Alaska District

DEPARTMENT OF THE ARMY

RECORD OF DECISON
&
PERMIT EVALUATION

APPLICANT: Oil Search Alaska
APPLICATION NO: POA-2015-00025
WATERWAY: Colville River

This document constitutes the United States (U.S.) Department of the Army (DA), Corps of Engineers' (Corps) Record of Decision (ROD) under the National Environmental Policy Act (NEPA); the compliance determination with the U.S. Environmental Protection Agency's (EPA) Section 404(b)(1) Guidelines (40 CFR 230) (Guidelines), and the public interest review, for the Nanushuk Development project (Project), under the authority delegated to the District Engineer by 33 CFR 325.8, pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899.

BACKGROUND

The Corps received a permit application on June 15, 2015, from Repsol E&P USA, Inc. (Repsol) to discharge fill into waters of the U.S (WOTUS), including wetlands. In April 2016 the Applicant changed from Repsol to Armstrong Energy, LLC. Armstrong Energy, LLC, submitted a revised application on July 10, 2017, requesting authorization for the placement of fill in WOTUS for the Nanushuk Project. The primary project purpose had not changed and the application proposed to develop hydrocarbon resources from the Alpine C and Nanushuk reservoirs on the East side of the Colville River approximately 6.5 miles northeast of Nuiqsut (at closest point). The Project would include construction of gravel roads and pads, pipelines, and production infrastructure. Construction involving the discharge of fill into WOTUS is expected to last 4 to 5 years. The estimated life of the project is 30 years total, including construction. Drilling is anticipated to last approximately 16 years and operation/productions are anticipated to last about 25 years. 120,000 barrels of oil per day is anticipated at peak production. The Corps developed and released a Draft Environmental Impact Statement (DEIS) in September 1, 2017, in compliance with NEPA. The Corps also published a Public Notice for the DA Permit Application on September 1, 2017, for a 45-day comment period. On September 13, 2017, the Corps extended the Public Notice comment period to November 15, 2017, at a request from the Arctic Slope Regional Corporation (ASRC) and Kuukpik Corporation.

Though Armstrong Energy, LLC, was the Applicant in the DEIS, Oil Search Alaska, LLC (hereafter referred to as the Applicant) officially assumed the role of operator and Applicant for the Project on March 15, 2018. In response to comments received on the Draft EIS, an additional revised application was submitted to the Corps on October 5, 2018. The changes to the project in the October 2018 revised application resulted in a reduction in impacts to WOTUS. The Corps released a Final Environmental Impact Statement (FEIS) on November 2, 2018. Concurrent with the review period for the Final EIS, the Corps published a Public Notice for the revised DA Permit Application. The review period for the Final EIS and the comment period for the DA Permit Application closed December 3, 2018.

AUTHORITY

The proposed activities within the Corps federal control and responsibility include the discharge of fill for the construction of roads, pads, and pipeline supports (pursuant to Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344)) and the screeding of sediments in the Beaufort Sea adjacent to the Oliktok Dock (under Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403), and pursuant to Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344)).

I have independently reviewed and evaluated the information in the FEIS, including all supplemental data and information subsequently provided, in accordance with 40 CFR 1506.3 and 40 CFR Part 230, and have found them to be sufficient and accurate assessments, and therefore appropriate for the purposes of the public interest review and alternatives analysis required by 33 CFR 320.4(b)(4) and 40 CFR 230.10.

1.0 SUMMARY OF DECISION

A DA permit will be issued to the Applicant for the proposed discharge of fill material into WOTUS, including wetlands, and the screeding within navigable waters. The DA permit authorizes the Applicant's proposed action (Alternative 5: Applicant's Preferred), as described in Section 2.0, Proposed Project. The impacts as a result of the discharge of fill into WOTUS and the screeding in navigable waters are described in the FEIS and summarized in this ROD. Alternative 5 incorporates all practicable avoidance and minimization measures. The permit would authorize the discharge of fill into 272 acres of WOTUS for the construction of roads, pads and Vertical Support Members (VSMs) for the Project. It also authorizes the screeding of 5.7 acres of marine sediments in the Beaufort Sea adjacent to Oliktok Dock.

Principal impacts resulting from the proposed project are described in Section 6.0 of this document and the FEIS. The DA authorization would include special conditions to minimize potential adverse impacts and compensate for the unavoidable losses of aquatic resources and to ensure that the project would not be contrary to the public interest. The Corps' mitigation determination is included in Section 5.1 of this ROD.

All work would be performed in accordance with the attached plan (25 pages) and Sheets 1- 61 dated January 7, 2019.

2.0 PROPOSED PROJECT

2.1 Project Description: The Applicant proposes to drill wells and construct and operate infrastructure and facilities to produce and transport sales-quality oil to the Trans-Alaska Pipeline System (TAPS). The estimated life of the project is 30 years total, including construction. Drilling is anticipated to last approximately 16 years and operation/productions are anticipated to last about 25 years. 120,000 barrels of oil per day is anticipated at peak production.

This proposal reflects Alternative 5 in the FEIS. Project components include: the Nanushuk Pad (composed of DS1 and central processing facility), two standalone gravel drill sites (DS2 and DS3), an operations center, a tie-in pad, infield pipelines on vertical support members (VSMs), the Nanushuk Pipeline on VSMs, gravel infield roads, a gravel access road, road bridges at the Miluveach (bridge length is 170 linear feet) and Kachemach Rivers (bridge length is 245 linear feet), and a potable water intake system. The Applicant proposes placement of 2.9 million cubic yards (cy) of clean fill material into 272 acres of waters of the U.S. to construct the Project. Culverts would be placed in roads every 500 feet on average for a total of approximately 235 culverts. Approximately 5080 VSM's would be installed for impacts to approximately 0.6 acres and power and fiber optic cable trenching under road crossing would result in an impact of 0.1 acres. The Project also includes redistribution of dredged material over 5.7 acres of navigable waters of the U.S. (Harrison Bay of the Beaufort Sea) for screeding activities in front of the existing Oliktok Dock and trenching for power and fiber optic cables at pipeline-road crossings. Construction is anticipated to take four to five years. The project impacts are described in Table 1, below.

Table 1: Project Fill Footprint and Volume:

Feature	Length (mi)	Gravel Fill (CY)	Footprint (Acres)
Total Permanent Impact to WOUS	**26.9**	**2,934,150**	**266.2***
DS1 Pad	-	243,000	16.2
DS2 Pad	-	279,000	19.5
DS3 Pad	-	249,000	18.0
CPF	-	225,000	17.1
Operations Center Pad	-	234,000	16.4
Tie-in Pad	-	7,000	0.8
Pump House Pad	-	13,000	1.1
Boat Ramp**	-	14,000	1.3
Boat Ramp below OHW*	**-**	**6,000**	**0.7**
Access Road	9.5	637,000	72.8
DS1 Road	3.5	221,000	25.4

DS2 Road	2.1	142,000	15.2
DS3 Road	5.2	485,000	45.5
Water Source Access Road	0.2	10,000	1.1
Boat Ramp Access Road	1.4	65,000	8.6
Mustang Road Upgrade	4.7	90,000	5.9
VSM	5,080 VSM's	14,150	0.6
Total Temporary Impact to WOUS:	-	500	**5.8**
Screeding		500	5.7
Trenching for fiber optic cable	0	0	0.1
TOTAL WOTUS IMPACTED:	**--**	**--**	**272**

* 266.2 total is made up of 265.5 acres to wetlands and 0.7 acres below OHW.
**Altogether, the Boat Ramp would result in the discharge of 21,000 CY of fill into 2.0 acres of WOTUS, including wetlands. This table does not include 0.1 acres impact to uplands.

2.2 Project Design Revisions: In June 15, 2015, the Applicant originally proposed to fill 288 acres of WOTUS. In July 2017, the Applicant submitted a revised permit application modifying the width of the access road from 38 to 35 feet wide. This change resulted in a 16.4 acre reduction of the proposed fill area to 271.6 acres. This reduction was not analyzed in the DEIS due to the timing of receipt of the revisions, although the changes were reflected in the September 1, 2017, Public Notice for the DA Permit Application. Changes to the proposed project between the DEIS and the FEIS are documented in the FEIS; Table 2.2-2.

In response to comments on the DEIS, the Applicant further modified their Project as follows: 1) changed the Applicant's proposed project to reflect Alternative 5 of the FEIS and added a compensatory mitigation proposal; 2) changed road side slopes from 3:1 to 2:1; 3) changed road surface widths from 38 and 35 feet to 32 feet; 4) changed fill volume from 2.8 to 2.9 million cubic yards; 5) relocated Drill Site (DS) 2 approximately 0.4 mile further east away from the Colville River; and 6) added tundra access ramps on the gravel roads and a gravel boat ramp, and 7) changed water source from Lake 9211 to Lake MC7903.

These changes decreased the overall Project footprint in wetlands by another 5.4 acres to 266.2 acres. This is a 21.8 acre reduction in permanent impacts to WOTUS from the original application dated June 15, 2015. The difference in acreages between the FEIS and this ROD are due to the method in which impacts were calculated. To definitively determine total fill acreages for permitting purposes, the Applicant used more detailed methods that took into account onsite topography.

2.3 Project Purpose:

Applicant's Purpose and Need: The Applicant's stated purpose and need is: "…to safely produce commercial quantities of liquid hydrocarbons in its oil and gas leasehold by operating from a site east of the CRD; to process hydrocarbons on or

near the drill sites; and to transport sales-quality oil through a new export pipeline to the Kuparuk sales oil pipeline, and then to TAPS…..[and]…to further delineate geologic features and hydrocarbon accumulations in [OSA's] leasehold utilizing the proposed infrastructure."

"The primary need for the project is to maximize economic benefit to [OSA] as lessee of record, the State of Alaska and ASRC as subsurface owners, and other parties having agreements with one or more subsurface owners. A secondary need is to provide workforce and business development opportunities in local, state, national, and international markets."

Basic Project Purpose: The Corps has determined that the basic project purpose [40 CFR 230.10(a)(3)] is to produce, process, and transport hydrocarbon liquids to market. The production, processing and transport of hydrocarbon liquids to market is not a water dependent activity. Therefore, pursuant to 40 CFR 230.10(a)(3), practicable alternatives not involving special aquatic sites are presumed to be available and are presumed to have less adverse impacts on the aquatic ecosystem unless clearly demonstrated otherwise. However, considering the location of the oil deposits, where the landscape is almost entirely wetlands, the Corps has determined that alternatives not involving special aquatic sites are not available. Alternatives are discussed below in Section 3.0.

Overall Project Purpose: The overall project purpose is the foundation from which the Corps evaluates alternatives to determine the Least Environmentally Damaging Practicable Alternative (LEDPA). The Guidelines define practicable to mean: "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the *overall project purpose*" [40 CFR 230.10(a)(2)]. While the definition of overall project purpose is the Corps' responsibility, it must take into consideration the Applicant's stated need for the project and the type of project being proposed. The overall project purpose should be specific enough to define the Applicant's needs, but not so restrictive as to constrain the range of alternatives that must be considered under the 404(b)(1) guidelines.

The Corps has determined that the overall project purpose is to safely produce, process, and transport commercial quantities of liquid hydrocarbons to market via pipeline from the Alpine C and Nanushuk reservoirs.

2.4 Scope of Analysis

The Corps' federal involvement is limited to a DA permit decision informed by an appropriate NEPA evaluation and public interest review, for activities and in areas over which the Corps has regulatory jurisdiction. However, the Corps is required to determine the scope of analysis for a NEPA document to address the impacts of both the specific activity over which the Corps has jurisdiction, and those portions of an entire project over which the Corps has sufficient control and responsibility to

warrant federal review. Considering that the Project area is almost entirely located in WOTUS, including wetlands, the extent of cumulative Federal control and responsibility includes the entire project area. Therefore, the Corps determined the scope of analysis under NEPA, covers the footprint of the entire proposed project.

Permit Area for National Historic Preservation Act: Section 106 of the NHPA requires each federal agency, prior to any federal or federally assisted or funded undertaking, including the issuance of a permit, to take into account the effect of its proposed undertaking on any property included in or eligible for inclusion in the National Register of Historic Places (NRHP) (hereafter called historic properties). The term "permit area" means those areas comprising the waters of the United States that will be directly affected by the proposed work or structure and upland directly affected as a result of authorizing the work or structures (33 CFR 325 Appendix C,1.g.).

The Corps, as the lead federal agency for Section 106 obligations under the NHPA, has determined that the permit area is the area of direct impacts, including those at Oliktok Dock, as well as a 330 foot buffer of the footprint of fill where secondary impacts could occur. Historic Properties consultation is discussed in Section 7.5 of this ROD.

Scope of Analysis for Endangered Species Act of 1973 (ESA):
Section 7 of the ESA requires all federal agencies to consult with the USFWS and/or NMFS when any action undertaken, funded, or permitted through the agency may affect an ESA-listed species or critical habitat. The Action Area established by the Corps in consultation with the USFWS and NMFS includes the following proposed Project components: roads, pads and VSMs for the Project and the screeding of marine sediments in the Beaufort Sea adjacent to Oliktok Dock. ESA Section 7 consultation conclusions are summarized in this ROD at Section 6.2.1.

3.0 ALTERNATIVES

Four action alternatives were determined to be reasonable under NEPA and practicable under the Clean Water Act and were carried forward for analysis under NEPA. The four action alternative are: Alternative 2: Applicant's Original Proposal, Alternative 3: Southern Access, Alternative 4: Northern Access, and Alternative 5: Applicant's Preferred. The EIS also analyzed Alternative 1: No Action. These Alternatives are discussed in detail in the FEIS, Chapter 2. Additionally, twenty seven alternatives and options were evaluated during the EIS process and eliminated from further consideration because they were not practicable, would not result in a reduction in impacts to WOTUS, or did not meet the overall project purpose. These alternatives are discussed in the FEIS, Chapter 2, Table 2.2-1.

3.1 Determination of the Least Environmentally Damaging Practicable Alternative (LEDPA): As discussed in Section 1.0 above, and based on the

analysis in the FEIS and the Guidelines analysis and Public Interest Review Factors below, the Corps has determined that Alternative 5, the Applicant's Preferred Alternative, is the LEDPA. This alternative meets the overall Project purpose, is practicable in consideration of costs, logistics, and exiting technology, and has the least total direct impacts and potential indirect impacts to WOTUS of the practicable alternatives (see FEIS Chapter 3.0). In response to comments on the DEIS the Applicant modified their proposed project to further minimize impacts to WOTUS. The Applicant adopted Alternative 5 as their preferred project (over Alternative 2, their originally proposed project), changed the side slopes of the road from 3:1 to 2:1 and reduced the width of all roads to 32 feet. Additionally, they moved the Central Processing Facility (CPF) farther north away from the Native Village of Nuiqsut (NVN) to address community concerns regarding air quality. To address concerns raised during the DEIS review period, the Applicant added tundra access ramps along the infield roads and a boat dock in the Kachemach River to improve access for local residents and subsistence hunters. Alternative 5 results in the least direct and indirect impacts to WOTUS compared to all other action alternatives. It has the smallest direct footprint, and the smallest dust shadow. The Applicant's proposed compensatory mitigation for the unavoidable impacts to WOTUS, is discussed in Section 5.1.4 below.

4.0 PUBLIC INVOLVEMENT

The Corps published a Public Notice (PN) for the DA permit application on September 1, 2017, with a 45-day comment period that expired on October 16, 2017. The Corps extended the PN comment period an additional 30-days to November 15, 2017 at the request of Arctic Slope Regional Corporation (ASRC) and Kuukpik Corporation. The Corps released a Final EIS on November 2, 2018. The 30-day review period for the Final EIS closed December 3, 2018. A summary table of all comments received on the EIS during the various commenting periods are discussed in Appendices II and XIII of the FEIS. Scoping and Pubic Outreach is discussed in Section 1.7 of the FEIS. Concurrent with the review period for the Final EIS, the Corps published a PN for the revised Permit Application with a 30-day comment period.

Comments received on the PN for the revised DA permit application are discussed below:

4.1 Federal Agencies:

4.1.1 Environmental Protection Agency (EPA)

The EPA submitted comments on the DEIS on November 14, 2017, and on the FEIS on December 3, 2018, expressing concerns regarding the analysis of air quality, aquatic resources and compensatory mitigation. The comments on the DEIS, including comments on air quality, aquatic resources and compensatory mitigation are discussed in detail in Appendices II and XIII of the FEIS. Additional discussion on aquatic resources can be found below and in Section 6.0 of this

ROD, and discussion of compensatory mitigation can be found in Section 5.0 of this ROD.

EPA comments under the Clean Water Act: The EPA initiated the 404Q elevation process on November 13, 2017, during the comment period for the DEIS and initial PN for the permit, designating the Colville River Delta, with its associated tributaries and wetlands, and adjacent wetland systems, as an aquatic resource of national importance according to the criteria identified in the Section 404(q) MOA. Comments received from EPA in the 3A and 3B letters, and the Corps' responses, are discussed below:

Comment from 404Q 3A letter dated November 13, 2017:

EPA1: Proposed project in DEIS is not the LEDPA. Alternative 5 has less impacts to WOTUS:
Corps Response: The Corps concurs that Alternative 5 is less environmentally damaging than Alternative 2, which was originally proposed by the Applicant. The Applicant has modified their project to reflect Alternative 5.

EPA2: Not all practicable steps have been taken to avoid and minimize, specifically:

1) The EPA suggests "the Applicant consider and analyze a route variation to the Alternative 5 configuration to avoid the lake complex of Lake MC7903 and the three smaller lakes by rerouting the alignment south of the complex. While this may slightly lengthen the road, it would potentially reduce the secondary impacts to the lake area complex. This may cause a slight shift to the CPF location and require moving the Operations Center to the new alignment, but it may reduce the need for the culvert battery between the lakes, as depicted in Figure 3.6-2."

   Corps Response: This alternative variation was examined by the EIS team. The analysis found that the alignment would not reduce impacts to hydrology; it would only shift the location of the impacts (i.e., a culvert battery or batteries would still be required); the alignment would shift toward the Kachemach River, an area identified by the Alaska Department of Fish and Game as being higher-quality habitat for terrestrial mammals; the alignment would increase the overall gravel access road length and the Project footprint, including impacts to wetlands and other WOTUS Although practicable, this modification would not result in the least environmental impacts and this modification was not carried forward for further analysis in the FEIS.

2) The EPA commented that the use of Lake MC7903 instead of Lake L9211 results in a reduction to impacts to WOTUS.

   Corps Response: The Corps concurs that this would result in a reduction in impacts to WOTUS. The use of Lake MC7903 is part of the design for the

Applicant's proposed project and the reduction of impacts to WOTUS is incorporated into the determination of impacts as analyzed in this ROD. The Final EIS analyzed the impacts from both options. The permit would authorize the discharge of fill for access to MC7903, as described in the Applicant's final plans for the proposed project.

3) "Another configuration option is to utilize the existing Mustang Road (as proposed for Alternatives 4 and 5), but then turn northwest to tie into the proposed Alternative 2 configuration. This altered alignment may reduce impacts and allow for consolidation of the CPF and DSI, as well as increase the distance between the CPF and the community of Nuiqsut."

   Corps Response: This modification was incorporated into the design for Alternative 2 in the Final EIS. This route was already part of Alternative 5, the Applicant's Preferred Alternative in the Final EIS and would be part of the project design.

4) The EIS needs to show which mitigation measures will be incorporated in the project design.

   Corps Response: The Applicant proposed mitigation measures relevant to WOTUS and necessary to be in compliance with the Guidelines are analyzed in this ROD and would be incorporated into the permit as special conditions or project design commitments.

EPA3: "Using the percentage of loss within the watershed as the sole basis of analysis is scientifically unsupportable; the impacts from wetland loss are dependent on type of wetland loss, location within the watershed, as well as spatial context in relation to other aquatic resources. Moreover, impacts occur simultaneously at multiple spatial scales. The analysis of percent land cover lost may help inform a cumulative impacts analysis, but it is not the sole basis for one, and does not provide meaningful information about how the proposed losses of wetlands affect the aquatic ecosystem."

Corps Response: The Corps determined that compensatory mitigation was appropriate for the proposed project and the Applicant submitted a revised Permittee Responsible Mitigation Plan that was published in the November 2, 2018 PN. The Corps considered the direct, indirect and cumulative impacts to WOTUS, as well as the type of wetland loss, location within the watershed, the spatial context of the wetlands in relation to other aquatic resources, as well as the information contained within the EPA's designation of the Colville River Delta and adjacent wetlands as an Aquatic Resource of National Importance (ARNI) in its determination regarding compensatory mitigation. Percentage of loss within the watershed was one factor considered for the analysis. Compensatory Mitigation is discussed in Section 5.0 of this ROD.

EPA4: The EPA suggested the EIS analyze the impacts to Caribou due to the increased side slopes (2:1 instead of 3:1). Steeper slopes may be out of compliance with state standards.

Corps Response: No studies have examined the effect of specific side slopes on caribou crossing success, but caribou regularly encounter and negotiate steep slopes while traveling in mountainous terrain in the Brooks Range and adjacent foothills. Conducting research regarding the steepness of side slopes and their effect on caribou was beyond the scope of the EIS and was not necessary to make a permit decision. The State did not comment on the change to steeper side slopes and 2:1 side slopes are common on North Slope roads. The 2:1 side slopes were analyzed in the FEIS and did not change the conclusions regarding impacts to Caribou.

Comments from 404Q 3B letter dated December 11, 2017:

EPA5: "Pursuant to Part IV, paragraph (3)(b) of the August 11, 1992 Clean Water Act Section 404(q) Memorandum of Agreement between the EPA and the Department of the Army, the EPA concludes that the proposed project will have substantial and unacceptable adverse effects on aquatic resources of national importance, specifically the Colville River basin and its contributing waterbodies."

Corps Response: This comment referred to Alternative 2 (the Applicant's Preferred Alternative) in the DEIS. In response to comments on the DEIS (including those by EPA indicating a preference for Alternative 5 which appeared to have less environmental impacts), the Applicant changed their proposed project to reflect Alternative 5 and further reduced impacts to WOTUS through additional design revisions. A modified Alternative 5 was analyzed in the Final EIS as the Applicant's Preferred Alternative. After analysis in the Final EIS and within this ROD, and with the inclusion of the avoidance and minimization measures as design features or special conditions of the permit (see Section 5.3 of the ROD), as well as the appropriate and practicable compensatory mitigation (see Section 5.1 of this ROD), the Corps has determined that the Project will not have substantial nor unacceptable adverse effects on aquatic resources of national importance, specifically the Colville River Delta and its adjacent wetlands. The Corps has determined that Alternative 5, with the proposed mitigation, is the LEDPA.

COMMENTS ON THE DECEMBER 2018 PN: The EPA expressed concerns regarding the amount of analysis of the newly proposed boat dock and subsistence ramps, and the lack of details regarding the proposed compensatory mitigation in the PN.

EPA6: "The current PN also includes two new project components: a boat ramp and a 1.4-mile-long access road that would connect the ramp to the roadways associated with the proposed project. These components would result in the loss of 10.3 acres of aquatic resources. They do not appear to meet the basic purpose of

the proposed project and were not previously identified or studied. Without these new project components, the overall impacts would be 251 acres, which would result in a net reduction of 20.6 acres when compared to the project as originally proposed in the first PN. While the new project component would increase aquatic resource impacts, the boat ramp is expected to aid in subsistence harvest and provide the population in Nuiqsut additional access to infrastructure during ice-free months. These components may thus comprise a separate activity having independent utility of the proposed project."

Corps response: *The impacts due to the construction of the boat ramp and subsistence ramps were disclosed in the FEIS and were not found to change any of the effects determinations. Additional analysis of the discharge of fill for the construction of the boat ramp can be found in Section 6.1.3 of this ROD. After comments received on the DEIS, and in consultation with the NVN and Kuukpik Corporation, the boat ramps and the subsistence ramps were included as mitigation measures for impacts to the human environment, specifically access to subsistence resources. The boat ramp would also provide access to emergency response boats as well as safe access to the road system for the population of Nuiqsut and other stakeholders. The construction of these features would be in compliance with the Clean Water Act, and not contrary to the public interest. Even with the added features, necessary to reduce impacts to the human environment, the Corps has determined that the revised proposed project is the LEDPA.*

EPA7: "The application states that the Applicant is in the process of refining its compensatory mitigation plan and will develop a plan for submittal to the Corps as part of the ongoing permit review process. The Applicant notes that the plan will comply with the 2008 Mitigation Rule (33 CFR § 332.4(c)). The Applicant also states it is considering mitigation opportunities over a larger scale watershed, as well as out-of-kind mitigation opportunities, and mitigation opportunities on public lands, consistent with the flexibilities articulated in the June 15, 2018 *A Memorandum of Agreement between the Department of Army and the Environmental Protection Agency concerning Mitigation Sequence for Wetlands in Alaska.* Because the EPA has not had the opportunity to review and comment on the substantive plan for compensatory mitigation associated with the PN process for this project, we request to do so when it is submitted to the Corps as part of the ongoing permit process."

Corps Response: The Corps provided their draft analysis of Applicant's compensatory mitigation plan to EPA on December 21, 2018. The Corps, EPA and the Applicant met to discuss the compensatory mitigation plan on December 27, 2018. In compliance with the Clean Water Act Section 404(q) Memorandum of Agreement Between the Environmental Protection Agency and the Department of the Army, the ROD and draft Permit was provided to the EPA prior to the Corps making a permit decision in compliance with the Regional and National 404Q Process Memorandum.

4.1.2 USFWS: The USFWS submitted comments dated December 7, 2018 on the PN for the permit.

USFWS1: The USFWS recommends determining the wetland functional loss using the Rapid Assessment of Wetlands in the North Slope Region of Alaska, and then using the Alaska District's Credit/Debit Methodology to determine the wetland functional debits.
Corps Response: Both methodologies were used for the evaluation of the Applicant's compensatory mitigation plan. This analysis can be found in Section 5.1 of this ROD.

USFWS2: The Service does not object to permit issuance providing the following conditions are included in the permit:
1. No fill, equipment or construction materials shall be stockpiled or stored on wetlands that do not have Department of the Army authorization for those activities.
2. All disturbed, stockpile and fill areas shall be stabilized to prevent erosion. Increased water turbidity and accumulation of sediment in drainages, sloughs, and other wetlands shall be evidence of insufficient stabilization.
3. Unavoidable project impacts to wetlands remaining after avoidance, minimization and successful reclamation shall be compensated with acres or credit provided by a mitigation bank, in lieu fee program, or permittee-responsible mitigation.
4. Implement a robust monitoring and maintenance plan to address erosion and wetland drainage issues until the closed site has demonstrated long-term stability.
5. Alternative restoration/mitigation projects shall be implemented should restoration attempts fail or do not meet expectations at any time.

Corps Response: The Corps has developed a list of conditions for the permit that are required for the proposed project to sufficiently avoid and minimize impacts to WOTUS. The purpose of the conditions above, while not included verbatim, are incorporated into the Corps conditions. Condition #3 will not be implemented since the Corps has determined that additional mitigation beyond what was proposed and approved is not practicable (See Section 5.0 of this ROD for full discussion of the Corps' mitigation determination).

4.2 STATE AGENCIES: No comments were received from any state agency on the PN for the permit application. Comments received on the Draft EIS from State agencies are discussed in detail in Appendices II and XIII of the FEIS.

4.3 LOCAL AGENCIES:

4.3.1 Fairbanks Chamber of Commerce: Fairbanks Chamber of Commerce submitted a comment in support of the Project on December 3, 2018, stating that the project "will bring many benefits to the State of Alaska and its communities, including the creation of jobs, which is a key component of a vibrant economy and the overall strength of the Alaskan labor force. Other positive economic benefits include increases in local contracts for Fairbanks, Anchorage, and other

communities that support North Slope activities. Additionally, it would create positive fiscal impacts for the state in terms of royalties, tax revenues, and lease payments." They specifically support Alternative 5 (Alt. 5 is the Applicant's modified proposed project as reflected in the November 2018 PN).

4.3.2 Arctic Slope Regional Corporation (ASRC):
ASRC submitted comments on December 3, 2018, supporting the proposed project, particularly the Applicant's modified preferred alternative as reflected in the public notice and Alternative 5 of the FEIS because "it will generate positive economic benefits across the North Slope, specifically to our shareholders, the Iñupiat people—we feel that with close coordination with the local people, the Nanushuk reservoir can be developed in and environmentally safe and culturally sensitive manner." ASRC supports the changes to the proposed project, including the subsistence ramps and recommend Oils Search work with local subsistence users to determine the best placement for these ramps. ASRC is also supportive of the boat ramp and access road from the Colville River to the project infrastructure stating that "In the Alpine and GMT project areas local access to infield roads has become a countervailing impact for subsistence users and helped to address "the avoidance effect"." ASRC requested that the Corps consider these local benefits while evaluating potential impacts from the Nanushuk Project.

Corps Response: The impacts due to the construction of the boat ramp and subsistence ramps were disclosed in the Final EIS and were not found to change any of the effects determinations. Additional analysis of the discharge of fill for the construction of the boat ramp can be found in Section 6.0 of this ROD. After comments received on the DEIS, and in consultation with the NVN and Kuukpik Corporation, the boat ramps and the subsistence ramps were included as mitigation measures for impacts to the human environment, specifically access to subsistence resources, and would provide a boat ramp for emergency response boats as well as safe access to the road system for the population of Nuiqsut and other stakeholders. The construction of these features would be in compliance with the Clean Water Act, and not contrary to the public interest. Even with the added features, necessary to reduce impacts to the human environment, the Corps has determined that the revised proposed Project is the LEDPA.

4.3.3 Kuukpik Corporation: These comments were received on 4 December 2018 due to email delay. The comments are dated 3 December 2018. This list also contains some of the comments received on the DEIS from Kuukpik dated November 14, 2018. The Corps extended the comment period on the DEIS by 30 days in response to a request from ASRC and Kuukpik Corporation.

Full text comments and initial responses from comments on the DEIS can be found in Appendices II and XIII of the FEIS. In general some of the concerns raised by Kuukpik Corporation in their comments on the PN for the permit application and on the DEIS include:

KC1 Kuukpik raised concerns regarding the impacts to Subsistence:
Corps Response: Subsistence is discussed in Section 7.19.1 of this ROD and in Chapter 3.17 in the Nanushuk FEIS. The Corps acknowledges there will be impacts to subsistence due to the proposed project as described in the Nanushuk FEIS Chapter 3.17. In response to concerns raised about impacts to access to subsistence areas, the Applicant proposed the construction of a boat ramp in the Kachemach River as well as subsistence ramps to mitigate for impacts to access. The Applicant has committed to an additional 17 design features and mitigation measures that will minimize impacts specifically to wildlife, particularly caribou, and subsistence activities. These features and measures are listed in Chapter 3.17.7.1 of the FEIS. Measures to avoid and minimize impacts to WOTUS also result in minimizing impacts to wildlife and subsistence as loss of wetlands and the habitat they provide is directly related to subsistence activities.

KC2 Kuukpik raised concerns regarding impacts to Air Quality:
Corps Response: Air Quality is discussed in the FEIS, Chapter 3.5 Air Quality. The Applicant would have to obtain the appropriate Air Quality permits from the State and be in compliance with the requirements of the Clean Air Act. ADEC would issue an air quality permit for each Project facility only after a demonstration of compliance with all applicable ambient air quality standards is made during the air permitting process. These concerns regarding Air Quality were forwarded to the State of Alaska for their consideration. Additionally, in response to comments received on the DEIS, at the Public Meetings on the DEIS, and during cooperating agency meetings, the Applicant re-located the CPF further north away from Nuiqsut in address concerns about air quality. Air Quality and The Clean Air Act is also discussed in Section 8.3 of this ROD.

KC3 Avoidance and Minimization Measures:
Kuukpik suggests that lightweight storage and camp buildings should be placed on piles to reduce impacts to WOTUS.

Applicant Response: "Oil Search is confident that benefit from the small reduction (if any) in the Project footprint would be outweighed by the significant safety and technical concerns that would be caused by constructing on pilings. Oil Search's primary concern is with safety of camp residents, maintenance personnel, and emergency responders. Emergency egress to the tundra carries significant risk, and emergency response would be made difficult, and in some cases impossible, if the only access were over tundra. Oil Search has considered the suggestions provided by the commenter for camp maintenance, but these suggestions are either not consistent with the type of maintenance that will be required for a three-story building of the sort Oil Search intends to construct or would require impacts to the tundra that are equivalent to the impact of placing gravel to be made feasible." It is currently unclear how a heated pile support structure over the top of tundra might affect the thermal properties of the underlying tundra. A thermal analysis would be required to determine the effectiveness of this approach. From an environmental

standpoint, tundra under the pile supported structure would not be gravel filled, but would still be directly impacted. The loss of sunlight would reduce or kill tundra vegetation. Loss of vegetation, and potential heat transfer from the building to the ground would alter the tundra from that surrounding the site. The loss of vegetative cover and potential for heat transfer from the camp to the tundra could lead to subsidence which, once started, is difficult to stop or reverse. It could also alter use of the area by wildlife, reducing natural wildlife habitat, but potentially creating habitat for predators such as foxes. Finally, if a spill or leak were to occur, it would not be contained on a gravel pad but would be discharged directly to the tundra. This would complicate cleanup and recovery of discharged materials and result in increased impacts. Overall, the minimal benefit of a small reduction of gravel footprint is likely offset by other direct and indirect impacts described above. For the reasons listed above, Oil Search does not consider pile supported facilities over tundra a viable option for the Nanushuk Project."

Corps Response: Placing lightweight storage and camp buildings on pilings i presents logistical and safety concerns that increase the risks associated with this construction technique while not resulting in meaningful environmental impact reductions and it has the potential to impact permafrost stability should heat from the structure be transferred to the ground over time. This alternative results in only a minimal reduction of impacts to WOTUS, and is not substantially different than the proposed project. Therefore, this construction alternative was not carried forward for further analysis. Other avoidance and minimization measures are discussed in this ROD, and in Chapter 6 of the Nanushuk FEIS.

KC4 Compensatory Mitigation: Kuukpik commented that they feel the impacts due to the Nanushuk Project warrant compensatory mitigation. "Kuukpik has no objection to the Applicant repairing the bridge to the old Nuiqsut airstrip and/or repairing/replacing the culverts on the road to the Nuiqsut boat ramp as part of required 404 compensatory mitigation. The Applicant has suggested making the bridge to the old airstrip the primary access to the boat ramp and simply removing the currently-used culverts and stream crossing to the boat ramp and effectively having only one route into that area. Kuukpik is not ready to take a position on such a proposal yet, one way or the other, until further internal discussions have occurred and community input is obtained. Both of these stream-crossing projects would restore and improved aquatic function, but further discussion internally and in the community is needed to determine Kuukpik's preferences for how the work should be design and whether abandoning the more northern access is appropriate."

Corps Response: The Corps has evaluated the Applicant's compensatory mitigation proposal (see Section 5.0 of the ROD) and has determined that the proposed removal of culverts and replacement of a bridge is appropriate mitigation for the 261.3 acres of impacts due to the proposed project. This proposal does not completely compensate for the impacts, and its worth as a compensatory mitigation project is dependent on the removal of the fills at the northern culverted crossing

and the restoration of the channel morphology and floodplain. The replacement of the bridge provides less lift compared to the removal of the culverts, and the Corps' approval of this mitigation project is dependent on the removal of the culverts and adjacent fills as well as the replacement of the bridge. Without the culvert removal, the proposal is not an adequate compensatory mitigation project.

KC5: Drill Site 2 is located too close to the Colville River.
Corps Response: In response to the comments received on the DEIS and original permit application, the Applicant relocated DS 2 approximately 0.4 mile further east away from the Colville River. DS 2 has been shifted to the east side of Lake L9211 and is now approximately 0.9 miles from the East Channel of the Colville River. In their comment on the November 2018 PN Kuukpik commented that Oil Search had responded positively to their concern regarding moving DS 2.

KC6: Kuukpik comments on Land Use: "Kuukpik selected the land on which Armstrong proposes to build Nanushuk because of its critical importance for subsistence activities near the village of Nuiqsut. Now we are being asked to sacrifice a portion of that land to yet another oil development-one that does not seem to offer many, or any, offsetting benefits to the community. So far, the majority of Nuiqsut residents do not seem willing to do so."

Corps Response: Chapter 3.17, Subsistence and Traditional Use, of the Nanushuk FEIS documents the importance of the project area for subsistence. Chapter 3.15 of the Nanushuk FEIS found that while land ownership and the overall pattern of land ownership in the analysis area would not change, land use in the Project footprint would change from oil and gas exploration activities, wildlife habitat, research, and subsistence uses to oil and gas development and operations. However, most lands in the analysis area would also continue to be used for wildlife habitat, subsistence uses, research, and further oil and gas exploration. Any operations on lands in the Project area would be conducted in accordance with State of Alaska or ASRC (or both) oil and gas lease provisions; applicable federal, state, and local land regulations; and all governing settlement agreements. Additionally, Kuukpik Corporation itself stated that Kuukpik land management would continue to balance subsistence use and oil and gas development consistent with its commitment to ensuring that subsistence users' rights are protected, as well as providing opportunities for environmentally safe, economically feasible exploration, development, and production on its lands (Kuukpik Corporation 2017).

4.4 NATIVE VILLAGE OF NUIQSUT (NVN) (comments received August 8, 2018)**:**

NVN1 Subsistence: "Exploration and development activities within the region continue to compromise our irreplaceable subsistence use areas. There have been no meaningful federal or state actions to protect subsistence resources and our remaining subsistence use areas from the impacts of oil development within the region.

The development of Nanushuk will reduce our subsistence use area and permanently impact where and how we hunt, fish, and gather. This project is a prime habitat area for many subsistence resources, and will deter resources like caribou and wolverine from coming close to the community. These resources, among many, are what our community thrives on. These altered conditions will force hunters to travel further to avoid infrastructure and the associated activities of development. Safety concerns will also force our hunters to stay away from development and will limit how and where they can shoot. Furthermore, the Nanushuk project presents unacceptable risks to the Colville River and jeopardizes our ability to harvest abundant numbers of fish that are safe to eat. The Colville River delta has been a place of great cultural and traditional importance for thousands of years and should not be compromised by more oil development."

Corps Response: Subsistence is discussed in Section 7.1.4 a) of this ROD and in Chapter 3.17 in the Nanushuk FEIS. The Corps acknowledges there will be impacts to subsistence due to the proposed project as described in the Nanushuk FEIS Chapter 3.17. In response to concerns raised about impacts to access to subsistence areas, the Applicant proposed the construction of a boat ramp in the Kachemach River as well as subsistence ramps to mitigate for impacts to access. The Applicant also moved DS2 farther from the Colville River to reduce impacts to subsistence activities along the channel. The Applicant has committed to an additional 17 design features and mitigation measures that will minimize impacts specifically to wildlife, particularly caribou, and subsistence activities. These are listed in Chapter 3.17.7.1 of the FEIS. Measures to avoid and minimize impacts to WOTUS also result in minimizing impacts to wildlife and subsistence as loss of wetlands and the habitat they provide is directly tied to subsistence activities. The construction of the boat ramp and the subsistence ramps are a part of the proposed project and would be included in the permit.

NVN2 Human Health: "Subsistence resources and practices are directly connected to the health of our community. The harvest, preparation, sharing, and consumption of these wild resources contributes to our health and wellness. The Nanushuk project will impact subsistence practices and further harm our food security. The impacts of constructing and operating the Nanushuk project will also add a variety of unacceptable stressors and harm our community's mental health."

Corps Response: Subsistence is discussed in the above response to comments and in Section 7.1.4 a) of this ROD. The connection between the project and impacts to subsistence and human health are discussed in the FEIS Chapter 3.20, Human Health and Safety. The FEIS has discussed the mixed impacts the project has on food security and to human health, and the Corps has determined that the proposed project, with the associated special conditions, is not contrary to the public interest.

NVN3 Air Quality: "We continue to have serious concerns about air quality. As residents, we have personally experienced and observed the impacts of oil

development on air quality within our region; and we do not believe that government agencies (Corps, EPA, State of Alaska, North Slope Borough) are doing enough to ensure that our community's air is safe. Air quality monitoring should not be managed by the oil companies contributing to the region's air pollution. The Arctic's air is unique; and independent outside experts should design and conduct the necessary analysis to study the air quality of our community and the surrounding region. This analysis will take time and is another reason why we believe the Nanushuk project should not be permitted. Industry's impacts on our air quality exemplify how development is not being conducted responsibly."

Corps Response: See response to Kuukpik's comment KC2 above.

NVN4 Cumulative Effects: "This development is another example of how the cumulative impacts of oil exploration and development are not being effectively quantified and considered. In addition to this project, over the coming months ConocoPhillips Alaska Inc. plans to bring the Greater Mooses Tooth One (GMT-1) project online, to secure permitting for the Greater Mooses Tooth Two (GMT-2) project, to begin a Master Development Plan for the massive Willow project, and to continue active exploration on lands south of the Nanushuk project. These and other exploration and development activities on State of Alaska lands will require regular seismic surveys, blasting at the ASRC gravel mine, and substantial transportation on the landscape. We believe that there is too much oil development activity too close to our community. More comprehensive analysis and more detailed studies, including air quality, should be conducted before any more development, including Nanushuk, is allowed to move forward."

Corps Response: The Corps acknowledges the cumulative effects to NVN due to the development that is occurring in proximity to their Village. Cumulative Effects is discussed in each individual resource section of Chapter 3.0 of the Nanushuk FEIS and in Section 6.1.8 of this ROD. Table 3.1.2 in the FEIS summarizes Past and Present Development in the Cumulative Effects Analyses Area. Greater Mooses Tooth One and Two and the Willow Project were considered as part of the cumulative analysis in the FEIS. The Corps has determined that the Applicant has avoided and minimized impacts to WOTUS to the maximum extent practicable. In addition, the Applicant has proposed additional measures to reduce impacts to other resources, including subsistence resources and air quality. The Applicant has also proposed to construct a boat ramp and subsistence ramps on the roads to help minimize impacts to access to subsistence resources. After analysis in the FEIS and within this ROD, and with the inclusion of the avoidance and minimization measures as special conditions of the permit (see Section 5.3 of the ROD), as well as the appropriate and practicable compensatory mitigation (see Section 5.1 of this ROD), the Corps has determined that the project will not result in substantial direct, indirect nor cumulative adverse effects on WOTUS. The Corps has determined that Alternative 5 in the FEIS, the Applicant's Preferred Alternative, with the proposed mitigation, is the LEDPA.

NVN5 Public Interest: "The Nanushuk project is not in the public interest. The project involves significant, unresolved conflicts as to resource use and will result in major adverse impacts to subsistence uses and other values. As discussed above, the Nanushuk project will extend existing infrastructure directly into the heart of one of Nuiqsut's primary subsistence use areas. The introduction of infrastructure into this subsistence use area will reduce the area where residents can hunt and fish and would be considered a substantial loss of traditional lands by many residents. The EIS analysis repeatedly identifies negative impacts to subsistence access, the loss of subsistence use areas, and concerns with hunter avoidance of industrial areas as significant impacts that are likely to result from this project. The cumulative effects to Nuiqsut from the infrastructure and development activities occurring in the region are overwhelming. The significant adverse effects of this project outweigh the benefits of the Nanushuk project, and the Corps should deny this permit since it is not in the public interest."

Corps Response: Chapter 3.15 of the Nanushuk FEIS found that while land ownership and the overall pattern of land ownership in the analysis area would not change, land use in the Project footprint would change from oil and gas exploration activities, wildlife habitat, research, and subsistence uses to oil and gas development and operations. However, Kuukpik land management would continue to balance subsistence use and oil and gas development consistent with its commitment to ensuring that subsistence users' rights are protected, as well as providing opportunities for environmentally safe, economically feasible exploration, development, and production on its lands (Kuukpik Corporation 2017).

In response to comments from NVN and Kuukpik Corporation on subsistence, the Applicant included subsistence ramps (ramps across road for snow machine access in winter) that would be constructed and located with input from local subsistence hunters and a boat ramp and small parking pad on the north east side of the Kachemach River near its confluence with the Colville River. Both the subsistence ramps and the boat ramp will improve access for hunters to subsistence hunting areas, and will also improve access to the state road system. With this subsistence mitigation, and other mitigation measures proposed by the Applicant, the Corps concludes that this project is not contrary to the public interest.

State wide, this project would not be in conflict with State priorities or objectives and the Applicant would need to obtain the appropriate State authorizations. Any operations on lands in the Project area would be conducted in accordance with State of Alaska or ASRC (or both) oil and gas lease provisions; applicable federal, state, and local land regulations; and all governing settlement agreements.

Oil and Gas development is a priority for the nation and this process was subject to EO 13212, Actions to Expedite Energy-Related Projects (May 18, 2001) and EO 13302, Amending Executive Order 13212, Actions to Expedite Energy-Related Project (May 15, 2003).

The Applicant has shown that there are no other practicable alternatives that would meet the purpose and need for the proposed project and be less environmentally damaging than the Applicant's proposed project discussed in this ROD.

NVN6 LEPDA and Cumulative Effects: The Nanushuk project should be considered in tandem with the Willow project and not on a piecemeal basis to ensure that the Corps is able to adequately consider a full range of alternatives and properly select the LEDPA.

Corps Response: The proposed Willow project is considered under cumulative effects section of this ROD as it is not a connected action under NEPA. The Nanushuk Project and the Willow Project have independent utility and different Applicants. The Corps will determine the LEDPA for the Nanushuk Project and the Willow Project separately, but considering the cumulative impacts of each project on the other.

5.0 MEANS TO MINIMIZE OR AVOID ADVERSE ENVIRONMENTAL IMPACT TO AQUATIC RESOURCES (40 CFR 1505.2(C), 40 CFR 1505.3, 40 CFR 230.70, SUBPART H)

5.1 Mitigation:

5.1.1 Avoidance: Given the extent of wetlands within the project area (greater than 99% of assessment area and project footprint), which is defined by the location of the oil resource, avoidance of wetlands is not practicable. However, certain design features resulted in the avoidance of impacts that could have otherwise occurred. The following avoidance measures were provided by the Applicant:

- "Drill sites are located east of the Colville River and as far east as practicable, while still meeting the Nanushuk Project (Project) purpose and need to produce commercial quantities of crude oil from the target reservoirs. The location of drill sites avoids placement of surface facilities west of the East Channel of the Colville River (East Channel), which eliminates the need for associated transportation and pipeline infrastructure to access this area.
- Connection to the existing gravel road system allows use of the existing Deadhorse Airport to support field logistics. This eliminates the need for a new project-specific airstrip to transport personnel and the associated regular fixed-wing air travel impacts in the project area. Connection to the existing gravel road system also results in less storage space required at each drill site to accommodate required site support materials, fuels, hazardous substances, and solid waste, reducing the overall size of each pad.
- Stockpiling of gravel within WOTUS is not proposed as part of the Project. Therefore, additional acreage is not being requested. Gravel will be transported directly from the material site and placed on the permitted project footprint.

- Existing barge infrastructure at Oliktok Point will be used to avoid the need to construct new marine facilities to support sealift module delivery.
- Seasonal ice pads and roads will be used to support winter pipeline and gravel infrastructure construction, avoiding the need for additional fill to support construction.
- Drilling for vertical support members (VSMs) will occur from an ice road and drilling cuttings will be sidecast onto the ice around each VSM, avoiding a discharge of fill material into WOTUS, since the side-casting will not change the bottom elevation of a WOTUS or replace any portion of a WOTUS with dry ground. The drilling cuttings will be removed once VSM installation is complete.
- Trenching will occur during the winter, and all trenched materials will be temporarily sidecast onto an ice pad adjacent to the trench. Trenched material will be taken off the ice pad and backfilled into the excavation once trenching is complete. This will avoid a discharge of fill material into WOTUS from the sidecast.
- Power cables and fiber optic cables will be installed on the horizontal support members (HSMs) using messenger cables, avoiding the need for power poles and associated fill.
- At pipeline-river crossings, all pipelines, HSMs, and suspended cables will be elevated to maintain adequate freeboard."

Table 2: Acres WOTUS Avoided

Avoidance Measure:	**Acres**
Connection to the existing gravel road system and use of the existing Deadhorse Airport to support field logistics	32
Stockpiling of gravel within WOTUS is not proposed as part of the Project	13
Use of existing barge infrastructure at Oliktok Point	2
Use of seasonal ice pads to support winter pipeline and gravel infrastructure construction	24
Drilling VSMs from an ice road with drilling cuttings temporarily sidecast onto the ice around each VSM and removed after VSM installation is complete	38
Winter trenching with all trenched materials temporarily sidecast onto an ice pad and backfilled into the excavation after trenching is complete	<1
Installation of power cables and fiber optic cables on HSMs using messenger cables	<0.1

Total Approximate Avoidance	109

5.1.2 Minimization: The Applicant has committed to the following minimization measures:

- "Locating drill sites as far east as practicable from the Colville River minimizes the distance of gravel road and pipeline needed to tie into existing infrastructure.
- The proposed project has been updated to a modified version of Alternative 5 evaluated in the Nanushuk Project Draft Environmental Impact Statement (Draft EIS; U.S. Army Corps of Engineers [USACE] 2017) that includes use of 4.7 miles of the existing Mustang Road, resulting in a reduction of fill in WOTUS. Based on analysis presented by USACE in the Draft EIS [and FEIS], this update also has potential to reduce impacts to other resources.
- Based on stakeholder feedback, DS2 has been relocated approximately 3,200 feet east to a location southeast of Lake 9211, minimizing the DS2 access road and infield pipeline by approximately 0.7 mile.
- Drill Site 3 (DS3) has been relocated to a suitable location outside of the Colville River floodplain, thus minimizing placement of gravel within the floodplain.
- Gravel roads and pads are located outside of the Alaska Department of Natural Resources 0.5-mile setback from the Colville River, to the extent practicable, minimizing potential impacts to the watershed and subsistence users in the project vicinity.
- Roads will have standard minimum thickness (5 feet minimum) to protect underlying permafrost by insulating and maintaining stable permafrost conditions.
- Pads will have standard minimum thickness (6 feet minimum) to protect underlying permafrost by insulating and maintaining stable permafrost conditions. Pads are at least 1 foot thicker than roads due to higher thermal loads associated with pads.
- The following engineering methods will be employed to minimize heat transfer from infrastructure on pads to the underlying permafrost:
    - In well conductors, the gap between the well conductor and inner pipe will be filled with polyurethane foam.
    - Thermosyphons will be installed adjacent to well rows and at-grade heated structures (e.g., the warehouse and cold storage).
    - Heated at-grade structures will be constructed with 4 to 8 inches of rigid insulation installed approximately 24 inches below the foundation/floor slabs.
    - Flare stack height will be selected to reduce ground-level radiant heat intensity to levels that will protect personnel, structures, and equipment as well as to avoid permafrost degradation (typically 1,500 btu/hr/ft2).

- Gravel roads provide all-season access to parallel export/import and infield pipelines for visual inspection and for routine and emergency maintenance and repairs. This also reduces the need for tundra travel associated with these activities. Roads and pipelines will be located within 1,000 feet of each other where feasible.
- On-site processing minimizes the length of the multiphase pipeline and potentially allows for a smaller total processing facility footprint relative to construction of pre-processing facilities at each drill site.
- No processing of multiphase fluids will occur at DS2 or DS3, avoiding the need for processing infrastructure at each site and reducing the overall gravel footprint.
- All on- and off-pad pipelines will be elevated above grade on VSMs to reduce impacts to permafrost.
- The export/import pipeline will be co-located with existing pipelines and/or gravel roads associated with the Southern Miluveach and Kuparuk River Units between the Mustang Pad and the Kuparuk DS2C near CPF2. Where available, co-location with existing pipelines and roads minimizes impacts to the aquatic environment compared to spacing the two features farther apart.
- Project roads are located to reduce impacts to hydrology through minimization of the placement of gravel fill within the floodplain. In addition, the placement of the Miluveach River and Kachemach River bridges at narrow portions of the rivers minimizes placement of gravel fill in the floodplain and piers below ordinary high water.
- Road widths have been designed, in part, based on the weights and sizes of vehicles expected to travel on them. Access roads to the boat ramp and pump house pad will be constructed to a minimum 24–foot-wide surface to minimize gravel fill relative to the 32-foot-wide gravel access road and DS1, DS2, and DS3 infield roads.
- Gravel road footprints have been further minimized by using 2:1 side slopes instead of 3:1 side slopes and reducing the access and infield road widths to 32 feet at the surface.
- Pad and road layouts consider topography and maintenance of natural drainage patterns and avoid ponds, lakes, and streams, where possible, to minimize gravel requirements, maintain natural drainage patterns, and minimize water ponding. Where natural drainage patterns are crossed, roads will be designed perpendicular to the general flow direction to the extent practicable. Layout design also considers the effects of spring breakup and other flood events.
- In addition to minimum gravel thickness criteria, gravel facilities located within the floodplain will be built to more conservative elevations based on hydrologic conditions, including both open-water and ice-affected stage frequency conditions, to minimize potential effects on hydrology.
- Drill sites are oriented with the long axis parallel to the prevailing northeast/southwest wind direction to minimize snow drift and related maintenance activities, resulting in a minimization of potential effects on hydrology during spring breakup.

- Pads and roads will be designed to limit point sources of runoff to the surrounding tundra. Instead, both snowmelt and rain water on the pad will primarily seep directly through the gravel.
- Drill site locations are designed to minimize lengths of infield roads and pipelines, with considerations for hydrology, wetlands, and subsistence use.
- All drill sites are sized to minimize overall gravel requirements while maintaining space for a sufficient number of well heads to meet the overall project purpose. Well-head spacing has been reduced from 30 feet to 20 feet to further minimize drill site footprint.
- Bridge abutments will be designed using sheet piles to minimize the gravel fill footprint, road embankment erosion, and stream scour.
- External corrosion inspections of pipelines will be conducted during winter and will be supported by approved tundra travel vehicles to avoid impacts associated with summer tundra travel.
- Drainage culverts will be sited and designed at streams and concentrated drainages to pass the 50-year flood event with a headwater elevation not exceeding the diameter of the culvert to minimize potential impacts to hydrology. Where possible, as determined by engineering or regulatory agencies, culverts within the 200-year floodplain may be designed to pass the 75-year flood event. Prior to construction, an engineer will walk and slope-stake roads to determine the precise locations of drainage structures and determine on-site conditions for final layout.
- Fish passage culverts will be designed at stream crossings where the Alaska Department of Fish and Game (ADF&G) determine that fish are present, and design will be in accordance with ADF&G Title 16 fish passage standards. Flow velocities at culvert outlets will be analyzed, and outlet erosion control measures will be designed as necessary to prevent channel degradation.
- Cross-drainage culverts will be installed within the access and infield roads to reduce impoundment and allow conveyance of surface water flow that intersects the road, in order to maintain natural drainage patterns. As a general guideline, cross-drainage culverts will be sited approximately every 500 feet along the alignment during initial design efforts, although exact placement of culverts will depend on actual in-field local drainage patterns.
- Regular ice road use will be limited to construction activities to minimize the need for annual withdrawal of water for ice road construction. Ice roads are not planned for use on a regular basis to support development drilling and operations.
- In accordance with permits, ice road crossings of designated streams and rivers will be slotted, breached, or weakened upon completion of use.
- Pending commercial agreements and availability of supply, seawater purchased from a third party will be used to supply make-up water, minimizing use of local freshwater sources and avoiding the need for additional seawater treatment and transportation infrastructure.
- During drilling and operations, grind and inject facilities (Underground Injection Control, or UIC, Class I well) will be available for disposal of Resource Conservation and Recovery Act exempt and non-hazardous

waste. This will minimize the risk of fluid spills during transport of fluids to an off-site disposal facility. Project modifications reduced the number of UIC wells from four to two: one primary disposal well and one backup disposal well.

- Discharge of domestic wastewater to the tundra at the project site is not planned during normal conditions. As a result, a number of impacts would be minimized, including the potential for soil erosion from water discharge and potential impacts to water quality, vegetation, birds, and wildlife.
- Personnel will be required to stay on gravel or ice surfaces to minimize impacts to the tundra unless their specific job duties require them to be on the tundra and that activity is properly permitted.
- Except for removal of snow and ice in excess of 4 inches from work areas, disturbance of the tundra, including vegetation and organic cover, will be avoided during gravel placement to minimize impacts to permafrost.
- Dust control measures will be implemented to reduce the incidence of dust on vegetation and snow.
- Snow removal management measures will be implemented to reduce the potential for gravel fill to be pushed off pads during snow removal.
- At the conclusion of production, abandonment of project facilities will be conducted in accordance with Alaska Department of Natural Resources Division of Oil and Gas North Slope Areawide Lease Mitigation Measures and in compliance with all permit and lease requirements."

Additional design changes adopted by the Applicant that minimized impacts to WOTUS include the following. The Applicant:
1) changed the Project to reflect Alternative 5 of the FEIS and added a compensatory mitigation proposal; 2) changed road side slopes from 3:1 to 2:1; 3) changed road surface widths from 38 and 35 feet to 32 feet; 4) changed fill volume from 2.8 to 2.9 million cubic yards; 5) relocated Drill Site (DS) 2 approximately 0.4 mile further east away from the Colville River; and 6) added tundra access ramps on the gravel roads and a gravel boat ramp, and 7) changed water source from Lake 9211 to Lake MC7903.

These minimization measures resulted in a reduction in indirect impacts to WOTUS. The Applicant minimized the project direct impacts by 21.8 acres between the original application (288 acres) and the final project proposal (266.2 acres).

5.1.3 Compensatory Mitigation Determination:
5.1.3.1 Is compensatory mitigation required? ☒ yes ☐ no

5.1.3.2 Is the impact in the service area of an approved mitigation bank?
☐ yes ☒ no
Does the mitigation bank have the appropriate number and resource type of credits available?
☐ yes ☐ no ☒ n/a

5.1.3.3 Is the impact in the service area of an approved in-lieu fee program?
☐ yes ☒ no
Does the in-lieu fee program have the appropriate number and resource type of credits available?
☐ yes ☐ no ☒ n/a

5.1.3.4 Check the selected compensatory mitigation option(s):
- ☐ mitigation bank credits
- ☐ in-lieu fee program credits
- ☒ permittee-responsible mitigation under a watershed approach
- ☒ permittee-responsible mitigation, on-site and in-kind
- ☒ permittee-responsible mitigation, off-site and out-of-kind

5.1.3.5 Mitigation Summary: See Appendix A for MFR, POA-2015-25, Consideration of Applicant's Proposed Mitigation Plan (attached).
At present, there are no mitigation banks or In-Lieu Fee (ILF) programs with service areas covering the compensatory mitigation analysis areas, or anywhere on Alaska's North Slope. As a result, use of a mitigation bank or ILF program to provide compensatory mitigation for the proposed Project is not practicable. Therefore, the Applicant has proposed permittee responsible mitigation.

In order to identify potential available and appropriate permittee responsible compensatory mitigation projects, OSA developed the compensatory mitigation identification and screening process (Appendix 1: Nanushuk Project Compensatory Mitigation Planning Framework, December 2018). During this process, OSA engaged with various public and private stakeholders with interests in the analysis areas, including local residents and organizations, public and private landowners and managers; oil and gas operators with facilities in the analysis areas; and local, state, and federal agencies with management oversight over potential compensatory mitigation projects.

The options OSA identified "were screened and prioritized in an iterative manner to identify potentially appropriate and practicable compensatory mitigation to compensate for unavoidable losses of WOUS associated with the Project.
All concepts were first screened based on availability. Considerations include:
- whether or not the landowner or current operator will allow OSA to perform work at the site;
- whether compensatory mitigation credit could be demonstrated for the concept, based on the capacity of the potential compensation to offset adverse impacts that would be caused by the proposed project;
- whether the site has an existing DA permit or other agency-driven requirements; and
- whether the site has been identified as a contaminated site with a status of open or cleanup complete with institutional controls or whether

contamination of the site is highly likely based on past use but the extent is unknown or undefined, and

Concepts determined unavailable based on the criteria above were eliminated from further consideration. OSA then screened and ranked the remaining concepts based on the following factors:

- Potential practicability;
- Consistency with watershed approach;
- Potential for functional lift and overall environmental benefit;
- Consistency with preservation criteria (preservation concepts only); and
- Other factors as appropriate." (Nanushuk Project Compensatory Mitigation Planning Framework, December 2018).

The proposed Access Road Compensatory Mitigation Project would remove two existing temporary culverts and associated sediments, replace an existing failed bridge with a new bridge, and restore channel morphology and floodplain characteristics at the two crossings. This project would result in the reconnection of fish habitat in 43,000 linear feet of stream channel and 580 acres of connected waterbodies in a tributary to the Nigliq Channel of the Colville River near Nuiqsut Alaska.

The Corps of Engineers has made a watershed informed decision that the Access Road Compensatory Mitigation Project would result in environmentally preferable, albeit out-of-kind, compensatory mitigation that will serve the aquatic resource needs of the watershed, specifically the restoration of fish habitat. Compensatory mitigation, namely the implementation of the Boat Ramp Access Road Compensatory Mitigation Plan and monitoring described herein would restore 5.19 acres of stream and adjacent floodplain and connect 600 acres of fish habitat to the Nigliq Channel of the Colville River. This proposed project would remove two 48" culverts that are a fish blockage for a majority of flow levels at the lower crossing of the creek and result in the removal of fill material from approximately 0.6 acres of the channel and adjacent wetlands and floodplain just upstream of its mouth at the Nigliq Channel of the Colville River. It would restore to more natural conditions, 5.19 acres of the stream and its floodplain that have been impacted by water backing up behind the culverts (for example, as seen in a June 2007 aerial photo). The restored channel and improved bridge crossing would allow for the channel to accommodate back water and ice jams during breakup, without damaging the crossing infrastructure. The removal of the culverts would re-establish more natural hydrologic conditions where the fill is removed, restore a more natural floodplain condition, and reduce anthropogenic sources of sediment into the Creek and the Nigliq Channel. The removal of these culverts would not result in degradation to the system that can occur when large quantities of sediments stored behind a structure is remobilized. The replacement of the upper crossing with a larger bridge would reduce the potential for impacts to the fills and structure from ice-jams and other high water events. Stabilizing this upper crossing would also restore natural drainage patterns and reduce erosion and sedimentation.

The stream, once connected to the Nigliq Channel of the Colville River would provide additional fish habitat, primarily summer rearing habitat, for residential and anadromous fish. The Colville River, including the Nigliq Channel, is designated **essential fish habitat (EFH)** for Pacific salmon (pink and chum, *Oncorhynchus gorbuscha* and *O. keta*), per the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and many other subsistence species including, for example, Arctic cisco (*Coregonus autumnalis*) and broad whitefish (*Coregonus autumnalis*). Resident fish include nine-spine stickleback and arctic grayling, anadromous fish include broad whitefish and least cisco. While the proposed project would result in restoration of fish habitat, an important function of the stream, much of the 600 acres of restored habitat is relatively undisturbed and does not require additional restoration actions. Given that only fish *presence* is being restored to the 600 acres, which is only one function that the stream provides, applying a 1 to 1 credit (i.e. 1 credit for each acre of fish habitat reconnected) is not appropriate.

Conclusion:

The Corps of Engineers has made a watershed informed decision that the Access Road Compensatory Mitigation Project would result in out-of-kind compensatory mitigation that will serve the aquatic resource needs of the watershed, specifically the restoration of fish habitat.

The 2018 MOA between USACE and EPA Section II. Policy, Part B, Guiding Principles, recognizes that restoring, enhancing, or establishing wetlands for compensatory mitigation may not be practicable due to limited availability of sites and or and/or technical or logistical limitations. It is also consistent with Part III B of the MOU discussing Minimization: "With respect to the mitigation sequence, where neither avoidance nor compensatory mitigation is practicable, minimizing impacts will be the primary means of satisfying compliance with the Guidelines."

The permittee would be required to implement the approved Nanushuk Boat Ramp Access Road Compensatory Mitigation Plan (CMP), POA-2015-25, dated March 2019 (see Appendix D). Additionally, the applicant will augment the Access Road CMP with a project to improve village wastewater treatment facilities in the Native Village of Nuiqsut to ensure improved sanitation within the community and improved water quality conditions in aquatic resources surrounding the community. Specific plans must be developed and submitted to USACE for approval prior to Project construction. The project would improve sanitation and water quality conditions in aquatic resources surrounding the community. The project shall be designed to improve water quality of aquatic resources within the Colville River watershed by minimizing nitrogen loading in and around the discharge point and mixing zone associated with the wastewater treatment facility, the discharge of decanted fluids from the sewage lagoon, and community and wildlife exposure to domestic wastewater at holding areas and the sewage lagoon. The Permittee shall

implement the plan, as approved by USACE, prior to commencement of construction activities.

5.2 Mitigation Measures Required by State Agencies

ADEC's Certificate of Reasonable Assurance dated December 31, 2018 for the proposed action includes the following conditions:

1. Reasonable precautions and controls must be used to prevent incidental and accidental discharge of petroleum products or other hazardous substances. Fuel storage and handling activities for equipment must be sited and conducted so there is no petroleum contamination of the ground, subsurface, or surface waterbodies.

2. During construction, spill response equipment and supplies such as sorbent pads shall be available and used immediately to contain and cleanup oil, fuel, hydraulic fluid, antifreeze, or other pollutant spills. Any spill amount must be reported in accordance with Discharge Notification and Reporting Requirements (AS 46.03.755 and 18 AAC 75 Article 3). The Applicant must contact by telephone the DEC Area Response Team for Northern Alaska at (907) 451-2121 during work hours or 1-800-478-9300 after hours. Also, the Applicant must contact by telephone the National Response Center at 1-800-424-8802.

3. Construction equipment shall not be operated below the ordinary high water mark (culverts and bridges) if equipment is leaking fuel, oil, hydraulic fluid, or any other hazardous material. Equipment shall be inspected and recorded in a log on a daily basis for leaks. If leaks are found, the equipment shall not be used and pulled from service until the leak is repaired.

4. All work areas, material access routes, and surrounding wetlands involved in the construction project shall be clearly delineated and marked in such a way that equipment operators do not operate outside of the marked areas.

5. Natural drainage patterns shall be maintained, to the extent practicable, without introducing ponding or drying.

6. Excavated or fill material, including overburden, shall be placed so that it is stable, meaning after placement the material does not show signs of excessive erosion. Indicators of excess erosion include: gullying, head cutting, caving, block slippage, material sloughing, etc. The material must be contained with siltation best management practices (BMPs) to preclude reentry into any waters of the U.S., which includes wetlands.

7. Include the following BMPs to handle storm water and total storm water volume discharges as they apply to the site:

a. Divert storm water from off-site around the site so that it does not flow onto the project site and cause erosion of exposed soils;

b. Slow down or contain storm water that may collect and concentrate within a site and cause erosion of exposed soils;

c. Place velocity dissipation devices (e.g., check dams, sediment traps, or riprap) along the length of any conveyance channel to provide a non-erosive flow velocity. Also place velocity dissipation devices where discharges from the conveyance channel or structure join a water course to prevent erosion and to protect the channel embankment, outlet, adjacent stream bank slopes, and downstream waters.

8. Fill material must be clean sand, gravel or rock, free from petroleum products and toxic contaminants in toxic amounts.

9. Any disturbed ground and exposed soil not covered with fill must be stabilized and re-vegetated with endemic species, grasses, or other suitable vegetation in an appropriate manner to minimize erosion and sedimentation, so that a durable vegetative cover is established in a timely manner.

The conditions of the Water Quality Certification as listed above, would become conditions of the DA permit, if issues.

5.3 Special Conditions and Rationales of the Corps Permit

The following special conditions will be included in the Department of the Army (DA) permit to ensure the project is not contrary to the public interest [33 CFR 320.4(r)], and to ensure the project complies with the 404 (b)(1) Guidelines [40 CFR 230.1O(d)], or at the permittee's request.

Pre-construction Meeting:

1. The permittee shall convene a pre-construction meeting, with their contractor representatives present, a minimum of 15-days prior to the discharge of fill material into waters of the US authorized under this DA permit. The permittee shall invite the USACE, and appropriate federal, state, and borough resource or regulatory agencies within 10-days of the meeting date. The permittee shall provide copies of this DA permit and all attachments to all contractor representatives who shall make the permit copies available in the field during construction activities.
   Rationale: To ensure clarification of all permit requirements with the permittee and their contractors. 33 CFR 325

2. All contractors involved in this permitted activity shall be provided copies of this permit in its entirety. A copy shall remain on site at all times during construction.
   Rationale: This special condition is required to ensure compliance with the permit, and to minimize impacts to adjacent wetlands and other waters of

the U.S. as a result of the permitted project (33 CFR 320.4(b) and 40 CFR 230.41).

Compensatory Mitigation:

3. **Mitigation Plan:** The permittee shall implement, prior to beginning construction, the Approved Mitigation Plan dated March 2019 and attached as Nanushuk Project Boat Ramp Access Road Compensatory Mitigation Plan, POA-2015-25. Additionally the permittee will implement a project to improve village wastewater treatment facilities in the Native Village of Nuiqsut. No later than 90 days prior to commencement of construction activities authorized by this permit, the permittee shall submit to USACE for review and approval, a plan to improve handling, treatment, and discharge of domestic wastewater in the Native Village of Nuiqsut, Alaska. The plan shall be designed to improve water quality of aquatic resources within the Colville River watershed by minimizing nitrogen loading in and around the discharge point and mixing zone associated with the wastewater treatment facility, the discharge of decanted fluids from the sewage lagoon, and community and wildlife exposure to domestic wastewater at holding areas and the sewage lagoon. The Permittee shall implement the plan, as approved by USACE, prior to commencement of construction activities authorized by this permit and complete construction within four years. *Rationale: To ensure compliance with the 404(b)(1) guidelines and 33CFR320.4(r).*

Fill Discharges:

4. The Permittee shall use only clean fill material for this project. The fill material shall be free from items such as trash, debris, automotive parts, asphalt, construction materials, concrete blocks with exposed reinforcement bars, and soils contaminated with any toxic substance, in toxic amounts in accordance with Section 307 of the Clean Water Act.
Rationale: This condition is required to prevent adverse impacts to wetlands and other waters of the U.S. outside of the permitted project area (33 CFR 320.4(b) and (d), 40 CFR 230.11(c) and (d), and 40 CFR 230.60)).

5. All authorized fill area boundaries shall be surveyed and be clearly delineated (staked, flagged, or posted) prior to the discharge. No fill material, supplies, or construction materials shall be stockpiled on wetlands outside of the authorized fill areas. Transportation vehicles and equipment shall not be operated outside of the authorized fill areas, except as authorized by the State of Alaska and/or North Slope Borough to construct and operate on winter ice pads and/or roads or for tundra travel with specially designed and approved low tundra impact vehicles. Road and fill

pad surfaces and slopes shall be maintained without discharging fill material outside of permitted fill embankments into waters of the US.
Rationale: This condition is required to avoid adverse impacts to adjacent wetlands as a result of the permitted project (33 CFR 320.4(b)(1), 33 CFR 320.4(r)(1), and 40 CFR 230.41).

6. All fill slopes shall be immediately stabilized to prevent erosional impacts to the aquatic environment. Active sloughing of fill material, increased water turbidity, accumulation of sediment in waters and wetlands, and erosion on slopes or around culverts shall be indicators fill slope stabilization is not adequate.
Rationale. This condition is required to ensure that areas outside of the permitted area are protected from sediment caused by erosion, slumping, or lateral displacement of surrounding bottom deposits until the site is permanently stabilized (33 CFR 320.4(b), 40 CFR 230.20(b), 40 CFR 230.21, and 40 CFR 230.72(a)).

7. Snow and ice clearing operations must prevent vegetation, soil, or debris from being discharged into waters of the US outside of all authorized fill areas.
Rationale. This condition is required to avoid adverse impacts to adjacent wetlands as a result of the permitted project (33 CFR 320.4(b)(1), 33 CFR 320.4(r)(1), and 40 CFR 230.41).

8. If placement of the access road fill material is not completed within any winter season, sufficient openings shall be provided in the roadbed to maintain natural drainage flows and overland cross-drainage. Road opening widths shall be of sufficient size to prevent scour of the adjacent tundra wetlands.
Rationale. This condition is required to minimize impacts to adjacent wetlands and other waters of the U.S. as a result of the permitted project (33 CFR 320.4(b) and (l) and 40 CFR 230.41).This condition is included to protect water quality and fish and wildlife habitats. 40 CFR 230, 33 CFR 320

Activities Involving Trenching:

9. Trenches may not be constructed or backfilled in such a manner as to drain waters of the U.S. (e.g., backfilling with extensive gravel layers, creating a French drain effect). Ditch plugs or other methods shall be used to prevent this situation.
Except for material placed as minor trench over-fill or surcharge necessary to offset subsidence or compaction, all excess materials shall be removed to a non-wetland location. The backfilled trench shall achieve the pre-construction elevation, within a year of disturbance unless climatic

conditions warrant additional time. The additional time must be approved by the Corps.

Excavated material temporarily sidecast into wetlands shall be underlain with geotextile, ice pads, or similar material, to allow for removal of the temporary material to the maximum extent practicable. Revegetation of the site shall begin as soon as site conditions allow and in the same growing season as the disturbance unless climatic conditions warrant additional time. If natural revegetation is not sufficient to stabilize the site, additional measures must be taken to stabilize the site and increase revegetation. Species to be used for seeding and planting shall follow this order of preference: 1) species native to the site; 2) species native to the area; 3) species native to the state.
Rationale: To ensure trenching for cable burial does not cause permanent impacts to WOTUS (33 CFR 320.4b, 40 CFR 230.21).

10. Trenches will be monitored frequently (and at least 3 times per snow free season) to ensure trench does not capture or cause redirection of surface water. Any subsidence within the trench will be mitigated by the additional placement of fill as soon as subsidence is observed.
Rationale: To ensure trenching for cable burial does not cause permanent impacts to WOTUS. (33 CFR 320.4b, 40 CFR 230.21).

Modifications:

11. Should any other agency require and/or approve changes to the work authorized or obligated by this permit, the Permittee is advised a modification to this permit may be required prior to initiation of those changes. It is the Permittee's responsibility to request a modification of this permit. The Corps reserves the right to fully evaluate, amend, and approve or deny the request for modification of this permit.
Rationale: This special condition is required to ensure compliance with the permit, and to minimize impacts to adjacent wetlands and other waters of the U.S. as a result of the permitted project (33 CFR 320.4(b) and 40 CFR 230.41).

Commencement Notification:

12. Within 10 days from the date of initiating the work authorized by this permit for each phase of the authorized project, the Permittee shall provide a written notification of the date of commencement of authorized work to the Corps.
Rationale: This special condition is necessary in order to efficiently plan compliance inspections and ensure compliance of the permitted project.

Self-Certification:

13. Within 60 days of completion of the work authorized by this permit, the Permittee shall complete the attached "Self-Certification Statement of Compliance" form (Attachment 2) and submit it to the Corps (U.S. Army Corps of Engineers, Regulatory Division, 2715 University Avenue, Suite #201 E, Fairbanks, AK 99709). In the event that the completed work deviates in any manner from the authorized work, the Permittee shall describe the deviations between the work authorized by this permit and the work as constructed on the "Self-Certification Statement of Compliance" form, and provide plans showing the deviation. The description of any deviations on the "Self-Certification Statement of Compliance" form does not constitute approval of any deviations by the Corps.
Rationale: This special condition is required to ensure compliance with the permit and in order to efficiently plan compliance inspections.

Cease to Maintain or Abandon:

14. Should the permittee decide to cease to maintain, use, or to abandon the authorized fill and pipeline, VSMs authorized under this DA permit, the USACE shall be notified by written communication and in compliance with General Condition 2 of this DA permit. Cease to maintain, use, and abandon are defined as non-use of the facilities, or portions thereof, for a period of 5 consecutive years. If any authorized fill areas or pipeline sections are determined to be unmaintained, used, or abandoned, a fill and/or structure removal and site rehabilitation plan (Rehab Plan) shall be submitted to the USACE within 120 days of abandonment. The plan shall include, at a minimum: goals and objectives, site treatments, performance standards, reporting, remedial work plans, and monitoring to ensure performance standards are met. The plan shall include an objective of restoring fish and wildlife habitat.
Rationale: This condition is necessary to make a determination following General Condition 2 and 4 of this permit and 33 CFR 325 (Appendix A).

Hydrology:

15. Existing (natural) drainage patterns shall be maintained throughout all construction and operation periods by the installation of culverts in all authorized fill areas in sufficient number and size to prevent ponding, dewatering, water diversion between watersheds, or concentrating runoff flows. Important field surveying, planning, and design work must ensure the placement of culverts along the access road are not effected by hydrologic changes due to project construction.
Rationale. This condition is included to protect important watersheds for water quality, vegetation and soils, and fish and wildlife habitats. 40 CFR 230, 33 CFR 320.

16. The permittee shall prepare and submit a culvert monitoring report to the USACE, for 3 summer seasons following completion of the fill placement authorized in this DA permit. The reports shall be submitted prior to July 30 of each year. The report shall include photographs of all road and pad areas to demonstrate the hydrologic conditions at spring break-up time and post break-up (summer conditions). The report shall include an evaluation of all areas where additional culverts are necessary to retain existing drainage patterns and where culvert maintenance, repair, upgrade, setting adjustments, or replacement are necessary. The culvert/drainage corrective work shall be completed by freeze-up within the same summer season the drainage problems are identified. Evidence of ponding, drying, erosion, or stream channel changes adjacent to authorized fill areas are indicators of necessary corrective action. Culverts shall be marked to facilitate snow removal operations to prevent excessive deposition of snow into creeks and drainage areas. Culverts shall be maintained to adequately convey surface waters throughout the life of the project (access road use).
Rationale. This condition is included to ensure water flow through the culvert is adequate for all flows at all times without causing erosional changes to the channel, including up and downstream reaches of the crossing; retain the substrate, banks, and vegetation; and provide for fish passage. The hydrologic regime protects water quantity and quality, vegetation, soils, and fish and wildlife habitats. 40 CFR 230, 33 CFR 320.

Gravel, Dust, and Snow:

17. The permittee shall ensure pollution to aquatic resources from road gravel spray and fine airborne fill particle dust discharges are minimized to the maximum extent practicable. Dust abatement practices, during dust prone weather and/or seasonal conditions, must be performed for the life of the project (use of the road). Compliance with this condition shall be determined by the absence of visible dust and gravel on tundra wetland areas adjacent to the authorized fill areas.
Rationale. This condition is included to protect water quality and fish and wildlife habitats from secondary impacts. 40 CFR 230, 33 CFR 320.

Threatened and Endangered Species (Terms and Conditions for Endangered Species Act Compliance):

18. Biological Opinion: This permit does not authorize the Permittee to take an endangered species, in particular the spectacled eiders (*Somateria fischeri*) or polar bears (*Ursus maritimus*). In order to legally take a listed species, the Permittee must have separate authorization under the Endangered Species Act (ESA) (e.g., an ESA Section 10 permit, or a BO under ESA Section 7, with “incidental take” provisions with which you must comply).

The enclosed Biological Opinion (BO) (Attachment 3) contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that is also specified in the BO. Authorization under this permit is conditional upon compliance with all of the mandatory terms and conditions associated with incidental take of the enclosed BO, which terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the BO, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute noncompliance with this permit. The United States Fish and Wildlife Service is the appropriate authority to determine compliance with the terms and conditions of its BO, and with the ESA.

Rationale: This condition is required by the HQ Memorandum, dated September 9, 2002, incorporating the BO into the permit and is intended to reduce the likelihood of the impacts prohibited by the Endangered Species Act (Section 7 of the ESA and 40 CFR 230.30).

19. The permittee shall comply with the Federal Endangered Species Act, you must implement all of the mitigating measures identified in the enclosed National Marine Fisheries Service letter of concurrence (Attachment 4, Number NMFS #AKR-2019-9847, dated February 20, 2019), including those ascribed to the Corps therein. If you are unable to implement any of these measures, you must immediately notify the Corps and the National Marine Fisheries Service so we may consult as appropriate, prior to initiating the work, in accordance with Federal law.
Rationale: This condition is required to reduce the likelihood of adverse impacts to species protected under the Endangered Species Act and to comply with the Act (Section 7 of the ESA and 40 CFR 230.30).

SECTION 10 MANDATORY
[33 CFR PART 320.4(o)(3)] and HQ memorandum]:

20. Your use of the permitted activity must not interfere with the public's right to free navigation on all navigable waters of the U.S.
Rationale: Protection of navigation and the general public's right of navigation on the water surface is a primary concern of the federal government. This condition is required by regulation (33 CFR 320.4(o)(3)).

Historic Properties/Cultural Resources:

21. If human remains, historic resources, or archaeological resources are encountered during construction, all ground disturbing activities shall cease in the immediate area and you shall immediately (within one business day of

discovery) notify the U.S. Army Corps of Engineers (Corps), Alaska District, Regulatory Office at 2715 University Avenue, Suite #201 E, Fairbanks, AK 99709. Upon notification the Corps shall notify the appropriate Tribal Historic Preservation Office (THPO) and State Historic Preservation Office (SHPO). Based on the circumstances of the discovery, equity to all parties, and consideration of the public interest, the Corps may modify, suspend or revoke the permit in accordance with 33 CFR Part 325.7. After such notification, project activities on federal lands shall not resume without written authorization from the Corps, and/or THPO, SHPO, and federal manager. After such notification, project activities on tribal lands shall not resume without written authorization from the SHPO and the Corps. *Rationale: This condition is required to avoid impacts to historic properties/cultural resources and comply with Section 106 of the National Historic Preservation Act. (Section 106 of NHPA, 33 CFR 320.4(e), and 33 CFR 325 Appendix C).*

6.0 EVALUATION OF THE DISCHARGE OF DREDGE AND FILL MATERIAL IN ACCORDANCE WITH 404(B)(1) GUIDELINES (40 CFR Section 230, Subparts B through F)

6.1 SUBPART B- Compliance with the Guidelines:

Findings of significant degradation related to the proposed discharge shall be based upon appropriate factual determinations, evaluation and tests required by subparts B and G, after consideration of subparts C through F, with special emphasis on the persistence and permanence of the effects outlined in those subparts (40 CFR 230.10(c)).

The determinations of potential short or long-term effects of proposed discharges of dredged or fill material on the physical, chemical and biological components of the aquatic environment include the following:

6.1.1. Physical Substrate Determinations [230.11(a), *230.20*],
Substrate [230.20, required under Section 230.11(a)]:

References: *Nanushuk FEIS: Potential effects to physical substrates are discussed in Chapter 3.4 Geomorphology, Permafrost, and Soils; Chapter 3.7 Water Quality; and Chapter 3.8, Wetlands and Vegetation of the FEIS. Chapter 6.0 discusses Avoidance, Minimization and Mitigation. Key information about Geomorphology, Permafrost, and Soils can be found in Section 3.4.1., and a description of the soils can be found in Section 3.4.5.3.*

The entire Arctic Coastal Plane (ACP), including the project area is underlain by continuous permafrost. The dominant soil order in the Project area is classified as cryosols (gelisols) which have permafrost within approximately 3 feet of the ground surface. The discharge of 2,856,000 cubic yards (CY) of fill would result in the

permanent burial of 260.6 acres of wetland substrates (gelisols) and 0.7 acres of substrates below OHW in the Kachemach River. The discharge of fill would also result in changes to the underlying permafrost. Indirect impacts to substrates from the discharge of fill would include dust deposition and snow accumulation adjacent to gravel fill footprint and associated potential increase in thermokarst and changes to permafrost. The proposed project would also result in 5.7 acres of temporary impacts to the marine substrate within Simpson Lagoon and secondary impacts to adjacent substrates would occur within 2000 feet of the screeding area due to sediment transport and settlement. Seven tenths of an acre of Kachemach River substrates below ordinary high water (OHW) would be filled due to the construction of a boat ramp.

All Avoidance and Minimization Measures are outlined in Section 5.1.2 and 5.1.3 of this ROD. Primary minimization measures include the following: The Applicant has minimized impacts to substrates by reducing the width of the roads from the originally proposed 35 - 38 feet, to 32 feet wide roads. Gravel pad size was minimized by reducing well head spacing. Impacts to substrates underlying the pads would be minimized by insulating the annular between the well conductor and the inner pipe and installing thermosiphons, as well as using rigid insulation below foundation of infrastructure to reduce heat transfer into the soils. Power cables and fiber optic cables would be installed on HSMs using messenger cables avoiding the need for trenching, expect at road crossings. Where trenching is needed, it would be done in winter and all trenched materials would be temporarily sidecast onto an ice pad and the trench backfilled into the excavation after trenching is complete. Gravel pads would have a minimum thickness of 6 feet and side slopes of 2:1, and roads would have a minimum thickness of 5 feet and sides slopes of 2:1 to protect underlying permafrost. These design features would be required as part of the permit. Additionally, the Applicant would use seasonal ice roads and ice pads to support winter pipeline and gravel infrastructure construction and for installing VSM's which reduces the need to construct permanent gravel roads.

Special Conditions to minimize impacts to wetland and marine substrates are listed in Section 5.3. Compensatory mitigation for the permanent loss of wetland and riverine substrates, and the function and services they provide would be required as described in Section 5.1.4. With proposed design features and inclusion of special conditions, including requirements for compensatory mitigation, the project would comply with this section of the Guidelines.

6.1.2 Water Quality, circulation, fluctuation and salinity determinations [230.11(b), *230.22 – 230.25*], ***Water*** *[230.22, required under 230.11(b)]*
Current patterns and water circulation *[230.23, required under 230.11(b)]*
Normal Water Fluctuation *[230.24, required under 230.11(b)]*
Salinity gradients *[230.25, required under 230.11(b)] :*

References: *Nanushuk FEIS: 3.6 Hydrology and Floodplains discusses impacts to water circulation and fluctuation (natural flow patterns). 3.7 Water Quality discusses*

impacts to water (water quality). Chapter 6.0 discusses Avoidance, Minimization and Mitigation.

The discharge of fill for the construction of roads and pads would result in impacts to natural flow patterns across the landscape due to obstruction of flow paths and thermokarst development due to water impoundment. The discharge of fill has the potential to impact natural drainage patterns and increase ponding. A dramatic increase or decrease in surface water ponding can also impact habitat, permafrost stability, and nutrient cycling dynamics. The proposed work does not have the potential to affect salinity gradients.

Fill placed in floodplains and within drainage channels could be eroded and carried into adjacent wetlands and river channels at high flows. Impacts to flow patterns would occur during high water (greater than the 2 year flood recurrence interval) due to the discharge of fill for the construction of abutments for bridges across the Miluveach and Kachemach Rivers and the VSM's for the Pipeline Crossings. Additionally, the construction of the boat ramp in the Kachemach River would have the potential to change flow patterns and patterns of erosion and accretion in the channel.

All Avoidance and Minimization Measures are outlined in Section 5.1.2 and 5.1.3 of this ROD. Primary minimization measures include the following: DS 3 has been relocated to a suitable location outside of the Colville River floodplain, thus minimizing placement of gravel within the floodplain. Pad and road layouts were located in consideration of topography and to maintain natural drainage patterns and avoid ponds, lakes, and streams, where possible, to minimize gravel requirements, maintain natural drainage patterns, and minimize water ponding. Where natural drainage patterns are crossed, roads would be perpendicular to the general flow direction to the extent practicable. Layout design also considers the effects of spring breakup and other flood events. Dust control management measures would be implemented to reduce the incidence of dust on vegetation or snow. These design features would be required as part of the permit.

Special Conditions to minimize impacts to water quality, circulation and water fluctuation are listed in Section 5.3. Compensatory mitigation for the permanent loss of Waters of the U.S., and the functions and services they provide would be required as described in Section 5.1.4. With proposed design features and inclusion of special conditions, including requirements for compensatory mitigation, the project would comply with this section of the Guidelines.

6.1.3 Suspended Particulate/Turbidity determinations [230.11(c), *230.21*], ***Suspended particulates/turbidity*** [230.21, required under 230.11(c)]:

References: *Potential effects to Suspended Particulates and Turbidity are discussed in Nanushuk FEIS: Chapter 3.7 Water Quality and Chapter 3.6 Hydrology and Floodplains. Chapter 6.0 discusses Avoidance, Minimization and Mitigation.*

The discharge of fill into WOTUS for the construction of gravel roads and pads and runoff from this gravel infrastructure, the management of snow on tops of pads and roads, screeding in the Beaufort Sea, and the placement of structures below ordinary high water (OHW) are all proposed activities that can result in increased suspended sediment and turbidity in the waterbody and/or wetlands adjacent to the disturbance. Discharged fill would need to be designed and sufficiently stabilized to prevent the spread of sediments into wetlands and other water bodies adjacent to the fill. Typically, increased turbidity and higher levels of suspended particulates would be minor and short term, especially when appropriate design features and best management practices and are utilized.

The screeding of 5.7 acres of marine substrates adjacent to Oliktok Dock would result in temporary increases to suspended particulates in the marine waters surrounding the dock. Turbidity may slightly increase temporarily in the immediate area around the screeding during redistribution of sediments. However, nearshore waters in the Beaufort Sea are already characterized by high turbidity levels, especially in association with storm events, river discharges, and other natural events so the impact from screeding would be minor.

Discharge of fill below OHW can change flow patterns and affect rates of erosion and sedimentation. The slopes of the boat ramp would be protected with jute matting with seeded vegetation or riprap as needed, depending on flood elevation and water velocity. This would minimize the potential for an increase in erosion and suspended particulates. If increases did occur, it would fall within the natural variability of sediment loads within the Kachemach Channel.

Changes in flow patterns have the potential to result in increases in suspended sediments and turbidity. Fill placed in floodplains and within drainage channels could be eroded and carried into adjacent wetlands and river channels at high flows. Erosion and accretion patterns could be impacted due to the placement of abutments, piers or VSMs below OHW in the Kachemach and Miluveach Rivers, which could result in periodically higher levels of sediment inputs into the channels.

All Avoidance and Minimization Measures are outlined in Section 5.1.2 and 5.1.3 of this ROD. Some of the primary minimization measures to reduce impacts to suspended particulate and turbidity include the following: Cross-drainage culverts will be installed within the access and infield roads to reduce impoundment and allow conveyance of surface water flow that intersects the road, in order to maintain natural drainage patterns. A s a general guideline, cross-drainage culverts will be sited approximately every 500 feet along the alignment during initial design efforts, although exact placement of culverts will depend on actual in-field local drainage patterns. Pads and roads will be designed to limit point sources of runoff to the surrounding tundra. Instead, both snowmelt and rain water on the pad will primarily seep directly through the gravel. Bridge abutments will be designed using sheet piles to minimize the gravel fill footprint, road embankment erosion, and stream scour. Dust control measures would be implemented to reduce the incidence of

dust on vegetation and snow. The slopes of the boat ramp would be protected with jute matting with seeded vegetation or riprap as needed, depending on flood elevation and water velocity. These mitigation measures and design features would be required as part of the permit.

The Special Conditions to minimize impacts to suspended particulates and turbidity are listed in Section 5.3. Compensatory mitigation for the permanent loss of wetland and riverine substrates, and the function and services they provide would be required as described in Section 5.1.4. With proposed design features and inclusion of special conditions, including requirements for compensatory mitigation, the project would comply with this section of the Guidelines.

6.1.4 Contaminant determinations [230.11(d)]: **(***Supported by: Subpart G – Evaluation and Testing (40 CFR Section 230, Subpart G***)**

References: *Assessment of contaminated sites within the Nanushuk Project area can be found in the Nansuhuk Final EIS Chapter 3.19*

6.1.4.1 The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material for all alternatives: (checked boxes apply)
☒ Physical characteristics (receiving waters, bottom sediments, slurry constituents).
☐ Hydrograph in relation to known or anticipated sources of contaminants.
☐ Results from previous testing of the material or similar material in the vicinity of the project.
☐ Known, significant, sources of persistent pesticides from land runoff or percolation.
☒ Spill records for petroleum products or designated (§311 of CWA) hazardous substances. (Chapter 3.19 FEIS)
☒ Other public records of significant introduction of contaminants from industry, municipalities or other sources. (Chapter 3.19 FEIS)
☐ Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities.

Chapter 3.19 analyzes the potential for the project to encounter contaminated sites. The Applicant would use gravel material from one or both of the nearby existing gravel material sites; the ASRC Mine Site and the NSB Mine Site F. Although there is a contaminated site with ½ mile of the NSB Mine Site F, it would be reasonable to assume that no contaminated gravel would be extracted since the location of the spill is known and the area can be avoided. Additionally, the NSB Mine Site F expansion would require a DA permit from the Corps of Engineers, which is currently under review. There are no known spills within a half mile of ASRC Mine Site. Chapter 3.19.6.2.2 discusses contamination near the potential gravel sources.

6.1.4.2 An evaluation of the information above indicates that there is no reason to believe the proposed dredged or fill material is a carrier of contaminants, or that levels of contaminants are substantively similar at extraction and disposal sites. The material meets the testing exclusion criteria**.**

☒ Yes ☐ No ☐ Unknown

6.1.4.3 Is the discharge site adjacent to the extraction site and subject to the same sources of contaminants, or are the materials at the two sites substantially similar?

☒ Yes ☐ No ☐ Unknown

6.1.4.4 If there is a high probability that the material proposed for discharge is a carrier of contaminants are there constraints available that are acceptable to the permitting authority, and the Regional Administrator, to reduce potential contamination to acceptable levels at the disposal site?

This question is not applicable. There is not a high probability that the material proposed for discharge is a carrier of contaminants.

6.1.5: Aquatic ecosystem and organism determinations [230.11(e)], ***Fish, crustaceans, mollusks, and other aquatic organisms in the food web*** *[230.31]*:

References: *Nanushuk FEIS: Potential effects to aquatic ecosystem and organism determinations are discussed in Chapter 3.8 Wetlands and Vegetation, Chapter 3.12 Fish and Invertebrates, and Chapter 3.7 Water Quality. Chapter 6.0 discusses Avoidance, Minimization and Mitigation.*

“Twenty-eight fish species, ten of which are important subsistence species for Nuiqsut, are known to occur within the freshwater, brackish, and nearshore marine waters adjacent to and within the Nanushuk Project area. Essential Fish Habitat has been established for inter-jurisdictional pink and chum salmon in the lower Colville River as well as all Pacific salmon species in the nearshore marine waters from the outer Colville Delta to Oliktok point. Approximately 80 species of migratory birds, 9 of which are considered Birds of Conservation Concern, move through or nest within the vicinity of the Nanushuk Project” (USFWS Comments dated December 6, 2018).

The discharge of fill for the construction of the project infrastructure, the construction of the boat ramp and the screeding at Oliktok Dock are all activities that have the potential to impact the aquatic ecosystem. Habitat loss to fish and other aquatic organisms would occur due to the discharge of fill; from fugitive dust and gravel spray from gravel road, screeding at Oliktok Dock, and the placement of infrastructure (specifically for the construction of road crossings). The direct impacts to Aquatic Habitat would be the long term loss of 266.2 acres of wetlands, 0.7 acres of substrates below OHW in the Kachemach River and 5.7 acres of substrates in the Beaufort Sea. The screeding activity would impact an estimated 5.7 acres of benthic foraging habitat near Oliktok Dock. This would have the

potential to impact individual aquatic organisms but is unlikely to affect the population of aquatic organisms as a whole. Secondary impacts from the discharge of fill also has the potential to impact aquatic organisms (for example dust accumulation adjacent to fill, and stormwater runoff and associated changes in water quality). Utilizing a 328 feet (100 m) distance that dust impacts could occur around the footprint of the fill, 1,846 acres of secondary impacts would occur due to the proposed project. The 328-foot distance is based on literature documenting typical extents of indirect effects to vegetation (i.e., changes to albedo and thermokarsting) from gravel spray, dust accumulation, and dust distribution.

All Avoidance and Minimization Measures are outlined in Section 5.1.2 and 5.1.3 of this ROD. All measures that reduce impacts to WOTUS would reduce impacts to aquatic organisms. Additionally, as compensatory mitigation, the applicant would remove a fish blockage culvert reconnecting 600 acres of fish habitat to the Colville River, an anadromous waterbody that feeds the Colville River Delta. Compensatory mitigation is described in Section 5.1.4. Special Conditions to minimize impacts to the aquatic ecosystem are listed in Section 5.3. With proposed design features and inclusion of special conditions, including requirements for compensatory mitigation, the project would comply with this section of the Guidelines.

6.1.6: Proposed disposal site determination [230.11(f)]:
Reference: Chapter 3.7, Water Quality.
An evaluation of the appropriate factors below indicates that the disposal site and/or size of the mixing zone are acceptable. The applicant proposes to redistribute up to 3000 cubic yards of sea floor sediments over 5.7 acres in navigable WOTUS to complete screeding operation at Oliktok Dock. Impacts due to screeding would be minor and temporary. Screeding is anticipated to take 7 days to complete. The FEIS found that sediments in Simpson Lagoon are primarily silt and sand which under average current velocities for the area would likely settle within 2,000 feet of the screeding area (if suspended 6 feet in the water column).

☒ Depth of water
☒ Current velocity, direction, and variability
☒ Degree of turbulence
☐ Water column stratification
☐ Discharge vessel speed and direction
☐ Rate of discharge
☒ Dredged material characteristics
☒ Other factors affecting rates and patterns of mixing (natural sediment loads)

6.1.7 Determination of Secondary Effects on the Aquatic Ecosystem [40 CFR 230.11(h)]:

References: *Nanushuk FEIS Chapter 3, Environmental Analysis discusses secondary impacts of the proposed project in each resource section. Chapter 6.0 discusses Avoidance, Minimization and Mitigation*

The discharge of 2,856,000 cubic yards (CY) of fill would result in the permanent burial of 266.2 acres of wetlands and 0.7 acres of substrates below OHW in the Kachemach River as well as screeding in 5.7 acres of the Beaufort Sea. Some of the secondary impacts due to the discharge of fill into WOTUS include increase dust production from the gravel infrastructure, impacts to permafrost and changes in natural flow patterns. The FEIS estimates that approximately 1800 acres of wetlands would be impacted to some degree by the dust shadow from gravel roads and pads (Table 2.2-3). Accumulation of dust can impact soils and vegetation distribution resulting in changes to wetland characteristics. The construction of gravel infrastructure can result in changes to hydrology and natural flow patterns over time as changes to the underlying permafrost occur, which can impact wetland characteristics. A dramatic increase or decrease in surface water ponding can also impact habitat, permafrost stability, and nutrient cycling dynamics. Fill placed in wetlands could also be moved (for example through snow removal) or eroded during high water events into adjacent WOTUS, including wetlands and streams.

The following mitigation measures would be implemented to minimize the potential for these secondary effects: The roads would be constructed with a standard minimum thickness of 5 feet and the pads with a standard minimum thickness of 6 feet to insulate underlying permafrost. Dust control measures would be implemented to reduce the incidence of dust on vegetation and snow. Drainage culverts would be sited and designed at streams and concentrated drainages to pass the 50-year flood event with a headwater elevation not exceeding the diameter of the culvert to minimize potential impacts to hydrology. Where possible, as determined by engineering or regulatory agencies, culverts within the 200-year floodplain may be designed to pass the 75-year flood event. Prior to construction, an engineer would walk and slope-stake roads to determine the precise locations of drainage structures and determine on-site conditions for final layout. Snow removal management measures would be implemented to reduce the potential for gravel fill to be pushed off pads during snow removal. These design features and mitigation measures would be required as part of the permit.

All Avoidance and Minimization Measures are outlined in Section 5.1.2 and 5.1.3 of this ROD. Compensatory mitigation is described in Section 5.1.4. Special Conditions to minimize impacts to the aquatic ecosystem are listed in Section 5.3. With proposed design features and inclusion of special conditions, including requirements for compensatory mitigation, the project would comply with this section of the guidelines.

6.1.8 Determination of Cumulative Effects on the Aquatic Ecosystem [40 CFR230.11(g)]:

References: Nanushuk FEIS Chapter 3, Environmental Analysis discusses cumulative effects in each resource section. Chapter 3.1 Introduction and Analysis Methods, defines past and present actions and RFFAs considered in the analysis.

Analysis areas are based on the resource and are defined in each resource section within Chapter 3. Chapter 3.8 Wetlands and Vegetation (specifically 3.8.6.4), and Chapter 3.12 Fish and Invertebrates (specifically discuss cumulative impacts to the Aquatic Ecosystem. Chapter 6.0 discusses Avoidance, Minimization and Mitigation.

The FEIS documents that there has been a steady expansion of oil and gas development activities in recent years in and around the analysis area (NRC 2003). Additionally, the area has seen previous development in the form of gravel mine sites, access road developments, utilities, and remediation activities from legacy wells. It is reasonably certain that increased development activities (by industry as well as State and local governments) would continue as new oil and gas reserves are discovered. The proposed project would be located in one of the last remaining road-less areas between Kuparuk and the Colville River Delta.

Although the percentage impacts to a watershed is only one factor considered for cumulative effects, the FEIS worked to quantify the amount of cumulative impacts that would occur within the watersheds affected by the proposed project. The Project's incremental increase in wetland fill, combined with past and present development, would result in approximately 975.8 to 1,155.4 acres of cumulative impacts. Additionally, the Project's incremental increase in indirect effects to wetlands, combined with past and present development, would result in approximately 6,245.9 to 7,992.6 acres of indirect cumulative impacts. This accounts for the cumulative direct and indirect impact to WOTUS due to the placement of fill. The FEIS also discussed secondary and cumulative impacts to other resources in each resources section in Chapter 3. In the reasonably foreseeable future, the impacts described for fish, invertebrates, and aquatic habitats, as well as other resources that depend on wetlands in the analysis area are likely to increase in intensity when compared to existing conditions because of new road and pad placement, water withdrawals, noise, and other impacts associated with new oil and gas development. For example, impacts to Caribou and Birds (primarily Eider) result in impacts to Subsistence. These impacts vary by subsistence resource and would be cumulative to impacts from other Oil and Gas Development Project in the vicinity of the NVN. The FEIS concluded that impacts to access to caribou and caribou availability (a primary subsistence resource) would be probable and major. Further oil and gas development on the North Slope could increase the frequency and severity of existing impacts and affect subsistence harvest patterns across the North Slope. The cumulative effects to subsistence and traditional use include: 1) Reduction in available acres of use areas, 2) reduced access to use areas and 3) Reduced resource abundance. These impacts are discussed in detail in Chapter 3.17.6.4 of the FEIS.

6.1.9 Findings of compliance or non-compliance with the restrictions on discharge [40 CFR 230.12]:

On the basis of these Guidelines (Subparts C through G), the proposed disposal site for the discharge of dredged or fill material complies with the Section 404(b)(1) Guidelines with the inclusion of the appropriate and practicable discharge

conditions to minimize pollution or adverse effects to the affected aquatic ecosystem. See Section 5.3 for a list of Special Conditions.

6.2 Subpart D - Potential Impacts on Biological Characteristics of the Aquatic Ecosystem (40 CFR Section 230 Subpart D) (Note: The impacts described in this subpart were considered in making the factual determinations and the findings of compliance or non-compliance in subpart B (see 6.1 above).)

6.2.1 Threatened and endangered species *[230.30]*

References: Nanushuk Development Project BAs,Appendix IX, Biological Assessments, FEIS FEIS Chapter 3.9 Birds, 3.11 Marine Mammals.

The proposed project is within the range of three species listed as threatened under the Endangered Species Act of 1973 (ESA), as amended: spectacled eider (*Somateria fischeri*), the Alaska-breeding population of Steller's eider (*Polysticta stelleri*), and polar bear (*Ursus maritimus*), and polar bear critical habitat. Consultation with USWFS for these three species was originally initiated in September 2017, and the consultation request was revised in September 2018 due to changes in the proposed project. The Corps determined that the proposed project may affect, but is not likely to adversely affect polar bears (Ursus maritimus) and Steller's eiders (Polysticta stelleri). The project may adversely affect spectacled eiders (Somateria fischeri). The Corps adopted the Nanushuk Project USFWS Biological Assessment, Armstrong Energy, LLC, dated September 26, 2018.

The USFWS provided their Biological Opinion (BO) on March 5, 2019. They concluded that the proposed action is not likely to adversely affect Alaska-breeding Steller's eiders, is not likely to jeopardize the continued existence of spectacled eiders or polar bears, and is not likely to destroy or adversely modify polar bear critical habitat. The permit would include a special condition requiring the applicant to comply with the terms and conditions to implement the reasonable and prudent measures within the BO.

The proposed project is within the range of bowhead whale (Balaena mysticetus), ringed seals (Phoca hispida hispida) and bearded seals (Erignathus barbatus), endangered species managed under ESA as well as the Marine Mammal Protection Act (MMPA). The Corps determined that the proposed activity may affect, but is not likely to adversely affect the bowhead whale (Balaena mysticetus), ringed seals (Phoca hispida hispida) and bearded seals (Erignathus barbatus). Informal consultation with the National Marine Fisheries Service (NMFS) regarding bowhead whale *(Balaena mysticetus)* and bearded seal *(Erignathus barbatus nauticus)* was initially requested by the Corps in a letter dated March 6, 2018. The NMFS concurred with our finding of may affect, not likely adversely affect bowhead whales (*Balaena mysticetus*), Beringia DPS bearded seals (*Erignathus barbatus*

nauticus), or Arctic ringed seals (*Phoca hispida hispida*), concluding the informal consultation process, in a letter dated February 20, 2019. Adherence to the mitigation measures in the letter of concurrence, dated February 20, 2019, would be a condition of the permit.

***6.2.2 Other wildlife** [230.32]*

***References: FEIS** Chapters 3.9 Birds, 3.10 Terrestrial Mammals, 3.11 Marine Mammals, 3.12 Fish and Invertebrates.*

The discharge of 2,856,000 cubic yards (CY) of fill would result in the permanent burial of 266.2 acres of wetlands and 0.7 acres of substrates below OHW in the Kachemach River as well as 5.7 acres of screeding in the Beaufort Sea. The proposed project would result in direct loss of 266.2 acres of wildlife habitat for approximately 80 species of migratory birds, 9 of which are considered Birds of Conservation Concern, and move through or nest within the vicinity of the Nanushuk Project. The juxtaposition of a diverse variety of habitats within and adjacent to the project area, such as coastal mudflats, nearshore salt marshes, riverine, and sand dunes, provide an abundant food supply, spring and fall staging habitat, and diverse nesting habitats for many species of migratory birds. The DA permit would include special conditions to minimize impacts to wildlife.

6.3 Subpart E - Potential Impacts on Special Aquatic Sites (40 CFR Section 230 Subpart E) (Note: The impacts described in this subpart were considered in making the factual determinations and the findings of compliance or non-compliance in subpart B (see 6.1 above).)

***6.3.1 Sanctuaries and refuges** [40 CFR 230.40]; **Mud Flats** [40 CFR 230.42], **Vegetated Shallows** [40 CFR 230.43], **Coral Reefs** [40 CFR 230.44], **Riffle and Pool Complexes** [40 CFR 230.45]*

No impacts would occur to these resources as there are no sanctuaries, refuges, mud flats, vegetated shallows, coral reefs, nor riffle and pool complexes in the project area.

***6.3.2 Wetlands** [40 CFR 230.41]*
References: FEIS Chapter 3.8 Wetlands and Vegetation

The discharge of 2,856,000 cubic yards (CY) of fill for the construction of project infrastructure would result in the permanent burial of 266.2 acres of wetlands. Direct effects to wetlands would impact less than 0.1% of any of the 12 digit HUC watersheds the project is located within.

Indirect effects due to dust shadow include changes in soil composition, wetland composition, or vegetation patterns and increased mechanisms for invasive species introduction or dispersal. These effects could primarily occur within 328 feet (100 m) of gravel fill. Where these effects occur, they would change wetland

composition in the landscape, resulting in a change or degradation of existing wetland functions. The 328-foot distance is based on literature documenting typical extents of indirect effects to vegetation (i.e., changes to albedo and thermokarsting) from gravel spray, dust accumulation, and dust distribution. Indirect effects to wetlands would impact no more than 0.6% of any of the watershed the project is located within. The types of wetlands and vegetation classes impacted by the proposed project are shown in Table 3 below and are discussed in detail in Chapter 3.8 of the FEIS.

Table 3: Permanent impacts to WOTUS by NWI Code

Vegetation Class	NWI Code	Acres	% of Total
Basin Wetland Complex, Old	PUBH, PEM1H, PEM1F, PEM1/SS1B, PEM1/SS3B	38.9	14.6%
Basin Wetland Complex, Young	PUBH, PEM2H, PEM1H, PEM1F, PEM1B, PEM1/SS1	15.07	5.7%
Closed Low Willow	PSS1B	0.91	0.3%
Fresh Sedge Marsh	PEM1H	0.49	0.2%
Moist Sedge-Shrub Tundra	PEM1/SS1B	107.55	40.5%
	PEM1/SS1B, PEM1/SS1C	0.68	0.3%
	PSS1/EM1B	0.79	0.3%
Open Low Willow	PSS1/EM1B	0.45	0.2%
Tussock Tundra	PEM1/SS1B, PEM1/SS3B	65.97	24.8%
Water	L1UBH	1.28	0.5%
	PUBH	12.88	4.8%
	R1UBV	0.7	0.3%
	R2UBH	0.1	0.0%
Wet Sedge-Willow Meadow	PEM1/SS1B, PEM1F, PEM1/SS1F	5.77	2.2%
	PEM1F	14.03	5.3%
Misc. Veg	Misc. Wetlands[1]	0.6	0.2%
TOTAL PERMANENT IMPACTS TO WOUS		**266.2**	**100%**

The wetland functions most impacted by the proposed project include maintenance of the soil thermal regime, terrestrial mammal habitat, production and export of organic matter, flood flow moderation and conveyance and waterbird habitat. This is primarily due to the fact that those functions are the functions most ubiquitously performed by the wetlands in the analysis area. The percent loss of these functions is reflected in the percent distribution of these functions within the analysis area. This means no one function was disproportionately affected by the proposed project compared to its distribution across the analysis area. The Projects 266.2 acres of permanent wetland loss represents a small percent of the watershed. However, these wetlands are located adjacent to the CRD, which is the largest (approximately

250 square miles) and most complex delta in northern Alaska, draining about 30% (20,700 square miles) of the North Slope. The project would result in the construction of roads and pads in the last mostly roadless areas between the Nigliq Channel of the Colville River and Kuparik, and result in impacts to an extensive and complex mix of patterned wetlands, tapped lakes, deep channels, salt marsh, and mudflats. The Corps has determined that compensatory mitigation is appropriate for the proposed project because the direct, indirect and cumulative impacts of the project would occur within wetlands that are unique due to their location within/adjacent to the CRD on the ACP.

All Avoidance and Minimization Measures are outlined in Section 5.1.2 and 5.1.3 of this ROD. Compensatory mitigation is described in Section 5.1.4. Special Conditions to minimize impacts to the aquatic ecosystem are listed in Section 5.3. With proposed design features and inclusion of special conditions, including requirements for compensatory mitigation, the project would comply with this section of the Guidelines.

6.4 Subpart F - Potential Effects on Human Use Characteristics (40 CFR Section 230, Subpart F) (Note: The impacts described in this subpart were considered in making the factual determinations and the findings of compliance or non-compliance in subpart B (see 6.1 above).)

6.4.1 Municipal and Private Water Supplies *[40 CFR 230.50]*
References: FEIS chapter 3.3.1
Deep groundwater is highly saline and is not potable and is not recognized as a potential drinking water source. The closest above ground drinking water source is the Tugruk Lake on the west side on the Colville River near the Native Village of Nuiqsut. The project has no potential to impact this water source.

6.4.2 Recreational and Commercial Fisheries *[230.51]*
References: FEIS Chapter 3.12 Fish and Invertebrates
While there are eight species of fish in the analysis area that can be harvested for recreational and commercial fisheries (least cisco (*Coregonus sardinella*), Arctic cisco (*Coregonus autumnalis*), Bering cisco (*Coregonus iaurettae*), Broad whitefish (*Coregonus nasus)* , Humpback whitefish (*Corgonus pidschian*), Artic grayling (*Thymallus arcticus*), Dolly varden (Salvelinus malma) and Burbot (*Lota*), recreational and commercial fisheries either do not occur or only occur in a limited way due to safety restrictions and limited public access to the Colville River. Most of these species are fished for subsistence purposes. The Applicant has proposed compensatory mitigation that would remove a fish blockage culvert and reconnect 600 acres of fish habitat to the Colville River, and anadromous fish stream. This would increase overwintering fish habitat near the NVN and possibly improve recreational and subsistence fisheries. Additional discussion regarding impacts to fisheries are discussed in Section 6.1.5 of the ROD. All Avoidance and Minimization Measures are outlined in Section 5.1.2 and 5.1.3 of this ROD. Compensatory mitigation is described in Section 5.1.4. With proposed design

features and inclusion of special conditions, including requirements for compensatory mitigation, the project would comply with this section of the guidelines.

6.4.3 Water-related Recreation [230.52]

References: FEIS 3.1.6

Limited recreation occurs in the Project are due to safety restrictions and limited public access across the North Slope. This factor was not evaluated in detail in the FEIS. There would be negligible impact to water-related recreation due to the proposed project.

6.4.4 Aesthetics [230.53]

References: FEIS Chapter 3.13 Visual and Aesthetic Resources discusses impacts to these resources in detail. Also see Section 7.1.8 c) of this ROD.

Construction, drilling, and operation of the proposed project would impact aesthetics by introducing contrast that would change the character of the landscape in areas with higher scenic quality or in proximity to sensitive viewers. The built features, as well as the presence of personnel and use of lighting, would introduce glare, textures and geometries that contrast with the existing conditions, thereby affecting the visual quality. These impacts would be minor to moderate and would last the life of the project and would be cumulative to other developments in the surrounding area. The Applicant modified their proposed project and moved DS 2 farther away from the Colville River thus reducing the visual impact to those traveling along the River. Other minimization measures include designing facility lighting to minimize the impact on visual aesthetics (as well as the occurrence of bird strikes); covering or coating the pipelines with a non-reflective surface treatment to reduce reflectivity, and implementing dust control measure to reduce dust impacts to snow and vegetation. All Avoidance and Minimization Measures are outlined in Section 5.1.2 and 5.1.3 of this ROD. With proposed design features and inclusion of special conditions, including requirements for compensatory mitigation, the project would comply with this section of the guidelines.

6.4.5 Parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves [230.54]

References: FEIS 3.15.5.1

There are no parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves and therefore no impacts to these resources would occur.

6.5 Subpart H – Actions to Minimize Adverse Effects (40 CFR Section 230, Subpart H)

The following actions, as appropriate, have been taken through application of 40 CFR 230.40-230.77 to ensure minimal adverse effects of the proposed discharge: Actions concerning the location of the discharge and the material to be discharged, actions controlling the material after discharge, actions affecting the method of

dispersion, actions affecting plan and animal populations and actions affecting human use.

All Avoidance and Minimization Measures are outlined in Section 5.1.2 and 5.1.3 of this ROD. With proposed design features and inclusion of special conditions, the project has avoided and minimized to the maximum extent practicable and would comply with this section of the Guidelines.

7.0 GENERAL POLICIES FOR EVALUATING SECTION 10 RHA AND 404 CWA PERMIT DECISIONS [33 CFR 320.4]:

7.1 Public Interest Review [33 CFR 320.4(a)]: The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest.

The Corps has determined, after evaluation of the following general criteria (*i – iii* below) and the factors listed in Section 7.1.2 through 7.1.19, that the proposed Project would not be contrary to the public interest, as long as all permit special conditions listed in Section 5.3 of this ROD are implemented.

i. **The relative extent of the public and private need for the proposed work:** At a projected 120,000 barrels of oil per day, the Project would increase throughput of the Trans Alaska Pipeline by approximately 20-25%, a significant and important contribution to the system integrity and state and local revenues. The proposed Project would minimally increase employment opportunities for NVN residents and the NSB, and revenues (through job creation, taxes and fees for the purchase or leasing of materials and easements) to the NSB, ASRC and Kuukpik Corporation. The project would meet the needs of the Applicant to develop oil resources for economic gain, and minimally contribute to the needs of the nation for oil resources.

ii. **Where there are unresolved conflicts as to resource use, the practicability of using reasonable alternative locations and/or methods to accomplish the objective of the proposed structure or work:**

Chapter 3.15 of the Nanushuk FEIS found that while land ownership and the overall pattern of land ownership in the analysis area would not change, land use in the Project footprint would change from oil and gas exploration activities, wildlife habitat, research, and subsistence uses to oil and gas development and operations. This represents an unresolved conflict as to resource use for residents of the NVN (see NVN's comment on resource use and public interest in Section 4.4 of this ROD). However, Kuukpik land management would continue to balance subsistence use and oil and gas development consistent with its commitment to ensuring that subsistence users' rights are

protected, as well as providing opportunities for environmentally safe, economically feasible exploration, development, and production on its lands (Kuukpik Corporation 2017).

In response to comments from NVN and Kuukpik Corporation on subsistence, the Applicant included subsistence ramps (ramps across road for snow machine access in winter) that would be constructed and located with input from local subsistence hunters and a boat ramp and small parking pad on the north east side of the Kachemach River near its confluence with the Colville River. Both the subsistence ramps and the boat ramp would improve access for hunters to subsistence hunting areas, and would also improve access to the state road system.

State wide, this project would not be in conflict with State priorities or objectives and the Applicant would need to obtain the appropriate State authorizations. Any operations on lands in the Project area would be conducted in accordance with State of Alaska or ASRC (or both) oil and gas lease provisions; applicable federal, state, and local land regulations; and all governing settlement agreements.

Oil and Gas development is a priority for the nation and this process was subject to EO 13212, Actions to Expedite Energy-Related Projects (May 18, 2001) and EO 13302, Amending Executive Order 13212, Actions to Expedite Energy-Related Project (May 15, 2003).

The Applicant has shown that there are no other practicable alternatives that would meet the purpose and need for the proposed project and be less environmentally damaging than the Applicant's proposed project discussed in this ROD.

iii. **The extent and permanence of the beneficial and/or detrimental effects that the proposed structures or work may have on the public and private uses which the area is suited:**

The Corps received comments from NVN and Kuukpik Corporation expressing concerns about impacts to subsistence and subsistence resources. These are discussed in Section 4.3.3 and 4.4 of this ROD. Impacts to subsistence drove the need for an EIS and the impacts to caribou subsistence use areas, caribou harvester access, and caribou resource availability were found to be probable, major and long term in the FEIS. The area in which the project is proposed is used for subsistence hunting by residents of the Native Village of Nuiqsut who have raised concerns that they will lose access to traditional hunting areas. These areas also contain oil and gas leases. Chapter 3.15 of the Nanushuk FEIS found that while land ownership and the overall pattern of land ownership in the analysis area would not change, land use in the Project footprint would change from oil and gas exploration activities, wildlife habitat, research, and subsistence uses to oil and gas

development and operations. Economic benefits are discussed in Section 7.1.19 of this ROD. The detrimental subsistence and beneficial economic effects would last the life of the project, which is anticipated to be approximately 30 years. The fill placement would be permanent. Kuukpik Corporation also commented that most lands in the analysis area would continue to be used for wildlife habitat, subsistence uses, research, and further oil and gas exploration.

7.1.2 Conservation [33 CFR 320.4(a)(1)]:

a) **Water Supply and Conservation [33 CFR 320.4(m)]:** Freshwater would be withdrawn from lakes in the project area for four primary uses: 1) construction of ice roads and pads during the winter construction season, 2) hydrostatic testing of pipelines, 3) dust suppression, and 4) as a potable water source during operations. (Potable water for domestic use at construction and drill rig camps would be transported from Deadhorse or other existing facilities.) Winter water withdrawal from lakes would gradually lower the water levels through each winter. However, naturally occurring recharge in the spring would be expected to replace the withdrawn water volumes in the lakes in most years. Considering the finding of the Nanushuk FEIS and the analysis in this ROD, the Corps has determined that the proposed project is not contrary to the Public Interest with regards to this factor.

b) **Energy Conservation and Development [33 CFR 320.4(n)] and Energy Needs [33 CFR 320.4(a)]:** The proposed project would expend energy during construction and operations of the facility. However, the project would produce 120,000 barrels of oil per day, which would increase throughput of the Alaska Pipeline by approximately 20-25%, a significant and important contribution to the system integrity and state and local revenues and would supply energy to the USA. The CPF includes a power generation facility. Initial Project power generation would come from diesel fired power generators until drill site and CPF facilities have been commissioned and reach steady-state operations (likely Year 5). Once consistent gas supplies are produced by the Project or are obtained from a third-party supplier, power generation would occur at the CPF using gas-fired combustion turbines. Energy would be conserved by using supplies generated by oil development projects on the North Slope. Power would be supplied to other facilities via power cables installed on infield and export/import pipeline HSMs using messenger cables (Section 2.3.2.4, *Pipelines*). Considering the finding of the Nanushuk FEIS and the analysis in this ROD, the Corps has determined that the proposed project in not contrary to the Public Interest with regards to this factor.

c) **Land Use [33 CFR 320.4(a)]:**
Reference: FEIS Chapter 3.15, Land Ownership, Management and Use.

Chapter 3.15 of the FEIS found that while land ownership and the overall pattern of land ownership in the analysis area would not change, land use in the Project footprint would change from oil and gas exploration activities, wildlife habitat, research, and subsistence uses to oil and gas development and operations. However, most lands in the analysis area would also continue to be used for wildlife habitat, subsistence uses, research, and further oil and gas exploration. Any operations on lands in the Project area would be conducted in accordance with State of Alaska or ASRC (or both) oil and gas lease provisions; applicable federal, state, and local land regulations; and all governing settlement agreements.

Lands developed for drill sites, support facilities, and infield roads in the Project area would need to be rezoned to Resource Development by the NSB. Portions of the access road that are south of Nuna and north or west of Mustang would also need to be rezoned to Resource Development. Under NSB's zoning code, this would allow for development of the Project under an NSB development permit. Kuukpik land management would continue to balance subsistence use and oil and gas development consistent with its commitment to ensuring that subsistence users' rights are protected, as well as providing opportunities for environmentally safe, economically feasible exploration, development, and production on its lands (Kuukpik Corporation 2017).

Considering the finding of the Nanushuk FEIS and the analysis in this ROD the Corps has determined that the proposed project is not contrary to the Public Interest with regards to this factor.

d) Food and Fiber Production [33 CFR 320.4(a)]: No commercial food or fiber production occurs within the project area. The area provides subsistence resources to NVN which is a primary source of food for these villagers. The proposed project would not impact commercial food or fiber production but would impact the timing and location of subsistence activities. Subsistence activities could still occur within the project area (See Sections 7.1.4a for additional discussion regarding subsistence). Considering the finding of the Nanushuk FEIS and the analysis in this ROD the Corps has determined that the proposed project is not contrary to the Public Interest with regards to this factor.

e) **Mineral Needs [33 CFR 320.4(a)]:** The use of gravel would be necessary for the construction of gravel roads and pads. Although gravel resources are relatively abundant on the North Slope, the economic viability for use of the material often depends on the proximity of a mine site to a proposed project, due to the cost of transporting the material. Thus, the removal of material at a gravel mine site can permanently reduce the availability of gravel for future use within the vicinity of the mine site. Gravel material would likely be obtained from one or more existing mine sites near the Project: NSB Mine

Site F or the ASRC Mine Site. These mine sites would be operated and permitted by the mine site owners. Additional discussion of mine sites can be found in section 6.1.4.1 of this ROD. Considering the finding of the Nanushuk FEIS and the analysis in this ROD the Corps has determined that the proposed project is not contrary to the Public Interest with regards to this factor.

7.1.3 **Needs and Welfare of the People [33 CFR 320.4(a)]:**
North Slope residents and communities have historically had a subsistence-based economy. However, development of oil and gas resources on the North Slope in the last 40 years has introduced a strong cash economy to the area. Oil and gas development now forms the basis of the cash economy in the NSB, as well as in Alaska as a whole. This has resulted in a mixed economy in North Slope communities, with both cash and subsistence playing important roles. The development of the proposed project would have mixed impacts on the needs and welfare of the people. Considering the finding of the Nanushuk FEIS and the analysis in this ROD the Corps has determined that the proposed project is not contrary to the Public Interest with regards to this factor.

7.1.4 General Environmental Concerns [33 CFR320.4(a)]:

Concerns that may be addressed under "general environmental concerns" include those not addressed in other sections of this document. Subsistence, climate change, general health, air quality, and noise are addressed below:

a) Subsistence: A recent USACE study (ResourcEcon et al. 2011) conducted a literature review of existing subsistence definitions and provided a proposed definition of subsistence, which addressed the economic, social, cultural, and nutritional elements and components of subsistence that have not been emphasized in previous definitions. In part, this definition reads:

Subsistence refers to a way of life in which wild renewable resources are obtained, processed, and distributed for household and communal consumption according to prescribed social and cultural systems and values….
…. The subsistence way of life satisfies to various degrees and in various contexts, the economic, social, cultural, and nutritional needs of subsistence-based communities. (ResourcEcon et al. 2011)

Direct, indirect and cumulative impacts to Subsistence are disclosed in the Nanushuk FEIS Chapter 3.17 Subsistence and Traditional Use and it was

determined that effects on caribou subsistence use areas, caribou harvester access, and caribou resource availability would be probable, major, and long term. The discharge of fill into WOTUS, including wetlands, would result in the direct loss of 266.2 acres of wetlands that are utilized for subsistence activities. Primary impacts to subsistence and traditional use activities in the community of Nuiqsut include reducing the availability of subsistence resources, changing access to subsistence use areas (both positive and negative effects), hunter avoidance of industrial areas, and reducing overall community participation in subsistence activities. Cumulative effects to subsistence and traditional use areas include reduction in available acres of use areas, reduced access to use areas, and reduced resource abundance. In response to comments from NVN and Kuukpik Corporation on subsistence, the Applicant included subsistence ramps (ramps across road for snow machine access in winter) that would be constructed and located with input from local subsistence hunters and a boat ramp and small parking pad on the north east side of the Kachemach River near its confluence with the Colville River. Both the subsistence ramps and the boat ramp will improve access for hunters to subsistence hunting areas, and will also improve access to the state road system.

In addition to adding a boat ramp and subsistence ramps to the proposed project, additional subsistence mitigation measures have been included in the design, construction, and operation of the proposed project to reduce impacts to subsistence resources and resource availability. These include locating project facilities away from subsistence use areas near the mouth of the Miluveach River, locating bridges across the Kachemach River to minimize impacts to boaters and subsistence use areas and ensuring adequate freeboard plus an additional 4 feet to minimize interference with vessel-based subsistence activities. The Applicant has committed to work with the Kuukpik Corporation to establish access agreements for use of project gravel roads and ice roads to increase potential access routes for subsistence activities. The Applicant will provide regular project updates to the community and leadership in Nuiqsut during project development, and will incorporate measures to address concerns into project designs, where practicable. Additionally, the Applicant has committed to continue to communicate regularly with the community and leadership in Nuiqsut throughout construction and operations. Additional Mitigation Measures that could reduce impacts to subsistence resources are listed in the Nanushuk FEIS at Chapter 3.17.7.

Considering the finding of the Nanushuk FEIS and the analysis in this ROD the Corps has determined that the proposed project is not contrary to the Public Interest with regards to this factor.

b) Climate Change: The Nanushuk FEIS evaluated both the impact of the project on climate change (Chapter 3.2 of the FEIS), as well as the impact

climate change may have on the project including how it may exacerbate the impacts of the proposed project (within each resource section of Chapter 3). The proposed activities within the Corps federal control and responsibility likely would result in a negligible release of greenhouse gases into the atmosphere when compared to global greenhouse gas emissions. Greenhouse gas emissions have been shown to contribute to climate change. Aquatic resources can be sources and/or sinks of greenhouse gases. For instance, some aquatic resources sequester carbon dioxide whereas others release methane; therefore, authorized impacts to aquatic resources can result in either an increase or decrease in atmospheric greenhouse gas. These impacts are considered de minimis. Greenhouse gas emissions associated with the Corps federal action may also occur from the combustion of fossil fuels associated with the operation of construction equipment, increases in traffic, etc. The Corps has no authority to regulate emissions that result from the combustion of fossil fuels. These are subject to federal regulations under the Clean Air Act and/or the Corporate Average Fuel Economy (CAFE) Program. Greenhouse gas emissions from the Corps action have been weighed against national goals of energy independence, national security, and economic development and determined not contrary to the public interest.

c) General Health: Nanushuk FEIS Chapter 3.20 discusses Human Health and Safety. NVN commented that "Subsistence resources and practices are directly connected to the health of our community. The harvest, preparation, sharing, and consumption of these wild resources contributes to our health and wellness. The Nanushuk project will impact subsistence practices and further harm our food security." The discharge of fill would not directly result in increased risk to human health as long as all safety procedures are followed during the work. Indirect effects on human health and safety would include both beneficial and detrimental impacts. Beneficial effects would result from increased family incomes and increased revenues to Kuukpik, ASRC, NSB, and the State of Alaska, which may provide funding to support social and health services in Nuiqsut. Detrimental impacts would include potential indirect effects on health from changes in diet (particularly to subsistence foods) and from increased stress levels. Subsistence is discussed in Section 7.1.4a of this ROD. Considering the finding of the Nanushuk FEIS and the analysis in this ROD the Corps has determined that the proposed project is not contrary to the Public Interest with regards to this factor.

d) Air Quality: The Applicant would have to obtain the appropriate Air Quality permits from the State and be in compliance with the requirements of the Clean Air Act. ADEC would issue an air quality permit for each Project facility only after a demonstration of compliance with all applicable ambient air quality standards is made during the air permitting process. Additionally, in response to comments received on the DEIS, at the Public Meetings on

the DEIS, and during cooperating agency meetings, the Applicant modified their proposed project to adopt alternative 5. They further modified the proposal by re-locating the CPF further north away from Nuiqsut in response to concerns about air quality. Considering the finding of the Nanushuk FEIS and the analysis in this ROD, as well as the State's primacy over Air Quality Issues, the Corps has determined that the discharge of fill for the proposed project is not contrary to the Public Interest with regards to this factor. Air Quality is also discussed in Section 8.3.

e) Noise: Impacts from project generated Noise are discussed in the Nanushuk FEIS Chapter 3.14. Project components that could generate noise include construction activities, Oliktok Dock screeding, gravel mine operations, ground transportation, air transportation, drilling activities and operations activities. Noise generated from the discharge of fill into WOTUS would occur primarily during the construction period of the proposed Project and would be minor to moderate and short term. To mitigate for noise from transportation activities, routine helicopter use would be avoided during regular development, drilling, or production activities, minimizing noise and related impacts to aesthetics, wildlife, and subsistence. Additionally, drill sites would receive turbine-generated power from the CPF via power cables to minimize noise impacts at individual drill sites. Considering the finding of the Nanushuk FEIS and the analysis in this ROD the Corps has determined that the proposed project is not contrary to the Public Interest with regards to this factor.

7.1.5 Wetlands [33 CFR 320.4(b)]:

The Applicant has avoided and minimized impacts to WOTUS to the maximum extent practicable. These avoidance and minimization measures are discussed in Sections 5.1.2 and 5.1.3 of this ROD. The Corps has determined that compensatory mitigation is required for the unavoidable impacts to 266.2 acres of wetlands. This compensatory mitigation determination is discussed in Section 5.1.3 of this ROD.

7.1.6 Fish and Wildlife Values [33 CFR 320.4(c)]: See discussion in Sections 6.1.5, 6.1.7, 6.1.8, 6.2.1 and 6.2.2 of this ROD. Eighteen (18) species of terrestrial mammals use the project area on an annual basis. Other cumulative impacts to non-aquatic resources include impacts on wildlife habitat, including the impacts of a long linear road and road traffic on wildlife migration corridors and breeding grounds. These impacts include habitat disturbance, loss and fragmentation, and disturbance due to increased traffic and access. Reduced survival or reproduction of the population would be unlikely because suitable alternative habitats are available for displaced animals. No aspects of the Project would be expected to cause appreciable population decreases; the demographic effects of direct mortality from vehicle strikes and indirect mortality from possible augmentation of predator populations would be minor. Considering the finding of the Nanushuk FEIS and the

analysis in this ROD, including the Guidelines analysis in Section 6.0, the Corps has determined that the proposed project is not contrary to the Public Interest with regards to this factor.

7.1.7 Water Quality [33 CFR 320.4(d)]: Impacts to water quality are discussed in Sections 6.1.2, 6.1.3, and 6.1.4 above in this ROD. The Section 401 Certificate of Reasonable Assurance for the Project from the State of Alaska Department of Environmental Conservation was received by the Corps on December 31, 2018. Considering the finding of the Nanushuk FEIS and the analysis in this ROD and the issuance of the 401 Certificate by the State of Alaska, the Corps has determined that the proposed project is not contrary to the Public Interest with regards to this factor.

7.1.8 Historic, Cultural, scenic/aesthetic and recreation values: [33 CFR 320.4(e)]:

a) Historic: Pursuant to 36 CFR Part 800.3, the Corps determined that a Historic property may be affected by the Project, but would not be adversely affected by the Project. Consultation with the State Historic Preservation Officer was initiated December 5, 2017. The Corps received a letter dated December 18, 2017, of concurrence with our finding of "No Adverse Effect" on December 27, 2017. Due to the project changes, the Corps re-initiated consultation on November 16, 2018 and received an email concurring with our finding of No Adverse Effect on November 16, 2018. The only change was the location of the impact. Considering the finding of the Nanushuk FEIS and the analysis in this ROD the Corps has determined that the proposed project is not contrary to the Public Interest with regards to this factor.

b) Cultural: Nanushuk FEIS Chapter 3.16 discusses Cultural Resources. Cultural resources are sites, objects, buildings, structures, districts, and landscapes that are considered to have historic or cultural value. Cultural landscapes and traditional land use areas that have importance for cultural practices or use of the natural environment are also considered cultural resources. A total of five sites (or use areas) overlap with the Project footprint and would therefore be likely to experience direct impacts. All activities (construction, drilling, and operations) associated with the Project would have the potential to indirectly impact cultural resources. A total of 9 sites (or use areas) are within the broader analysis area and would therefore be likely to experience indirect impacts from vibration, visual, and auditory activities. These impacts would vary in intensity, due to the nature of the cultural resources type and the activity. The Corps sought comment from NVN, Kuukpik and the ASRC regarding cultural resources in letters sent to these entities on September 11, 2017. No response to these letters was received by the Corps. No comments regarding cultural resources during the various comment periods were received by the Corps. The Project would also require a Certificate of Traditional Land Use Inventory (TLUI) Clearance from North Slope Borough (NSB) to gain approval to construct the Project. Considering the finding of the Nanushuk FEIS

and the analysis in this ROD the Corps has determined that the proposed project is not contrary to the Public Interest with regards to this factor.

c) Scenic/Aesthetics: Nanushuk FEIS Chapter 3.13 discusses Visual and Aesthetic Resources. Also see Section 6.4.4 of this ROD. The proposed project would expand industrial development into areas that are currently largely undeveloped, except for pockets of existing oil and gas infrastructure near Kuparuk, Mustang, and Nuna. The presence of roads, structures, machinery, and personnel during construction and operations would expand to new areas. These elements would introduce new textures, colors, and materials or increase the number of locations from which they would be visible. Construction activities and transportation would generate a dust cloud which would obscure the existing features of the landscape and change the color and visibility of the sky. Flaring from the CPF would also be visible in the analysis area. Flaring may occur during facility commission and maintenance events once or twice per year and would last 1 to 2 hours each. Full facility shutdowns for maintenance may require flaring. These flaring events would last approximately 12 to 18 hours and would occur roughly every 4 years. Impacts from dust and flaring would be temporary and intermittent, but the impacts from new structures and associated lighting would be more long term. The Applicant has proposed seven avoidance and minimization measures (as described in FEIS Ch. 3.13) to reduce impacts to Aesthetics, for example:

- Facility lighting would be designed to minimize the impact of lighting on visual aesthetics and minimize the occurrence of bird strikes. To minimize light visible from outside of the Project facilities, the Project would use downward illumination such as downcast floodlights, locate mast poles away from the pad edge, use lighting fixtures with lamps contained within the reflector, and would shade windows on the east side of buildings.
- Pipelines would be covered or coated with a non-reflective surface treatment to reduce reflectivity and potential impacts to wildlife and visual and aesthetic resources.
- Dust control management measures would be implemented to reduce the incidence of dust on vegetation or snow.

Considering the finding of the Nanushuk FEIS and the analysis in this ROD, the Corps has determined that the proposed project is not contrary to the Public Interest with regards to this factor.

d) Recreation: See discussion in Sections 6.4.2 and 6.4.3 of this ROD. Impacts to recreation from the proposed project would be very minor. Considering the finding of the Nanushuk FEIS and the analysis in this ROD, the Corps has determined that the proposed project is not contrary to the Public Interest with regards to this factor.

7.1.9 Effects on Limits of the Territorial Sea [33 CFR 320.4(f)]: The Project does not have the potential to impact the limits of the territorial Sea; the proposed Project is located inland. Screeding at Oliktok dock has no potential to affect the limits of the territorial sea.

7.1.10 Consideration of Property Ownership: [33 CFR 320.4(g)]
Kuukpik Corporation owns the surface estate of lands at the drill sites, lands traversed by the infield roads and infield pipelines, and portions of the access road and Nanushuk Pipeline. The State of Alaska, through the Alaska Department of Natural Resources manages the majority of surface lands traversed by the Nanushuk Pipeline and access road. The project would access subsurface mineral resources that area shared by the State of Alaska and the ASRC. Chapter 3.15 of the Nanushuk FEIS found that land ownership and the overall pattern of land ownership in the analysis area would not change due to the proposed project. See also, discussion under Section 7.1.2, Land Use of this ROD. The proposed project is located primarily on state land and some land owned by Kuukpik Corporation. The Applicant has worked with Kuukpik Corporation to obtain the appropriate authorizations to complete the project on Kuukpik Land. Kuukpik Corporation did not submit comments regarding property ownership. The proposed project would not directly impact any other native allotment. Considering the finding of the Nanushuk FEIS and the analysis in this ROD, the Corps has determined that the proposed project is not contrary to the Public Interest with regards to this factor.

7.1.11 Activities Affecting Coastal Zones [33 CFR 320.4(h)]: By operation of Alaska State law, the federally approved Alaska Coastal Management Program expired on July 1, 2011, resulting in a withdrawal from participation in the CZMA's National Coastal Management Program.

7.1.12 Activities in Marine Sanctuaries [33 CFR 320.4(i)]: N/A

7.1.13 Other Federal, State, and Local Requirements [33 CFR 320.4(j)]:

See Section 8.8 below for State and Local authorizations obtained.

7.1.14 Safety of Impoundment Structures [33 CFR 320.4(k)] and Safety (general) [33 CFR 320.4(a)]:
No impoundment structures are proposed for the project so the Safety of Impoundment Structures factor does not apply.
Safety (general) [33 CFR 320.4(a)]: Nanushuk Chapter 3.20, Human Health and Safety discusses safety. Other considerations regarding safety are included as appropriate in other resource chapters. Industrial oil and gas construction, drilling, and operational activities in the arctic is inherently hazardous to humans due to extreme weather conditions (cold, wet, dark, windy, etc.), machinery operations, transportations, wildlife, etc. The Applicant is expected to follow all safety precautions to provide for all employees, contractors, and visitors to the locations to ensure safe conditions are provided. Construction and operational activities would

follow standard North Slope safety practices, as outlined in the 2018 Alaska Safety Handbook and the Applicant's internal policies. The Applicant would provide employees with safety training and frequent safety meetings. Mitigation measures specific to safety, including a boat ramp, would be incorporated into the Project for local use to launch and retrieve boats, to increase potential access routes for subsistence activities, and to support faster response times in the event of a spill or other emergency. Additionally, to enhance access and safety for subsistence hunters, the Applicant would construct pullouts and ramps for subsistence access. Considering the finding of the Nanushuk FEIS and the analysis in this ROD, the Corps has determined that the proposed project is not contrary to the Public Interest with regards to this factor.

7.1.15 Floodplain Management [33 CFR 320.4(l); Executive Order (EO) 11988], Flood Hazards [33 CFR 320.4(a)], Floodplain Values [33 CFR 320.4(a)]: See Nanushuk FEIS Chapter 3.6, Hydrology and Floodplains. No federally mapped floodplains would be affected by the proposed project. The Applicant modified their proposed project to move DS2 out of the 100 year floodplain of the Colville River. All drill sites would be located outside of the 100 year floodplain of the Colville River. While road crossing of the Miluveach River and the Kachemach Rivers would result in roads and bridges within the 100 year floodplain, the Applicant has designed the project to minimize impacts to these floodplains. The proposed project is in compliance with EO 11988, as there is no practicable alternative to avoid the floodplain.

7.1.16 Shoreline Erosion and Accretion [33 CFR 320.4(a)]: See Nanushuk FEIS Chapter 3.6, Hydrology and Floodplains, Sections 6.1.1 and 6.1.3 of this ROD for discussion. The placement of fill below OHW for the construction of the boat ramp (see discussion under Section 6.1.3 of this ROD) has the potential to change erosion and accretion patterns in channels. The construction of the boat ramp in the Kachemach River, the construction of bridges across the Kachemach and the Miluveach Rivers and the installation of culverts in streams are project activities that would impact erosion and accretion patterns. The Applicant has committed to utilizing appropriate erosion control, and design measures that would minimize the risk of major impacts. Some of these measures include, for example: "River crossings will be positioned at stable riverbank locations. Bridges will be designed to cross rivers and streams that cannot feasibly be conveyed using culverts. They will be designed and constructed per typical North Slope practices. Bridges will be oriented, to the greatest extent possible, perpendicular to the stream to limit construction costs, infrastructure footprint within the floodplain, and the potential for scour and erosion" and
"Culverts will be used at minor stream crossings where bridges are both unnecessary and economically impractical. More than one culvert may be necessary to pass flows at these locations. Culvert batteries for all stream crossings will consist of an adequate number of culverts to pass the 50-year flood event with a headwater elevation not exceeding the top of the culvert (Headwater/Diameter ratio of 1 or less), based on specific site information and 2003 USGS regression

equations. Where possible, as determined by engineering or regulatory agencies, culverts within the 200-year floodplain may be designed to pass the 75-year flood event." (From Nanushuk Project, Basis of Design – Civil Infrastructure, Rev. 5, DOC.NO. RB-Bl01-CSDB-050001).
Considering the finding of the Nanushuk FEIS and the analysis in this ROD, the Corps has determined that the proposed project is not contrary to the Public Interest with regards to this factor.

7.1.17 Navigation [33 CFR 320.4(o)]:
References: See FEIS Chapters 3.1.6 and 3.6.3.5,
There are no established harbor lines in the Beaufort Sea in the area of Oliktok Dock. In general, impacts to navigation could occur due to the construction of the bridges across the Miluveach and Kachemach Rivers. The Applicant has designed the bridge height for 14 feet above ordinary high water which should allow boats to pass without issues during navigable water flows. Neither of those channels are a Section 10 Navigable Water. Screeding at the Oliktok Dock would improve Navigation for the barges that dock there by smoothing the sea floor adjacent to the dock. The Applicant has also proposed to construct a dock in the Kachemach River which would help provide access to a year round road system to residents of the Nuiqsut. Considering the finding of the Nanushuk FEIS and the analysis in this ROD, the Corps has determined that the proposed project is not contrary to the Public Interest with regards to this factor.

7.1.18 Environmental Benefits [33 CFR 320.4(p)]: The Applicant's Compensatory Mitigation Plan would restore fish passage to a small tributary to the Nigliq Channel of the Colville River. The project would also restore a more natural channel shape and floodplain, and improve access for residents of Nuiqsut to their boat dock and gravel source.

7.1.19 Economics [33 CFR 320.4(q)]:
References: See FEIS Chapter 3.18, Socioeconomics
At a projected 120,000 barrels of oil per day, the Nanushuk Project would increase throughput by approximately 20-25%, a significant and important contribution to the system integrity and state and local revenues. The proposed project would increase employment opportunities for the residents of the Native Village of Nuiqsut and the North Slope Borough, and revenues (through job creation, taxes and fees for the purchase or leasing of materials and easements) to the North Slope Borough, Arctic Slope Regional Corporation and Kuukpik Corporation.

On a national scale, the project could provide oil to the nation. At the state level, taxes paid by Repsol would be economically beneficial to the State of Alaska. Tax revenue would also be paid by Repsol to the North Slope
Borough. As surface landowners Kuupik Corporation and the State would benefit from lease agreements with Repsol. Arctic Slope Regional Corporation (ASRC) and the State of Alaska would economically benefit as subsurface landowners. Economic benefits for the Village of Nuiqsut could include employment

opportunities. The economic benefits of the proposed project are not expected to be significant on a regional and/or national level.

North Slope residents and communities have historically had a subsistence-based economy. However, development of oil and gas resources on the North Slope in the last 40 years has introduced a strong cash economy to the area. Oil and gas development now forms the basis of the cash economy in the NSB, as well as in Alaska as a whole. This has resulted in a mixed economy in North Slope communities, with both cash and subsistence playing important roles. The proposed project would have beneficial effects on cash economics and would not be contrary to the public interest.

7.1.20 Mitigation [33 CFR 320.4(r)]: Avoidance, Minimization and Compensatory Mitigation is discussed in Section 5.0 above. Compensatory mitigation is required for the unavoidable impacts to WOTUS due to the proposed project. Considering the finding of the Nanushuk FEIS and the analysis in this ROD, the Corps has determined that the proposed project, with the approved mitigation plan, is not contrary to the Public Interest.

8.0 COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS (33 CFR 320.3 Related Laws):
Table 1.8-1 in the Nanushuk FEIS provides a list of Applicable Laws, Executive Orders, Permits, Approvals, and Consultations.

8.1 Clean Water Act (33 USC Section 1341) Section 401 Certificate of Reasonable Assurance [33 CFR 320.4(d)]:

Date Issued: December 31, 2018

Special Conditions: ☒Yes ☐No

8.2 Executive Order 13175 Consultation and Coordination with Indian Tribal Governments: The Corps worked closely with NVN during the EIS process and NVN did not request formal Government to Government consultation with the Corps for the Nanushuk Project. NVN was invited to be a cooperating agency on November 2, 2016. Representatives of NVN attended multiple cooperating agency meetings during the preparation of the EIS. There were also several meetings between the tribe and the Corps at the Project Manager level. Additionally, a scoping meeting was held in the Native Village of Nuiqsut at the beginning of the EIS process and a public meeting about the DEIS was held in Nuiqsut.

8.3 Clean Air Act [42 U.S.C. 7401 - 7671 Section 176(c)]: Section 176(c) of the Clean Air Act (CAA) General Conformity Rule Review: The proposed permit action (the discharge of fill for the construction of the proposed project) is not in a CAA non-attainment area, and the conformity determination requirements of the CAA would not apply to the proposed project at this time. Any later indirect emissions

are generally not within the Corps' continuing program responsibility and generally cannot be practicably controlled by the Corps. For these reasons a conformity determination is not required for this permit action.

8.4 Executive Order 12898 (Environmental Justice (EJ)):
References: Nanushuk FEIS: 3.5 Air Quality, Chapter 3.18, Socioeconomics, 3.20 Human Health and Safety, 3.21 Environmental Justice.

The community of Nuiqsut meets the criteria for a minority and a low-income population for EJ analysis. The community of Nuiqsut is also a community that relies principally on subsistence. EO 12898 requires protection for populations that rely on subsistence consumption of fish and wildlife for a principal portion of their diet. Nuiqsut is considered a population that relies on subsistence, given that at least 98% of the community consumes subsistence harvests (see Table 3.17-6 in Chapter 3.17, *Subsistence and Traditional Use*) and 70% of its households get half or more of their diet from subsistence foods (NSB 2017a).
Nuiqsut residents have expressed concerns regarding the potential for effects on human health, the environment, and subsistence. The primary health concern is regarding air quality and access to food. The project would have mixed effects on access to food as described in FEIS Chapter 3.18 Socioeconomics. Air quality is discussed in the FEIS, Chapter 3.5 and in response to comments in Section 4.4 of the ROD and Section 8.3 of this ROD. The State of Alaska Department of Environmental Conservation (ADEC) has regulatory responsibilities under the Clean Air Act, and makes air quality permit decisions within their purview. Air Quality is discussed in Sections 4.3 and 8.3 of this ROD.
The EIS found that effects to subsistence caribou harvests may be disproportionately high and adverse on Nuiqsut residents because Nuiqsut is the only community that regularly harvests caribou from the affected area and a higher proportion of households depend on subsistence (for at least 50% of their diet) than most other NSB communities (NSB 2017a). USACE has consulted with Nuiqsut residents, NVN, and Kuukpik regarding alternatives and measures to reduce or mitigate the potentially high and adverse effects. These efforts are discussed in Section 8.2 above. The Applicant has proposed two project features that would mitigate the effect on subsistence, the construction of subsistence ramps along the roads (in consultation with NVN to determine their exact location) and a boat ramp in the Kachemach River. Both project features that the Applicant has committed to construct, would improve access to subsistence resources and minimize impacts to subsistence. Completion of the process and analysis contained within this ROD and signature by the authorizing official completes the Corps EO 12898 requirements.

8.5 Executive Order 11988 (Flood Plain Management): See Section 7.1.15 above. All project infrastructure except for the bridges across the Miluveach and Kachemach Rivers are outside of the 100 year floodplain. The proposed project has been designed to minimize impacts to floodplains. Completion of the process

and analysis contained within this ROD and signature by the authorizing official completes the Corps EO 11988 requirements.

8.6 EO 13112, Invasive Species. FEIS Chapter 3.8.5.5 and 3.8.6.2.3.1.4
☒ The evaluation above included invasive species concerns in the analysis of impacts at the project site and associated compensatory mitigation projects.
☐ Through special conditions, the permittee will be required to control the introduction and spread of exotic species.

The EIS found that increased mechanisms for introduction or dispersal of invasive and nonnative species would be possible, minor, and long-term.

8.7 EO 13212 and 13302, Energy Supply and Availability.
The review was expedited and/or other actions were taken to the extent permitted by law and regulation to accelerate completion of this energy-related (including pipeline safety) project while maintaining safety, public health, and environmental protections.

8.8 Significant National Issues [33 CFR 325.2(a)(6)]: This decision document and final decision is not contrary to state or local decisions.

9.0 Decision

I find that the issuance of the Corps permit, as described by regulations published in 33 CFR Parts 320 through 332, with the proposed work as described in this document, is based on a thorough analysis and evaluation of all issues set forth in this ROD. There are no less environmentally damaging, practicable alternatives available to Oil Search Alaska to construct the Project. The issuance of this permit is consistent with National Policy, statutes, and administrative directives; and on balance, issuance of a Corps' permit to construct the Nanushuk Development Project is not contrary to the public interest. As explained above, all practicable means to avoid and/or minimize environmental harm from the selected, permitted alternative have been adopted and required by terms and conditions of this permit.

David S. Hobbie
Chief, Regional Regulatory Division

5-14-19
Date