local government take — would still manage to net the company ~25% of the cost of developing the entire Willow project.[1436] Furthermore, net income from ConocoPhillips's Alaska operations in 2021 was higher than the total anticipated 30-year tax revenue to the North Slope Borough or State of Alaska.[1437] The largest beneficiary of the Willow project economically would be the company itself, and yet the DSEIS does not consider this in any manner, while considering a range of action alternatives that all are just slight variations on the proponent's project, and all of which anticipate near full development of the oil reservoir while guaranteeing impacts to surface values that could potentially be avoided through a broader range of alternatives.

Comparing these recent returns to the company — in both income, and 2021 income and production combined — to the proposed Willow project suggests that a broader range of

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[1433] 1 DSEIS at 252.
[1434] ConocoPhillips 2021 Annual Report, page 46.
[1435] ConocoPhillips Second-Quarter Earnings Conference Call Slides, Slide 4 https://static.conocophillips.com/files/resources/2q22-earnings-call-deck.pdf.
[1436] ConocoPhillips Willow Fact Sheet, recovered 8/2/2022 https://static.conocophillips.com/files/resources/22copa013-willow-fact-sheet-r7-19-12.pdf.
[1437] 1 DSEIS at 254.

alternatives should have been considered by BLM, as there would have likely been an economically attractive and feasible project to the leaseholder.

The net impact of the economic review in the DSEIS shows an outdated, incomplete, and slanted analysis of how the Willow project would affect jobs, and local, regional, state, and federal governments. The omission of any consideration of the revenue that would be generated for private industry fails to answer whether a profitable project for the leaseholder could have been feasible with an action alternative that provides stronger surface area protections such as by avoiding roads and requiring seasonal drilling, reduces the climate impact of fuels produced, and/or considered alternate construction of facilities other than the modular delivery option analyzed.

XIV. BLM MUST ANALYZE IMPACTS TO RECREATION.

The agency should not have excluded impacts to recreation from the Willow project review in the DSEIS. This issue was raised during the informal scoping process, and the agency's explanation — that "current recreation use is very low, and prospective future use of this area for recreation is also low."[1438] — is not grounds to completely ignore foreseeable harm to recreational opportunities in the project area should an action alternative be selected.

As noted in the Reserve's IAP, "visitors to the planning 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 can have disproportionately large impacts on user experiences."[1439] The IAP also notes that, among other places, the greatest potential for future recreation impacts would be found along river corridors and near the Teshekpuk Lake Special Area,[1440] both criteria that are impacted by the proposed Willow project. It goes further to outline the duration and timing of recreation impacts — some extending through the life of a project development — that could result from oil and gas extraction, including the potential for noise, dust, audio, and visual impacts, along with access issues, activity displacement, and user conflicts that would arise.[1441] The Colville River and its tributaries are noted in particular as the most frequently fished waters for "general fishing" in the Reserve,[1442] which would be directly by the Willow project.

Despite the IAP's recognition that the impacts to recreation could be extensive from oil and gas projects, the agency responded to informal scoping comments by stating that "land ownership and use of the area is not being changed from wildlife habitat and subsistence use, nor are protections being removed, recreation permits being changed, etc. The area retains its values related to recreation and wilderness."[1443] This explanation for ignoring recreational impacts runs contrary to the IAP and common sense. BLM's response that the agency would continue to issue recreation permits studiously ignores the fact that visitors to the Reserve are traveling there for a

[1438] 1 DSEIS at 5.
[1439] 1 2020 IAP FEIS at 320.
[1440] *Id*.
[1441] *Id*. at 320-321.
[1442] *Id*. at 319.
[1443] 4 DSEIS at 45.

wilderness experience; not seeking to camp in an oil field. By ignoring impacts to these places and activities, the agency is turning a blind eye to what may be low frequency in volume today, but truly unique experiences that cannot be found elsewhere on our nation's public lands system. Furthermore, by not quantifying and analyzing these uses that are specific to the project area, no attempt to mitigate or provide solutions through a meaningful range of action alternatives has been provided by the agency.

A lack of analyzing recreation impacts that result from oil and gas development in the Reserve marks a departure from how the agency has handled its obligations in reviewing other drilling projects, including both the Greater Mooses Tooth 1 & 2 projects. While the agency found impacts in both processes to be negligible to minimal, they analyzed the specifics of impacts to recreation, noting that "recreation use in the project area could be negatively impacted under all action alternatives due to the presence of permanent facilities and associated noise. However, these impacts would be localized. The duration of impacts would be temporary to long-term depending on the activity taking place."[1444] It is worth noting that both GMT-1 and GMT-2 are much smaller than the proposed Willow development, making it even more unacceptable to skip analyzing recreation in the DSEIS.

XV. THE DRAFT SEIS DOES NOT ADEQUATELY CONSIDER IMPACTS TO SUBSISTENCE AND SOCIOCULTURAL SYSTEMS.

While groups appreciate that the draft SEIS attempts to address vital sociocultural and subsistence impacts from the Willow Project,[1445] BLM failed to conduct an adequate analysis of these consequential effects. Willow is located in one of Nuiqsut's last remaining, infrastructure-free areas close in to the community. Other development activities have encircled the community and have already had significant impacts to the community's ability to continue its subsistence way of life. However, Willow's impacts will extend beyond Nuiqsut. Construction and operation of Willow, which will connect back to and magnify the amount of industrial activity in the region, will detrimentally impact the region's sociocultural systems by intensifying existing stressors on subsistence resources and activities. BLM must revise its analysis to account for the full extent of Willow's impacts to all relevant communities and resources, including impacts from the proposed Module Transfer Island, gather comprehensive baseline information, and consider measures to reduce subsistence and sociocultural impacts.

1. BLM failed to address all relevant communities and resources.

Like the final EIS, the DSEIS diminishes Willow's subsistence and sociocultural impacts by limiting its analysis to just two communities — Nuiqsut and Utqiaġvik.[1446] This narrow approach is insufficient because it fails to account for subsistence sharing and the migratory nature of many of the subsistence species that rely on the northeaster Reserve. In Alaska, subsistence use regions span large geographic areas and subsistence resources include many

[1444] 1 Bureau of Land Mgmt., Alpine Satellite Development Plan for the Proposed Greater Mooses Tooth 2 Development Project Final Supplemental Environmental Impact Statement, at 414 (2018).
[1445] 1 DSEIS at 256–307.
[1446] 1 2020 Willow final EIS at 225; 1 DSEIS at 256.

migratory species like caribou, marine mammals, and waterfowl, as well as extensive food-sharing networks. For example, impacts to migratory species such as TCH will be transmitted to communities that rely on caribou for subsistence throughout the herd's range. Any impacts to the health or abundance of the TCH will similarly reverberate across the North Slope through impacts to sharing. As BLM recognizes, subsistence sharing "is a key Iñupiaq value that strengthens social ties and promotes the continuation and transmission of cultural values and traditions."[1447] "The importance of subsistence for Alaska Native communities, and the continuation of subsistence-related practices, is that it is a critical linkage to linguistic and cultural survival (Active 1999). Participation provides opportunities for different generations to learn from one another and pass on critical knowledge and value systems. As such, subsistence practices are meaningful beyond the harvest of nutritional and cultural goods as they create and reproduce linkages across multiple social and ecological domains." It is critical to honor the government-to-government relationship with federally recognized tribes that may be affected by Willow. BLM should have provided more opportunities to meet with federally recognized tribes as early as possible in the planning process and, were the project to proceed, provide for government-to-government consultation throughout construction, development and operation of Willow. This would enable the agency and ConocoPhillips to anticipate and address conflicts between subsistence uses and development activities. BLM must also revise its analysis to identify and address all of the communities that stand to be impacted by Willow's massive development.

2. BLM failed to gather baseline information.

BLM's subsistence and sociocultural impacts analysis fails to capture the full complexity and connections between the natural environment and how subsistence and sociocultural systems may be impacted by Willow.[1448] Notably absent from the draft SEIS is an adequately comprehensive study of the sociocultural and economic impacts that would result from constraints that development from Willow would place on subsistence activities. This baseline information should be gathered, in part, by the Subsistence Advisory Panel before BLM proceeds. Because there has been no such study, the draft SEIS fails to fully consider the adverse impacts to intertribal and intergenerational social structures, which contribute to an already heavy history of trauma. Comprehensive study is imperative given the extent of development on the North Slope and existing impacts to communities such as Nuiqsut. As BLM acknowledges, Nuiqsut, census reports indicate "negative trends in housing access, labor force, employment rates, participation in certain subsistence activities, and food security."[1449] Willow is likely to add to these stressors by impacting resource availability and harvester success.[1450] As BLM recognizes, such impacts "affect[] social health by weakening social bonds."[1451] Without sufficient baseline data BLM's analysis of subsistence and sociocultural systems lacks

[1447] 1 DSEIS at 257.
[1448] *Id*. at 256–95.
[1449] *Id*. at 258.
[1450] *Id*. at 286.
[1451] *Id*.

significant rigor and warrants improved citations to best available sources and resources – which includes traditional knowledge – and inclusion of robust mitigation measures.[1452]

BLM must also gather information on the potential impacts of gravel mining activities on fish resources within the Ublutuoch River. Arctic fishes of subsistence importance are highly migratory and rely on the health of entire watersheds to complete their life cycles. Discussion opportunities with the Subsistence Advisory Panel[1453] would afford a platform to discuss the health of such watersheds. Life cycle research by local subsistence practitioners of fish gathering in the area could provide critical insight. Relatedly, BLM fails to consider how changes from mine development, operation, and closure will impact the physical and ecological systems that enable subsistence resources and practices within the project area. These impacts should also be analyzed in detail. This would also present an opportunity to employ local subsistence practitioners to assist in providing real-world datasets to the scientific community.

BLM also failed to sufficiently analyze and discuss the compounding adverse impacts of infrastructure development. The draft SEIS states that "[a]s the presence of permanent infrastructure grows throughout the construction and operations phases, the sources of impacts may change."[1454] From here, BLM proceeds to give one example about the relationship between air and ground traffic impacts. Providing one example is not enough analysis. BLM must comprehensively analyze how impacts may decrease, shift, or compound over the course of the project – and connected and related projects that impose cumulative effects – so that the true impacts are properly described and understood by BLM and affected communities. The presence of radio-collar data by trained tribal members would help the Subsistence Advisory Panel to discuss and present real-time impacts that the presence or absence of permanent structures that support carbon extraction activities, such as air traffic, have on the natural environment. Data regarding how harvester avoidance has been cumulatively compromised over time across Nuiqsut's subsistence use area is also necessary.[1455] Referencing GMT1 and GMT2 environmental impacts does not effectively capture harvester avoidance and how it has affected Nuiqsut subsistence use patterns over time.[1456] BLM must gather data regarding how subsistence practices have been impacted on federal, state, and private (native corporation) owned lands. This data should be mapped and included within the SEIS.

BLM's analysis is also not comprehensive enough when analyzing the connected, and often sequential, actions of oil exploration and development impacts. For example, the draft SEIS states that "while a substantial percentage of Nuiqsut harvesters reported using the Willow

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[1452] *See, e.g.*, Jessica S. Lefevre, A Pioneering Effort in the Design of Process and Law Supporting Integrated Arctic Ocean Management, Environmental Law Institute (2013).
[1453] *See* BLM, National Petroleum Reserve in Alaska, Subsistence Advisory Panel Handbook (May 2016) [hereinafter BLM SAP Handbook].
[1454] 1 DSEIS at 278.
[1455] A dedicated team of local research assistants who are paid through grant funding and overseen by the Subsistence Advisory Panel, would provide important information about harvester avoidance.
[1456] *See, e.g.*, 1 DSEIS at 260–61.

area over a 10-year period for all resources, fewer used the area in the 12 months prior to their interview (18% for all resources)."[1457] No reason for this reduced use is articulated and it marginalizes the project area's significance to cultural and traditional practices. The Subsistence Advisory Panel could ensure research data is correct and reflects actual use over time. It should be incumbent upon a Subsistence Advisory Panel to explore questions such as this. Exploratory activities, such as seismic exploration, ice road development, and exploratory drilling, could explain why harvesters are already using this area less than they have historically. Restrictions on development, with actual datasets provided through a Subsistence Advisory Panel, could provide important mitigation. The Subsistence Advisory Panel could also add necessary context to the draft SEIS's discussion of the households who use and don't use roads.[1458] Understanding this dynamic will require a systematic enumeration of data collection through local research assistants that target specific datasets. BLM should also explain how increased travel because of changes in subsistence resources and practices will increase risks to safety.[1459] In sum, the connected role of exploration's impacts should be described within this section of the document.

3. BLM's cumulative analysis is inadequate.

BLM's analysis of Willow's cumulative effect on subsistence and sociocultural systems is overly broad and fails to actually analyze Willow's likely effects when combined with particularly relevant RFFAs. BLM acknowledges that reduced sharing could extend Willow's sociocultural effects beyond Nuiqsut and Utqiaġvik if the cumulative case leads to large scale impacts to subsistence resources.[1460] While the DSEIS points the reader to BLM's cumulative effects section for additional information regarding this concerning possibility, that section provides no further context or analysis.[1461] BLM's cumulative analysis of subsistence and sociocultural systems discuses all RFFAs generally and indicates future development "could affect the health and abundance of different subsistence resources on the North Slope."[1462] This statement does not indicate which developments might cumulatively impact subsistence harvests in combination with Willow, which subsistence resources might be at risk in the cumulative case, or which communities might be impacted. BLM also failed to address relevant impacts from specific RFFAs. For example, the DSEIS indicates community members in Nuiqsut have experienced significant sociocultural impacts as a result of being boxed in by development and cutoff from traditional hunting areas.[1463] One proposed RFFA that would presumably add to this subsistence and sociocultural impact is ConocoPhillips' CD-8 pad which, unlike many other RFFAs, will be immediately adjacent to Nuiqsut.[1464] Yet, the DSEIS does not address CD-8 and broadly concludes all RFFAS "would have similar impacts to subsistence as [Willow]."[1465] BLM

[1457] *Id.* at 285.
[1458] *See, e.g.*, *id.* at 284.
[1459] *See id*. at 286–87.
[1460] *Id*. at 286.
[1461] *Id*.
[1462] *Id*. at 337.
[1463] *Id.* at 67.
[1464] Kay Cashman, *Colville POD Approved*, PETROLEUM NEWS, June, 19, 2022, at 1, 6.
[1465] 1 DSEIS at 337.

must revise its cumulative effects section to actually analyze Willow's cumulative effects to subsistence and sociocultural systems with reference to specific past present and future actions.

BLM's GMT1 analysis is also not meaningfully discussed enough within this draft SEIS to understand Willow's cumulative impacts. The GMT1 ROD states:

> Negative impacts to subsistence that were considered in the finding of major impacts for Environmental Justice include the project footprint's direct and indirect impact to subsistence use areas, including the 3-mile Fish Creek and Tiŋmiaqsiġvik (Ublutuoch) River setbacks, disruption to subsistence hunting activities caused by aircraft traffic, reduced access to and user avoidance of traditional subsistence use areas, reduced value of traditional subsistence use areas, and decreased community participation and transmission of knowledge. Also, many residents identify the cumulative effects as the loss of traditional land and a sense of being surrounded by infrastructure.[1466]

How this finding is related to and compounded by GMT2 and the Willow MDP should be discussed in detail, particularly regarding infrastructure and gravel mines that are being proposed within these and other important setback areas.

4. BLM Failed to Explain its Conclusions Regarding Impacts from Barging and the Module Transfer Island.

The construction of the Module Transfer Island (MTI) or upgrades to Oliktok dock or Point Lonely during the summer months and barging activities also warrants greater analysis. Harrison Bay is an area of subsistence importance for both resources and traditional practices. Yet, regarding bowhead whales — a "key" resource with "unique cultural and social importance to the Iñupiat of the North Slope" — BLM brushes off Willow's impacts without necessary analysis. Noting Willow's barging activity may affect the success of whale hunts for communities including tqiaġvik, BLM does not indicate the extent or magnitude of anticipated impacts. This is a significant oversight given that Iñupiaq social organization is based around the species and up to 65% of Utqiaġvik's total subsistence harvest may consist of bowhead whale.[1467] Rather, BLM simply asserts permittees for barging activities are required to coordinate with whaling officials to "minimize" impacts to subsistence whaling.[1468] It is unclear how impacts to subsistence whale hunters will be minimized given extensive traditional knowledge indicating that industrial noise has pushed whales further and further offshore — severely impacting the success of subsistence whale hunts.[1469] A greater analysis of how the barging in modules and associated construction activity to establish module delivery

[1466] GMT-1 ROD at 26.
[1467] *Id*. 282.
[1468] *Id*.
[1469] 8 DSEIS App. J at 16–18.

infrastructure will impact subsistence resources, including migrating whales and other marine mammals, should be included within this section of the analysis.

BLM states that the MTI will "be reshaped by waves and ice and resemble a natural barrier island within 10 to 20 years."[1470] BLM must articulate how the increase of material to Harrison Bay will, if at all, truly resemble that of a barrier island in the Beaufort Sea. Specific elements that should be addressed include the island's make-up (substrate), how this island in its proposed location will impact physical processes, and how the island's make-up and the associated physical process will impact ecological systems that are connected to subsistence resources and practices.

5. BLM Must Consider Alternatives and Meaningful Mitigation Measures that Reduce Subsistence and Sociocultural Impacts.

The subsistence and sociocultural systems analysis is hampered by the lack of meaningful project alternatives. BLM must consider additional reasonable alternatives that incur far less impacts presently and over time on subsistence activities. Additionally, while air traffic is often cited as a potential impact, there is little discussion of or sufficiently robust mitigation measures regarding how air traffic impacts could be mitigated through differing flight paths[1471] and the management of altitude, among other factors. Alternatives that avoid or minimize impacts to subsistence and sociocultural practices must be analyzed and considered. BLM should also explain how its decision to only consider alternatives which would streamline future development with Willow as a hub is consistent with considering any alternatives that might reduce impacts on the local community, given the agency's prior acknowledgement that increased development in the region has significant determinantal sociocultural impacts.[1472]

Similar to the inadequacy of climate impacts and GHG emissions mitigation in the draft SEIS, the measures to mitigate[1473] the deleterious and compounding impacts to subsistence activities and community health and well-being are starkly inadequate. While these mitigation measures may provide some minimization of adverse effects on subsistence, they presume that the massive impacts from Willow and the compounding impacts from planning future development (Greater Willow) in the Reserve are simply the status quo. Instead, BLM must seriously analyze reasonable alternatives that follow BLM's own mitigation Manual and Handbook[1474] and the mitigation hierarchy by providing an alternative that significantly avoids

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[1470] 1 DSEIS at 257.
[1471] *Id*. at 87 (noting that flight paths could be altered to avoid sensitive areas but providing no concrete measures or discussion of how altering flight paths could avoid impacting subsistence activities).
[1472] Bureau of Land Mgmt., Record of Decision for the Willow Master Development Plan, at 18 (2020) (explaining "rapid modernization and development, as well as other multiple stressful conditions, including significant changes in diet, housing, and traditional culture, has led to negative health outcomes, including suicide.").
[1473] I DSEIS at 264–75.
[1474] *See* IM No. 2021-046 and Manual and Handbook Sections 1794.

subsistence impacts. And, ultimately, choosing the no action alternative is critical to mitigating the devastating and long-term impacts to directly affected communities.

XVI. THE DRAFT SEIS DOES NOT ADEQUATELY CONSIDER IMPACTS TO ENVIRONMENTAL JUSTICE.

BLM's environmental justice analysis[1475] fails to sufficiently evaluate whether Willow will have "disproportionately high and adverse human health or environmental effects … on minority populations and low-income populations."[1476] 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."

In the memorandum accompanying EO 12898, the President specifically recognized the importance of NEPA and stated that "each Federal agency shall analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities."[1477] The President recognized that "[m]itigation measures outlined or analyzed in an environmental assessment, environmental impact statement, or record of decision, whenever feasible, should address significant and adverse environmental effects of proposed Federal actions on minority communities and low-income communities."[1478] Another key element is that federal agencies are required to "provide opportunities for community input in the NEPA process, including identifying potential effects and mitigation measures in consultation with affected communities and improving the accessibility of meetings, crucial documents, and notices."[1479]

On his first day in office, just hours after being sworn in, President Biden issued Executive Order 13990 Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis.[1480] The Executive Order committed to "promote and protect public health and the environment, as well as to "advance environmental justice."[1481] In doing so, the President explained that decisions "must be guided by the best science and be protected by

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[1475] 1 DSEIS at 295–307.
[1476] Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.
[1477] President William Clinton, Memorandum for the Heads of All Departments and Agencies re: Executive Order on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (Feb. 11, 1994).
[1478] *Id.* at 1.
[1479] *Id.*
[1480] Executive Order 13990 Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, sec. 1, available at: https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-protecting-public-health-and-environment-and-restoring-science-to-tackle-climate-crisis/.
[1481] *Id.*

processes that ensure the integrity of Federal decision-making."[1482] The President then announced his policy:

> It is, therefore, the policy of my Administration to listen to the science; to improve public health and protect our environment; to ensure access to clean air and water; to limit exposure to dangerous chemicals and pesticides; to hold polluters accountable, including those who disproportionately harm communities of color and low-income communities; to reduce greenhouse gas emissions; to bolster resilience to the impacts of climate change; to restore and expand our national treasures and monuments; and to prioritize both environmental justice and the creation of the well-paying union jobs necessary to deliver on these goals.[1483]

BLM has failed to meet these requirements and policies on all fronts. It has not considered impacts to all potentially affected populations, not adequately identified the potential environmental justice impacts, provided for adequate participation by impacted communities, nor adequately addressed ways in which to reduce those impacts.

The primary failing of BLM's analysis of Willow's potential environmental justice impacts is the agency's decision to consider just one North Slope community — Nuiqsut. There are broader impacts to minority and low-income communities that should be considered and addressed as part of BLM's analysis. ConocoPhillips is proposing to build infrastructure and engage in substantial amounts of industrial activities in areas that provide important habitat for multiple subsistence resources used by communities in the region, including caribou, furbearers, bowhead whales, bearded seals, ringed seals, and eiders. BLM's analysis fails to acknowledge or address the broader impacts to subsistence resources and other communities in addition to Nuiqsut that could occur from this project. For example, Utqiaġvik harvesters depend on many of the areas and resources that would be directly impacted by this development. Despite this, BLM's analysis wholly omits any consideration of impacts to other communities who depend directly on these migratory resources. BLM's narrow analysis also overlooks impacts to North Slope communities that widely engage in sharing practices and could be harmed if there are negative impacts to subsistence resources. BLM must revise its analysis to address these issues.

Even with regard to Nuiqsut, BLM has not gathered sufficient information to meet its obligations under EO 12898. There are a broad range of impacts — including impacts to subsistence, sociocultural systems, health, and more that are already being felt by the community of Nuiqsut from development in the region. Air quality and other health-related concerns have repeatedly been flagged by Nuiqsut. Despite this, BLM has yet to prepare a Health Impact Assessment for the Willow Project. In addition, as detailed in these comments and explained in the attached report by expert Megan Williams, there are substantial flaws with the modeling related to air quality. BLM has failed to adequately capture the potential air quality concerns related to Willow and to look at them in tandem with the potential cumulative impacts to air quality in the region. BLM needs to prepare a Health Impact Assessment looking at the specific

[1482] *Id.*
[1483] *Id.*

health impacts to Nuiqsut and should not review generalized information and data related to communities on the North Slope more broadly. It is vital that the agency have a thorough understanding of the potential health impacts, given that it is contemplating allowing a massive industrial complex to further extend into the backyard of the community.[1484]

BLM claims in its analysis that the NPR-A Working Group is one of the ways in which it has provided engagement opportunities for Nuiqsut. However, as groups have previously flagged to BLM, there are significant concerns with how the Working Group has been operating, given that it appears to be an advisory group formed and operated in violation of the Federal Advisory Committee Act. While groups appreciate BLM's efforts to engage with communities on the North Slope, BLM has been less than transparent about the operations of this group, and we have significant concerns about whether this entity has in fact been a meaningful platform for Nuiqsut to voice its concerns.

BLM's analysis of the economic impacts to Nuiqsut is also flawed. It focuses on BLM's assertion that Nuiqsut residents are likely to receive income from development, either through jobs or Kuukpik dividends, and concludes the "effects on Nuiqsut's economics would not be highly adverse."[1485] This conclusion is striking because BLM acknowledges that there are residents in Nuiqsut who are not shareholders and will not receive dividends, and not all Nuiqsut residents would qualify for or obtain jobs.[1486] It also ignores the fact that there are likely to be even greater adverse impacts to households from a reduction in access and abundance of subsistence resources, such as from hunters having a harder time harvesting subsistence resources in traditional areas or from them needing to travel further to obtain those resources.

BLM has previously identified access impacts and the overall reduction in Nuiqsut's subsistence use areas as some of the most significant impacts from development in the region. In the GMT-1 decision, BLM found there would be a significant restriction to subsistence for the village of Nuiqsut based on the reduced access to subsistence use areas, reduced availability of subsistence resources, and hunter avoidance of industrial areas — from a single drilling pad with one connective road.[1487] Some of the specific concerns included hunter avoidance of infrastructure that would extend well beyond the direct GMT1 project area; noise, traffic, and infrastructure that could impact the availability of key resources such as caribou, wolves, and wolverine; the number of caribou use areas in the GMT1 project area; the diversion of caribou from the road and traffic; increased helicopter impacts on caribou hunting; increased risks to hunters and increased investments in time, money, fuel, equipment, and hunting success; and numerous sociocultural and socioeconomic impacts.[1488]

[1484] *See* BLM SAP Handbook (containing additional mitigation and best process recommendations).
[1485] 1 DSEIS at 304.
[1486] *See id*.
[1487] GMT-1 Final SEIS at App. B, at B-7; GMT-1 ROD at 29–30.
[1488] GMT-1 ROD at 29–30.

These concerns are identical to and will be magnified by the Willow project. The GMT1 project acknowledged that there would be significant environmental justice and other impacts, and that those impacts would only increase in light of other developments in the region:

> The potential direct and indirect impacts of GMT2 would be very similar to that of GMT1 and these impacts would be additive. However, it is likely that development of GMT2 would make it feasible to develop other oil drill sites further west (i.e., most immediately in the Bear Tooth Unit). In that case, the impacts of GMT2 would be considered synergistic. Considered together with development east of the Colville Delta (Kuparuk and Prudhoe), in the Delta (CD1, CD2, CD3, and CD4), west of the Delta with CD5 and GMT1, and additional development further west, the cumulative impacts of GMT2 would include an extension of the corridor of industrial development between Nuiqsut and the coast. The westward expansion of industry could place Nuiqsut in an even more disadvantageous position regarding the Teshekpuk Herd. An access road to GMT2, like that to GMT1, would have some countervailing effects, but these would be outweighed by the adverse impacts of additional development within the area. If GMT1 is developed, it is likely that the pre-development GMT2 area will have an even higher value for subsistence because it will become one of the increasingly rare areas near town without industrial development.[1489]

BLM has not adequately analyzed the potential cumulative impacts the massive Willow project will have when added to the existing impacts of development that has already been built or authorized in the region.

Moreover, the increasingly devastating impacts of climate change disruption are not adequately analyzed and considered over the lengthy, 30-year span of the Willow Project, nor properly accounted for in mitigation. Every year, those climate impacts will accumulate, deeply worsening and compounding the adverse effects on directly impacted communities from Willow. The draft SEIS fails to sufficiently discuss these issues. And, as explained throughout this letter, BLM's analysis of impacts to important subsistence species—including caribou, fish, birds, and marine mammals—is also deficient.

Nonetheless, BLM is continuing to move forward without a solid understanding of how broad these impacts will be, or how it will be able to, adequately mitigate against those impacts. In the GMT1 decision, BLM acknowledged that the existing measures in the IAP were insufficient to fully mitigate the serious impacts to subsistence and sociocultural systems. As a result, it prepared a Regional Mitigation Strategy aimed at coming up with broader mitigation measures to better address the impacts to Nuiqsut. The handful of mitigation measures BLM has included in Table 3.17.2 do not go far enough to address the potential impacts.[1490] They only scratch the surface of what BLM should consider to address those impacts. Those measures in no way directly address the serious impacts to subsistence and health, or acknowledge the failure of similar measures to adequately address those impacts to date. There are no required mitigation

[1489] GMT-1 Final SEIS, App. B at B-19.
[1490] 1 DSEIS at 298–300, Table 3.17.2.

measures – they all remain discretionary. It would be contrary to EO 12898 to move forward with authorizing Willow as proposed since the project is likely to have substantial impacts to subsistence that have not been adequately addressed by the proposed mitigation measures.

BLM should explain how its fast-tracking of the Willow project — which would disproportionately harm communities of color and low-income communities while at the same time approving 30 or more years of climate damaging greenhouse gas emissions, on a pace which suppresses participation by the most impacted community — comports with relevant executive orders and agency guidance.

XVII. THE DRAFT SEIS DOES NOT ADEQUATELY CONSIDER IMPACTS TO PUBLIC HEALTH.

Overall, the DSEIS analysis of public health impacts lacks significant rigor for a matter of such importance. [1491]

The geographic extent of BLM's public health analysis is incorrect and too narrow in scope. BLM limits its study to the community of Nuiqsut when other communities' public health may also be harmed by the proposed development. For the communities of Atqasuk, Anatktuvuk Pass, and Utqiagvik, changes in subsistence resource availability from the development could impact food security and the health benefits of established social networks dependent on wild resources. Moreover, compromised food security has the potential to have direct and secondary impacts to individuals' nutrition and wellness and may increase the risk of chronic conditions, including diabetes and some forms of cancer.

The proposed development's impacts to culturally important lands, resources, and traditional practices for communities within and around the Reserve can also increase stress and harm residents' metal health. Such mental health impacts may be exacerbated by anxiety associated with the risks and dangers of living in such close proximity to an active oil field. Finally, BLM's use of the North Slope Borough's public health data exemplifies why and how this public health analysis should take a geographic approach larger than Nuiqsut.

The temporal scale of impact analysis is also incorrect. Mental health impacts should be analyzed and disclosed as beginning at the lease sale phase, the enabling circumstances for this project. Concerns over land use changes, and the associated impacts to particular resources and ways of life, can cause stress, anxiety, and depression. How these mental health impacts are likely to compound through the years of the project's construction and operations should also be disclosed.

Within section 3.18.2.3 Alternative A: No Action, BLM writes that "Alternative A would have no new effects on public health in Nuiqsut."[1492] This statement is incorrect. For many, selecting the "no action alternative" would greatly reduce the stress and anxiety associated with this project. The "no action alternative" would also help to ensure foundational, positive determinants of health. These determinants are healthy populations of wild resources that enable

[1491] *Id*. at 307.
[1492] *Id*. at 317.

traditional cultural practices, clean water, and less polluted air. Simply put, there would be fewer risks and impacts to human health if this project did not move forward. These conditions should be disclosed within the document.

BLM's finding that "construction would not affect general health in Nuiqsut"[1493] does not comport with its disclosure of impacts to health. Earlier environmental impact statements have found that even the environmental review process impacts rural residents' mental health. Construction activities and physical changes to the landscape that would occur during development would have public health impacts relating to mental health, air quality, and food security.

BLM's claim that "prevailing winds would typically blow equipment emissions and dust to the southwest, away from Nuiqsut, so construction activities would not impact air quality in the community"[1494] is incorrect. Such a statement both acknowledges a series of known risks, while also completely discounting the potential for harm. BLM should fully analyze and disclose the potential health impacts of emissions and dust on the community of Nuiqsut during the time when winds are blowing towards the community.

While briefly mentioned in a later section, the draft SEIS fails to meaningfully consider the full cumulative effects of the project on public health. We suggest that BLM's analysis of public health impacts take an integrative health approach that will more fully capture determinants and feedbacks associated with wellness and disease. In their paper "Food, culture, and human health in Alaska: an integrative health approach to food security" (2009), Loring and Gerlach provide a model of review that BLM should follow.[1495] As described in Loring and Gerlach's abstract, "this paper expands the discussion of food security, premised on an integrative model of health that links sociocultural, ecological, psychological, and biomedical aspects of individual and community health." This type of wholistic synthesis should be brought to the analysis and disclosure of the Willow Master Development Plan. This systems-based approach is necessary to fully and accurately describe true harm.

BLM'S ANILCA SECTION 810 ANALYSIS IS FLAWED.

I. ANILCA SECTION 810.

BLM's Alaska National Interest Lands Conservation Act (ANILCA) section 810 analysis is inadequate because it does not consider alternatives that would reduce impacts to subsistence and because its analysis of effects to subsistence is flawed in several key respects.

[1493] *Id*.

[1494] *Id*. at 318.

[1495] *See* Loring, Philip A., and S. C. Gerlach., *Food, Culture, and Human Health in Alaska: An Integrative Health Approach to Food Security*, 12:4 ENVIRONMENTAL SCIENCE AND POLICY, 466–478 (2009).

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.[1496] 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."[1497]

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.[1498] The agency is required to evaluate 1) "the effect of such use, occupancy, or disposition on subsistence uses and needs," 2) "the availability of other lands for the purposes sought to be achieved," and 3) "other alternatives which would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes."[1499] As part of its evaluation of the effect on subsistence uses and needs, BLM must consider the cumulative impacts[1500] and analyze:

a) Reductions in the abundance of subsistence resources caused by a decline in the population or amount of harvestable resources;
b) Reductions in the availability of resources used for subsistence purposes caused by alteration of their normal locations, migration, or distribution patterns; and;
c) Limitations on access to subsistence resources, including from increased competition for the resources.[1501]

Regardless of the final determination, "adequate discussion must be contained within the section 810 Evaluation to support the findings, so that the public can adequately review the findings and provide input during the DEIS meeting(s) or the ANILCA Hearing(s), if required."[1502]

If the agency, after conducting the Tier 1 analysis, determines that the activity will not "significantly restrict subsistence uses,"[1503] then the agency issues a Finding of No Significant Restriction and the requirements of ANILCA section 810 are satisfied. However, if the agency

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[1496] 16 U.S.C. §§ 3111–3126.
[1497] *Amoco Production Co. v. Village of Gambell, Alaska*, 480 U.S. 531, 544 (1987).
[1498] ANILCA § 810(a), 16 U.S.C. § 3120(a).
[1499] *Id.*; *Hanlon v. Barton*, 470 F. Supp. 1446, 1448 (D. Alaska 1988).
[1500] *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).
[1501] 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].
[1502] *Id.* at 6-3.
[1503] 16 U.S.C. § 3120(a).

makes the initial determination that the action would "significantly restrict subsistence uses," the agency must then conduct a Tier 2 analysis.[1504]

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.[1505] Thus, ANILCA section 810 imposes procedural requirements as well as substantive restrictions on the agency's decisions.[1506] The agency must provide notice to local and regional councils and hold hearings in potentially affected communities.[1507] 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.[1508]

BLM's Tier 1 ANILCA section 810 analysis is flawed in several respects. First, the alternatives analysis is flawed because it does not evaluate alternatives that would reduce the project's impact on subsistence. Second, the effects analysis is flawed because: 1) it does not give appropriate attention to impacts to fish and fishing, resulting in an unsupported conclusion that there will be no population level effects to fish; 2) its conclusion that there will be no population-level effects to subsistence species from the cumulative case is inconsistent with its own analysis; 3) its conclusions that the module alternatives will not significantly restrict subsistence are unsupported and contrary to its own analysis; and 4) even for areas where BLM acknowledges significant effects to subsistence, it downplays the level of significant effects.

II. BLM'S ANILCA SECTION 810 ANALYSIS FAILED TO CONSIDER ALTERNATIVES THAT WOULD REDUCE IMPACTS TO SUBSISTENCE.

Section 810 requires any federal agency "determining whether to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands," to consider "other alternatives which would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes."[1509] An agency 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."[1510] An agency cannot decline to consider alternatives or consider only a no action alternative where feasible alternatives exist.[1511] This requirement applies to all actions subject to ANILCA, regardless of whether the action would significantly restrict subsistence uses.[1512]

[1504] *Kunaknana v. Clark*, 742 F.2d 1145, 1151 (9th Cit. 1984); *Hanlon*, 470 F. Supp. at 1448.
[1505] 16 U.S.C. § 3120(a)(1)–(3).
[1506] *Sierra Club v. Marsh*, 872 F.2d 497, 502–03 (9th Cir. 1989).
[1507] 16 U.S.C. § 3120(a).
[1508] Instructional Memorandum at 6-2.
[1509] 16 U.S.C. § 3120(a).
[1510] *City of Tenakee Springs v. Clough*, 915 F.2d 1308, 1310, 1311-12 (9th Cir. 1990).
[1511] *See id*. at 1311-12.
[1512] *See* 16 U.S.C. § 3120(a); *Kunaknana*, 742 F.2d at 1150-51.

Here, BLM considered a no-action alternative and three alternatives that do not differ in any meaningful way in terms of impacts to subsistence. All of the alternatives BLM considered result in a finding of significant restrictions to subsistence.[1513] According to BLM, "[t]he long-term differences in direct impacts between Alternatives B and C are considered minimal because both alternatives would involve similar overall amounts of air and ground traffic, and both would include a year-round access road to the west of the Nuiqsut's core caribou hunting grounds."[1514] For Alternative D, BLM states that "Alternative D may result in fewer impacts on caribou availability than Alternative B due to the lack of a year-round gravel access road connecting the Project to existing development (e.g., GMT-2, Alpine), however, the BLM still anticipates a major redistribution of resources would occur under this alternative."[1515] Further, "[m]any benefits of reduced deflection from the lack of an access road would be offset by the aircraft traffic (including take offs and landings of large fixed-wing aircraft) in addition to the combined effects of a linear pipeline along the route between GMT-2 and the Project, parallel pipeline racks between GMT-2 and Alpine facilities, Project infield roads, drill sites, and the WPF, the location of and activity at the gravel mine site, and other disturbances described above for Alternative B."[1516]

There is therefore no alternative other than the no action alternative—which BLM asserts it cannot choose—that reduces impacts to subsistence. Section 810 requires an agency to consider *all* feasible alternatives, not just those that satisfy all of the project proponent's wishes.[1517] Many of the alternatives suggested above in the Alternatives section of this comment letter would reduce impacts to subsistence. BLM must consider these alternatives as part of its ANILCA evaluation, as well as its NEPA analysis.

III. BLM'S ANILCA SECTION 810 EFFECTS ANALYSIS IS FLAWED.

Title VIII of ANILCA provides a framework to consider and protect subsistence uses in agency decision-making processes, as described above.

BLM's finding that Willow may significantly restrict subsistence uses for the community of Nuiqsut but no other North Slope communities relies on faulty analysis that must be substantially revised.[1518] In reaching its section 810 findings, BLM failed to consider all relevant communities and resources, and did not adequately support its conclusions regarding the cumulative case and module delivery options.

[1513] 4 DSEIS, App. G, at 22, 26, 28.
[1514] *Id*. at 26.
[1515] *Id.* at 28.
[1516] *Id*.
[1517] *See City of Tenakee Springs*, 915 F.2d at 1311.
[1518] 1 DSEIS at ES-15.

1. BLM's ANILCA Section 810 analysis omits impacts to North Slope subsistence communities including important whaling impacts.

In reaching the conclusion that Willow will significantly restrict subsistence activities in Nuiqsut alone, BLM failed to fully account for the project's likely impacts to other subsistence communities. BLM's finding regarding Nuiqsut is premised on analysis that, as explained throughout this letter, diminishes impacts to important subsistence species.[1519] This underlying analytical failing is compounded by BLM's overly narrow 810 analysis. Unlike the subsistence and sociocultural section which addresses Utqiaġvik and Nuiqsut, BLM's section 810 analysis is focused on Nuiqsut.[1520] By limiting its analysis in this way, BLM failed to account for Willow's likely ripple effects on other North Slope communities. Many subsistence resources that stand to be impacted by Willow are migratory species such as caribou and birds that are relied on by numerous North Slope communities.[1521] Impacts to these species in the area immediately surrounding Willow will likely be transmitted to other North Slope communities as they travel throughout their range. In addition, reduced access or harvest success in one community is likely to be felt across the North Slope because Inupiat communities engage in "substantial sharing of traditional foods."[1522] Given the interconnected nature of Willow's likely subsistence impacts, BLM's analysis must be revised to consider the full range of communities across the North Slope that stand to be impacted by the project.

One notable omission from BLM's section 810 analysis is Willow's impacts to bowhead whale hunters in North Slope communities. In its section 810 analysis, BLM concludes "impacts to bowhead whale hunting associated with the Project are unlikely" because Nuiqsut's whale hunting activities occur outside the analysis area.[1523] This passage, and BLM's overall analysis — which does not mention bowhead whales further[1524] — gives the incorrect impression that subsistence impacts to bowhead whales are unlikely for all North Slope communities. Yet, elsewhere in the DSEIS, BLM indicates impacts to whaling communities are likely. While Willow's barging routes will not pass through Nuiqsut's particular whaling grounds, whales are migratory and thus impacts to them elsewhere on the barge route would impact Nuiqsut whalers' hunting success. Further, the DSEIS notes Willow's barge routes "would traverse whaling grounds for other communities . . . including Utqiaġvik."[1525] It is essential that impacts to bowhead whalers from these communities be thoroughly addressed as bowhead whales are a "key subsistence resource that has unique cultural and social importance to the Iñupiat of the

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[1519] *See supra* Resource Impacts.
[1520] *Compare* 7 DSEIS, App. E at Figure E.16.1 & E.16.12 (analysis area for subsistence and sociocultural systems), *with* 8 DSEIS App. G at Figure 2 (analysis area for ANILCA section 810); *and* 8 DSEIS App. G at 9 (explaining the ANILCA section 810 analysis is limited to an area "heavily used by Nuiqsut residents for subsistence.").
[1521] 1 DSEIS at 256.
[1522] *Id*. at 257.
[1523] 8 DSEIS App. G at 40.
[1524] *See* 8 DSEIS at 26-27 (listing primary resources harvested in the analysis area and discussing other secondary resources that may be impacted without addressing whales).
[1525] 1 DSEIS at 282.

North Slope."[1526] In fact, bowhead harvests account for nearly 65% of subsistence foods harvested by Utqiaġvik hunters. Given the importance of bowhead whaling in the region, the DSEIS warns that "any disruption" to bowhead whaling activities could have "substantial subsistence and sociocultural impacts."[1527] Traditional knowledge outlined in the DSEIS makes clear that noise has "devastating" impacts for whalers.[1528] BLM itself recognized that barging and noise associated with Willow may "displace bowhead whales and affect whale hunting success."[1529] However, the agency's section 810 analysis reaches a contrary conclusion — that harvesters of marine mammals are unlikely to be impacted by Willow "in the absence of significant offshore oil and gas exploration and development."[1530] This ignores Willow's direct impacts from the project's proposed screeding, ballast water discharges, and barging activities altogether. BLM must explain this inconsistency in its findings, consider all of Willow's impacts, and expand its section 810 analysis to account for subsistence impacts to all affected communities and resources.

While BLM's ultimate conclusion that Willow would significantly restrict Nuiqsut's subsistence activities[1531] is inescapable, the agency failed to address the full extent of impacts to the community. As BLM acknowledges, Willow would "continue a pattern of development infrastructure surrounding Nuiqsut" that alters "the traditional distribution of caribou within the Nuiqsut core subsistence use area."[1532] In fact, industry's "human corral" surrounding Nuiqsut and cutting off subsistence access may soon be complete.[1533] However, BLM's analysis of subsistence impacts to Nuiqsut fails to address impacts from ConocoPhillips' proposed CD-8 well site which will be immediately adjacent to the community and likely add to these impacts.[1534] In addition, the DSEIS suggests industrial roads may provide Nuiqsut's residents access for subsistence hunting and that the Colville River Access Road could even "help to offset impacts resulting from increased development."[1535] The DSEIS does not square this statement with BLM's finding elsewhere in the DSEIS that roads may not provide a "net benefit" for subsistence users.[1536] These oversights and inconsistencies do not provide an adequate picture of the extent of Willow's likely impacts on Nuiqsut. According to BLM's own guidance, "adequate

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[1526] *Id*.
[1527] *Id*. at 282.
[1528] 8 DSEIS, App. J at 16–18.
[1529] 1 DSEIS at 282.
[1530] 8 DSEIS App. G at 65.
[1531] *Id*. at 22, 26, 28.
[1532] *Id*. at 67.
[1533] *Id*. at 336; 8 DSEIS, App. G at 64 (explaining Nanushuk would "leave only the southerly direction [of Nuiqsut] untouched by oil and gas infrastructure" and noting exploration activities to the south of the community are underway).
[1534] *See* Kay Cashman, *Colville POD Approved*, PETROLEUM NEWS, June, 19, 2022, at 1, 6.
[1535] 8 DSEIS, App. G at 66.
[1536] 1 DSEIS at 337 (explaining increased subsistence hunting access "may not provide a net benefit" due to "changes in hunting methods and areas, resulting loss of traditional knowledge, increased impacts associated with hunting in proximity of development, and direct loss of traditional hunting areas.").

discussion must be contained within the Section 810 Evaluation to support the findings, so that the public can adequately review the findings and provide input."[1537] Without a thorough and honest accounting of Willow's effects, BLM cannot meet this obligation under ANILCA.

2. BLM's conclusion that there will be no population-level effects to subsistence species from the cumulative case is incorrect and contradictory.

BLM's cumulative analysis of subsistence impacts is inadequate. 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." [1538] A positive finding in the cumulative case triggers the notice, hearing, and determination requirements of ANILCA Section 810(a)."[1539] BLM's section 810 analysis adopts the flawed cumulative analysis set out in Section 3.19 of the DSEIS[1540] for its conclusion that "the cumulative case is not expected to result in a large reduction in the abundance (population level) of caribou or any other subsistence resource."[1541] As previously explained, the DSEIS's analysis of Willow's cumulative effects to subsistence was deficient for numerous reasons including BLM's failure to consider relevant RFFAs and communities beyond Nuiqsut and Utqiaġvik.[1542] Without considering Willow's impact in conjunction with relevant RFFAs including plans for Willow's future expansion, BLM's conclusions regarding impacts to subsistence fail to meet the agency's mandate under section 810 of ANILCA.

BLM's ultimate conclusion regarding impacts to subsistence in the cumulative case is also belied by many of the agency's findings. The DSEIS draws the limited conclusion that Willow "may significantly restrict [subsistence] uses for the community of Nuiqsut" but will not have such impacts on other North Slope communities.[1543] This finding is not supported by BLM's analysis in the DSEIS. For example, BLM acknowledges that "[i]f development continues westward into the core calving area for the TCH, or if it reduces access to key insect relief habitats . . . impacts related to the health and abundance of the TCH would likely extend to subsistence users of the herd including Nuiqsut, Utqiaġvik, Anaktuvuk Pass, Atqasuk, and Wainwright." [1544] The DSEIS suggests this outcome is unlikely because the Reserve's IAP, which was recently revised, is "not expected to cause an overall decline in [the TCH's] productivity and abundance."[1545] This conclusion — pinning the continued health of the TCH on the Reserve's land management plan alone rather than looking impacts from this project — contradicts BLM's statements elsewhere in the DSEIS. For example, the DSEIS acknowledges:

[1537] Instruction Memorandum at 6-3.
[1538] *Id*. at 7.
[1539] *Id*.
[1540] 8 DSEIS, App. G at 63.
[1541] *Id*. at 67.
[1542] *See supra* Resource Impacts XV.
[1543] 1 DSEIS at ES-15.
[1544] 8 DSEIS App. G at 67.
[1545] *Id*. at 67.

- under all alternatives "cumulative oil and gas activity, transportation projects, and climate change will increasingly restrict subsistence uses and affect the availability of subsistence resources such as caribou and marine mammals."[1546]
- increasing North slope oil and gas infrastructure "would continue to cause alteration and degradation of habitats for key subsistence resources including caribou, furbearers, fish, and goose" and "over time, these changes could affect the health and abundance of different subsistence resources on the North Slope."[1547]
- current development "could lead to additional future development in the BTU and elsewhere in the NPR-A that is within the core harvesting areas for Utqiaġvik and Atqasuk, thus increasing the potential for direct impacts to subsistence users from other communities."[1548]

BLM must explain its conclusion that these impacts, predicted to occur across the region despite adoption of the revised IAP, will be limited to Nuiqsut.

3. BLM's conclusion that the module delivery options will not significantly restrict subsistence contradicts agency guidance.

The module delivery options — which involve acres of gravel fill, road widening, ice roads, pads, and screeding[1549] — will significantly impact subsistence activities and BLM's contrary conclusion contradicts agency guidance.[1550] As BLM itself acknowledges, the analysis area for Module Delivery Option 1 is "heavily used by Nuiqsut residents for subsistence" hunting of "key" subsistence resources including caribou, wolf, and wolverine.[1551] The area is used by up to 78% of Nuiqsut's caribou harvesters.[1552] BLM also predicts that the construction, noise, and traffic associated with Option 1 would reduce subsistence resource availability in this important subsistence area.[1553] Caribou are expected to be deflected from ice roads "affecting resource availability for caribou harvesters."[1554] Wolf and wolverine hunting, which occurs primarily in the winter, would also be impacted as hunting for these species coincides with "peak ground traffic levels" that could "reach up to 121 trips per hour."[1555] The Module Transfer Island (MTI) would also "reduced harvest success for Nuiqsut seal hunters in the MTI area during the summer months."[1556] Option 2, which places the MTI near Point Lonely, is intended to reduce impacts to Nuiqsut's high subsistence use area.[1557] However, Option 2 would increase caribou

[1546] *Id*. at 63.
[1547] *Id*. at 66–67.
[1548] *Id*. at 64.
[1549] 1 DSEIS at 122–23.
[1550] 8 DSEIS, App. G at 51.
[1551] *Id*. at 40.
[1552] *Id*.
[1553] *Id*. at 50.
[1554] *Id*.
[1555] *Id*.
[1556] *Id*.
[1557] *Id*. at 51–52.

disturbance by encroaching on "critical calving, post-calving, and insect relief habitats for TCH caribou."[1558] The route selected for Option 2 is also a "key contemporary subsistence use area for many Utqiaġvik families and hunters year-round."[1559] As BLM recognizes, Option 2 would increase impacts to caribou and furbearer subsistence.[1560] Option 3 also involves concerning impacts for subsistence users, because it would cross through "areas of high winter subsistence use for Nuiqsut" resulting in the community "being completely encircled to the north, west, south, and east by gravel or ice roads for two winter seasons."[1561]

Despite these impacts, BLM determined the module delivery options would not cause significant restrictions on abundance, availability or access to subsistence resources because impacts are expected to be temporary and residents may adapt to disturbances.[1562] For example, although construction of the MTI would displace seals and reduce harvest success[1563] BLM concluded this would not result in "overall impacts" to subsistence because "most" seal displacement would be temporary and because "residents would likely avoid areas where immediate disturbance in likely."[1564] Overlooking the sheer magnitude of a subsistence restriction in a particularly important subsistence harvest area and within "critical" habitat for important resources simply because impacts are expected to be limited in time does not square with BLM's guidance. According to BLM's ANILCA guidance, managers must make significance findings with reference to the magnitude, duration, extent, likelihood, and intensity of subsistence impacts.[1565] In applying these criteria, managers are to "err on the side of protection" because the "ultimate goal" of section 810 is "identifying ways in which impacts to subsistence can be minimized."[1566] The DSEIS conflicts with this guidance by brushing aside impacts of significant magnitude, extent, likelihood, and intensity because those impacts are not expected to be permanent. This approach is particularly egregious given BLM's acknowledgement that the climate crisis "has decreased the safety, predictability, and success rates"[1567] of subsistence activities and that Nuiqsut area hunters already report decreased subsistence success rates "due to development related noise and traffic."[1568]

[1558] *Id*. at 52.
[1559] *Id*.
[1560] *Id*.
[1561] *Id*. at 53.
[1562] *Id*. at 49–50, 53.
[1563] *Id*.
[1564] *Id*. at 50.
[1565] Instruction Memorandum, App. 6 at 2–3.
[1566] *Id*.
[1567] 1 DSEIS at 264.
[1568] *Id*. at 336.