U.S. ARMY CORPS OF ENGINEERS APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

Seawater Treatment Plant

Submitted by:

Oil Search

March 2020

Oil Search

March 2, 2020

Ms. Janet Post
Alaska District Regulatory Division
U.S. Army Corps of Engineers
P.O. Box 6898
JBER, Alaska 99506-6898

RE: Department of the Army Permit Application Package
Seawater Treatment Plant at Oliktok Point and Associated Pipeline

Dear Ms. Post:

Oil Search (Alaska), LLC (OSA) is pleased to submit the enclosed Department of the Army (DA) application package for a permit to authorize placement of fill material associated with construction of a Seawater Treatment Plant (STP) at Oliktok Point and associated make-up water pipeline on Alaska's North Slope.

Enclosed please find the DA permit application package with the following components:

- DA Permit Application Form
- Project Description
- Supporting Figures
- Applicant Proposed Mitigation Statements

OSA received a DA permit (POA-2015-00025) in 2019 for the Nanushuk Project to drill wells and construct and operate infrastructure and facilities. In the permitting and National Environmental Policy Act process, the applicant (currently OSA) contemplated obtaining make-up water to support oil production from the Pikka Unit reservoirs from a third party, pending commercial agreements. While commercial arrangements remain a viable option, particularly for near-term make-up water needs, recent developments have highlighted to OSA the desirability of a make-up water arrangement for the Nanushuk Project that enhances the availability and suitability of the subject make-up water. As a result, OSA is pursuing plans to construct and operate an STP as an alternative to procuring water from a third party source.

We look forward to working with you through the permitting process. If you have any questions or require additional information, please do not hesitate to contact me.

Sincerely,

Greg Horner
Permitting Manager
Oil Search (Alaska), LLC

U.S. ARMY CORPS OF ENGINEERS

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

33 CFR 325. The proponent agency is CECW-CO-R.

Form Approved - OMB APPROVAL NO. 0710-0003 EXPIRES: 30-SEPTEMBER-2015

Public reporting for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE *(agent is not required)*
First- Bruce Middle- Last- Dingeman	First- Greg Middle- Last- Horner
Company- Oil Search (Alaska), LLC	Company- Oil Search (Alaska), LLC
E-mail Address- Bruce.Dingeman@oilsearch.com	E-mail Address- Greg.Horner@oilsearch.com
6. APPLICANT'S ADDRESS:	**9. AGENT'S ADDRESS:**
Address- P.O. Box 240927	Address- P.O. Box 240927
City- Anchorage State- AK Zip- 99524 Country- USA	City- Anchorage State- AK Zip- 99524 Country- USA

7. APPLICANT'S PHONE NOs. w/AREA CODE			10. AGENT'S PHONE NOs. w/AREA CODE		
a. Residence	b. Business	c. Fax	a. Residence	b. Business	c. Fax
	907-375-6900	907-375-6930		907-570-6562	907-375-6930

11. STATEMENT OF AUTHORIZATION

I hereby authorize Greg Horner to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

SIGNATURE OF APPLICANT — DATE: 3/2/2020

NAME, LOCATION AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE *(see instructions)*

Seawater Treatment Plant – Nanushuk Project

13. NAME OF WATERBODY, IF KNOWN *(if applicable)*	14. PROJECT STREET ADDRESS *(if applicable)*
Simpson Lagoon, Beaufort Sea	Address-
15. LOCATION OF PROJECT	City- State- Zip- Country-
Latitude: °N 70.511312 Longitude: °W -149.863999	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID See Project Description Municipality: North Slope Borough

Section- See Project Description Township- 11N, 12N, and 13N Range- 9E

17. DIRECTIONS TO THE SITE-

The proposed Seawater Treatment Plant (STP) is located along the shoreline of Oliktok Point, which is at the northern terminus of Oliktok Road. The site is approximately 39 miles northwest of Deadhorse and 33 miles northeast of the community of Nuiqsut.

18. Nature of Activity *(Description of project, include all features)*

OSA proposes to install an STP to supply make-up water to maintain adequate pressure support of the Pikka Unit oil and gas reservoirs. The STP will be constructed off-site as a submersible barge and will arrive by sealift. Upon arrival at Oliktok Point, the barge will be positioned by tugboats in the designated area. Gravel fill will be discharged over the area surrounding the barge. The STP will be fully functional upon arrival, following connection to a fuel gas pipeline and the STP pipeline; the STP will be equipped with the intake structure, filtration system, power generation, and heating system.

The STP will be connected to OSA's previously permitted make-up water pipeline northwest of Kuparuk Central Processing Facility 2 by a 16.5-mile pipeline that primarily parallels existing infrastructure. Approximately 16.3 miles of the proposed STP pipeline will be above-ground. Above-ground portions of the pipeline will be constructed on vertical support members (VSMs) with a diameter of 12 to 20 inches, spaced approximately 55-65 feet apart. Additionally, the VSMs will support a gas supply and fiber optic communications line to the STP.

The Project includes excavation and screeding prior to STP barge placement and trenching for the placement of the STP outfall pipe. Annual screeding will be required after construction is complete to maintain seawater flow at the water intake of the STP.

See the attached Project Description for additional details.

19. Project Purpose *(Describe the reason or purpose of the project, see instructions)*

The purpose for the Project is to provide a long-term supply of make-up water that is reliably available in sufficient quantities, and of sufficient water quality, to allow OSA to optimize production efficiency from the Pikka Unit reservoirs.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

- The STP will be located at Oliktok Point to access and treat the marine waters of the Beaufort Sea. Gravel fill is necessary for level and stable installation of the STP. Clean gravel will be obtained from existing permitted sources. Material excavated for barge positioning will be reused within the Project footprint to reduce the amount of clean fill needed. See the attached Project Description for additional details.

- Additional fill consisting of sand slurry mixture is necessary for the construction of VSMs to support the make-up water pipeline.

Temporary discharges:

- Sediment underlying the nearshore waters along Oliktok Point will be smoothed or re-contoured in a 7.56-acre area via dredging and screeding to facilitate sealift delivery and barge installation at Oliktok Point. Annual screeding will occur after construction is complete to maintain seawater flow at the water intake of the STP.

- Trenching is necessary to install the STP outfall pipe below the seafloor away from the water intake of the STP.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
STP Barge 47,000 cy	Gravel 163,000 cy	Excavated material 12,000 cy	Sand slurry 6,300 cy

Type Amount in Cubic Yards	Type Amount in Cubic Yards
Screeding sediment (temporary, occurs annually) 16,000 cy	Trenching fill (temporary) 30 cy

22. Surface Area in Acres of Wetlands or Other Waters Filled *(see instructions)*

Acres 6.12 acres (and an additional 7.56 acres of fill from temporary discharges related to screeding)

or

Linear Feet

23. Description of Avoidance, Minimization and Compensation *(see instructions)*

Please see the attached Applicant Proposed Mitigation Statements.

24. Is Any Portion of the Work Already Complete? ☐ Yes ☒ No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- State of Alaska, Department of Natural Resources, Division of Mining, Land and Water, 3700 Airport Way

City - Fairbanks State – AK Zip - 99709

b. Address- United States of America, Department of the Army, Division of Real Estate, U.S. Army Engineer District, Alaska P.O. Box 6898

City – JBER State – AK Zip – 99506-6898

c. Address-

City - State – Zip -

e. Address-

City - State – Zip -

26. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
See Project Description – Table 7					

* Would include but is not restricted to zoning, building, and floodplain permits

27. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT — DATE: 3/2/2020

SIGNATURE OF AGENT — DATE: 3/2/2020

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

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Oil Search

Seawater Treatment Plant

Project Description

Rev 1

March 2020

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CONTENTS

TABLES

SHEETS

Abbreviations

ACP	Arctic Coastal Plain
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
APDES	Alaska Pollutant Discharge Elimination System
CPAI	ConocoPhillips Alaska, Inc.
CPF	central processing facility
CWA	Clean Water Act
cy	cubic yards
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
HSM	horizontal support member
HTL	High Tide Line
IES	Illuminating Engineering Society
Kuparuk CPF2	Kuparuk Central Processing Facility 2
MG	million gallons
MHHW	mean higher high water
MHW	mean high water
MLLW	mean lower low water
NSB	North Slope Borough
OSA	Oil Search (Alaska), LLC
Project	STP and STP Pipeline
Q3, Q4	third quarter, fourth quarter
RCRA	Resource Conservation and Recovery Act
SPCC	Spill Prevention, Control, and Countermeasure
STP	seawater treatment plant
SWPPP	Storm Water Pollution Prevention Plan
USACE	U.S. Army Corps of Engineers
VSM	vertical support member
WOUS	Waters of the U.S.

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1.0 INTRODUCTION

Oil Search (Alaska), LLC (OSA), is advancing Pikka Unit development through construction of the Nanushuk Project in the Pikka Unit on Alaska's North Slope (POA-2015-00025; USACE 2019). Production of oil from the Pikka Unit reservoirs requires a supply of "make-up" water to conduct waterflood for pressure support of the reservoirs. Currently plans for the Project are to obtain make-up water from a third party pending commercial agreements, availability of supply, and confirmation that water quality will meet OSA's needs. OSA is progressing plans to obtain make-up water from a third party for the initial stages of production. However, in light of newly identified and proposed oil and gas development in the area (which would compete with the Nanushuk Project to procure water from third party sources) as well as the acquisition of additional information on the characteristics (porosity and permeability) of the rock within the Pikka Unit reservoirs, OSA is proposing to build a Seawater Treatment Plant (STP) and make-up water pipeline (STP pipeline), collectively, the Project, to support field development. Developing a STP will provide a reliable and predictable supply of make-up water of sufficient quantity and quality for improved hydrocarbon extraction efficiency from the Pikka Unit reservoirs. A 16.5-mile-long pipeline will be constructed to transport the make-up water from the STP to OSA's previously permitted make-up water pipeline northwest of Kuparuk Central Processing Facility (CPF) 2.

1.1 Purpose and Need

The purpose and need for the Project is to provide a long-term supply of make-up water with sufficient reliability and water quality assurance and allow OSA to optimize production efficiency from the Pikka Unit reservoirs. The Project will supplement or potentially displace the need to obtain make-up water from a third party to support full field development of the Pikka Unit.

1.2 Location

The proposed STP is located in the nearshore waters along the shoreline of Oliktok Point at the northern terminus of Oliktok Road. The site is approximately 39 miles northwest of Deadhorse and 33 miles northeast of the community of Nuiqsut. The pipeline will extend from Oliktok Point to OSA's previously permitted make-up water pipeline that begins 500 feet north of the northeast corner of the Kuparuk CPF2 gravel pad. Approximately 90 percent of this 16.5-mile-long alignment is within 500 feet of existing road and pipeline infrastructure. Table 1 and Sheet 1 detail the location of the proposed STP and pipeline.

Table 1. Project Components and Locations

Project Component	Township[a]	Range	Section(s)
Seawater Treatment Plant (STP)[b]	13 North	9 East	5
Pipeline	13 North 12 North 11 North	9 East 9 East 9 East	4, 5, 9, 16, 21, 28, 33 3, 10, 11, 15, 22, 23, 26, 27, 28, 32, 33 5, 8, 17

[a] All locations are based on the Umiat Meridian.

[b] Includes all activities associated with the STP: sheet pile, dolphin piles, trenching, excavation, fill placement, and screeding.

The Project is located within the North Slope Borough (NSB), and the STP will be located on state submerged lands, which are defined as those lands extending from mean higher high water (MHHW) to 3 miles seaward. The pipeline will cross land owned by the State of Alaska.

The State of Alaska, through the Alaska Department of Natural Resources (ADNR), manages the state waters, the submerged lands, and the surface lands traversed by the pipeline. Land ownership of properties adjacent to Project components is depicted on Sheet 2.

1.3 Site Conditions

Oliktok Point is located at the western end of Simpson Lagoon, a sheltered and shallow part of the Beaufort Sea between the shore of the Arctic Coastal Plain (ACP) and Jones Islands (Sheet 1). Oliktok Point is a natural point that has been extended into a man-made dock for the ConocoPhillips Alaska, Inc. (CPAI), Kuparuk STP facility as well as the Eni-operated Nikaitchuq onshore process and drilling facilities. Oliktok Point is 10 miles east of the mouth of the East Channel of the Colville River.

Simpson Lagoon has a relatively shallow nearshore shelf that provides a mixing environment for turbid, sediment-bearing, freshwater inflows from the Colville, Kuparuk, Sagavanirktok, and other smaller rivers entering the Beaufort Sea. Nearshore marine waters of the Beaufort Sea are fresher and more turbid compared to the deeper marine waters, which are clearer, colder, and more saline.

Nearshore waters of the Beaufort Sea have four seasonal states: freeze-up, ice cover, breakup, and open water. The marine water quality naturally changes among seasons and is influenced by the extent and depth of ice cover and other environmental factors. Ice in the vicinity of the STP typically begins to form in late September, becomes frozen by October, and attains a thickness of 4 to 5 feet by April. Ice cover typically remains until spring breakup, which generally occurs in June. During breakup, the water column along the coast has a freshwater upper layer resulting from sea ice melt and freshwater runoff. During the open-water season, wind drives currents and vertical mixing of the water column (LGL Alaska Research Associates Inc. and Environmental Science and Engineering Inc. 1990). Vertical mixing is further enhanced by turbulence from wind waves. Periods of varying winds cause rapid mixing in shallow areas. As the open-water season begins to cool and approaches freeze-up, coastal waters become colder and more saline as solar insolation and freshwater inputs diminish (LGL Alaska Research Associates Inc. and Environmental Science and Engineering Inc. 1990).

At Oliktok Point, the high tide line (HTL) is at 1.5 feet mean lower low water (MLLW), and mean high water (MHW) is at 0.6 foot MLLW (USACE 2017). In tidal waters, the lateral extent of U.S. Army Corps of Engineers (USACE) jurisdiction under Section 404 of the Clean Water Act (CWA) is the HTL, whereas the lateral extent of jurisdiction under Section 10 of the Rivers and Harbors Act of 1899 is the MHW.

2.0 PROJECT COMPONENTS

The Project includes two components: the STP and a pipeline connecting the STP with the make-up water pipeline previously permitted for the Nanushuk Project (Sheet 3). To construct these components, the Project will involve driving sheet pile, driving piles, trenching, excavating, placing gravel fill, screeding[1], installing vertical support members (VSMs) and pipeline, and constructing ice roads and pads.

2.1 Seawater Treatment Plant

The STP will be constructed off-site on a submersible barge and will arrive by sealift during the open water season in 2023. Upon arrival, the STP barge will be positioned by tugboats into its

[1] Screeding is a process of redistributing sediment to smooth the seafloor.

final location. Gravel fill will be discharged over the area surrounding the barge (Sheets 4 and 5). The STP will be fully functional upon arrival following connection to a fuel gas pipeline and the STP pipeline; the STP will be equipped with an intake structure, filtration system, power generation, and heating system.

The STP operates by conditioning seawater to make it suitable for injection into the Pikka reservoirs i.e., removing particulates that could plug injection wells or corrode the piping. Conditioning is accomplished by drawing seawater from the Beaufort Sea through intake pipes, filtering, heating, and removing oxygen and other particulates. Bars and travelling screens prevent organic debris and aquatic life from entering the plant prior to further conditioning. Strainers and filters remove suspended solids from the water. Membranes remove sulfates and a vacuum tower removes oxygen dissolved in the water. The STP outfall pipe discharges excess seawater containing particulates and byproducts from the filtration process. Gas turbine generators interior to the STP generate electric power for the associated pumps and lighting.

2.1.1 Site Preparation

Prior to the arrival of the STP to the North Slope, OSA will initiate site preparation of the area. Site preparation includes installing sheet pile, installing dolphin piles, excavating, screeding, and placing gravel fill.

The first step will be to install sheet pile that will form the dock face and enclose the future STP barge location. Approximately 2,167 linear feet of sheet pile will be installed during winter 2021/2022 (Sheet 8). Of the 2,167 linear feet of sheet pile, 2,112 linear feet will be installed below HTL and 55 linear feet will be installed within the existing gravel pad at the southwest corner of the barge enclosure.

Once temperatures are cold enough, a 6.0-acre ice pad and an ice road of sufficient depth will be constructed to support pile-driving activities and staging of materials and equipment. Vibratory hammers will be transported to the ice pad to install and remove temporary piles for the sheet pile templates as well as to install the sheet pile to extend the dock face at Oliktok Point. Four 12-inch-diameter, 25-foot-long temporary round, pipe piles will be installed per 25-foot-long sheet pile template. Templates will be installed and removed a total of approximately 85 times so that a total of 340 temporary round, pipe piles will be installed and removed. No more than 8 temporary piles (two templates) will be used at one time. Sheet pile will be installed over a period of approximately 60 days, with approximately 3 to 6 hours of pile driving occurring each day.

Also during winter 2021/2022, three mooring dolphins will be installed below MHW to help guide and moor the STP barge (Sheet 9). One additional mooring dolphin will be installed in uplands within the gravel fill footprint of Oliktok Point. Each dolphin will comprise a single 48-inch-diameter, 75-foot-long pile, for a total of four 48-inch diameter round pipe piles. Two of the dolphins will be installed approximately 300 feet north of the dock face, and the other two will be installed near the southwest and southeast corners of the barge berth. The piles will be installed to a depth of approximately -50 feet MLLW. Installation of the piles will occur over a period of 4 days using vibratory hammers, with an estimated 2 hours of vibratory driving per day. Pile installation of the two northern dolphins will require construction of a 0.1-mile-long ice road over the sea ice.

During winter 2021/2022, the STP outfall pipe that extends from the sheet pile will also be installed. The STP outfall pipe returns filtered particulates and unfiltered seawater back into the ocean. The 12.75-inch-diameter STP outfall pipe will extend 100 feet from the dock face and will be buried just below the sea floor (Sheet 7). An excavator will be used to dig a 2-foot-wide, 3-foot-deep, 125-foot-long trench, lay the pipe, and then cover the pipe with native material. The native material will be sidecast on the seafloor during trenching and then placed back over the

outfall pipe. The outfall of the pipe will be left uncovered. Excess material will be left in place. Trenching needed for the pipe is expected to last 1 to 3 days.

Site preparation will continue during summer 2022. The 1.92-acre area designated for STP barge placement will be dewatered and excavated to -9.5 feet MLLW, and the excavated material will be placed in the sheet pile enclosure located to the northeast[2]. This area is designed to allow reuse of the excavated material, control turbidity at the discharge site, reduce the amount of gravel needed, and reduce the footprint associated with fill slopes. Pumps, excavators, and a crane will be required for the excavation. Approximately 12,000 cubic yards (cy) of material will be excavated and placed in the adjacent sheet pile enclosure. Approximately 4 feet of clean fill (i.e., gravel) will be placed on top of the excavated material.

OSA estimates that a total approximately 163,000 cy of fill will be needed to prepare Oliktok Point for the STP and to secure the STP. Gravel fill will be placed in two discrete events; the first event will occur during summer 2022 (138,000 cy) and the other in summer 2023 (25,000 cy). The first fill placement will backfill the sheet piles and create a work surface for arrival of the STP barge. The second fill placement will occur after the barge is in place and will fill the gap between the sheet pile and the barge, securing the barge in place. Gravel material for Project development will be sourced from one or more existing gravel mine sites (see Section 3.1), which have previously been permitted and operate independently of the Project. Gravel will be hauled from existing permitted sources, and some gravel may be temporarily stockpiled on the gravel pad at Oliktok Point.

The first fill event will involve placing 138,000 cy of gravel fill over 4.14 acres of Waters of the U.S. (WOUS) to create the berth for the barge. Pit-run gravel will be placed off the existing east side of Oliktok Point in lifts, using large-capacity dump trucks, and will be spread out with bulldozers or similar heavy earth-moving equipment. Once the gravel is placed, it will be re-graded, farmed,[3] and re-compacted by heavy roller. The final elevation of the gravel surface will match the existing grade at Oliktok Point (12.5 feet MLLW). Side slopes not adjacent to sheet pile will be 3H:1V and will be armored with sand bags (4 cy polyester bags), with 50 percent overlap (see Sheet 6).

2.1.2 Screeding

During summer 2023, in preparation of the delivery of the STP barge by sealift, approximately 7.56 acres north of the dock face will be screeded (Sheet 4). This screeding will occur adjacent to the screeding permitted previously as part of the Nanushuk Project (POA-2015-00025). Screeding will allow for movement and docking of the sealifted STP barge. Screeding will occur to a depth of 7.5 to 8.0 feet below MLLW. Screeding is performed by a screeding device (a plow or rake-like structure) attached to a barge. The screeding device is controlled vertically using hydraulics (i.e., a forklift located on the barge). The barge will also be outfitted with excavators and an anchor-based mooring system. The excavators will be used to groom significant humps and depressions on the seafloor that are too large or compacted for the screeding device to handle. The mooring system will permit the barge to maintain a fixed position when the excavators are employed for seafloor grooming. The barge will be manipulated using two

[2] 40 Code of Federal Regulations 230.60 states that "Where the discharge site is adjacent to the extraction site and subject to the same sources of contaminants, and materials at the two sites are substantially similar, the fact that the material to be discharged may be a carrier of contaminants is not likely to result in degradation of the disposal site. In such circumstances, when dissolved material and suspended particulates can be controlled to prevent carrying pollutants to less contaminated areas, testing will not be required."

[3] Farming, also called seasoning, consists of turning the upper layers of gravel to expose buried areas and facilitate drying.

tugboats. Screeding will occur during June to August 2023 and involve the redistribution of approximately 16,000 cy of seafloor, with the final volume dependent on site conditions prior to commencement of activities.

Annual screeding of the area will be required in subsequent years to maintain seawater flow at the water intake opening of the STP at the dock face. Annual screeding will occur during the summer over the same are area as the summer 2023 screeding and will involve the redistribution of up to 16,000 cy of seafloor to maintain a depth of 7.5 to 8.0 feet below MLLW (Sheet 4).

2.1.3 STP Barge Placement

After the initial gravel placement and screeding, approximately 182 linear feet of sheet pile will be removed by crane, potentially assisted by a vibratory hammer, at the entrance of the barge berth. The STP will then be brought in by sealift vessel to just outside of the barrier islands near the Project site and then positioned by tugboats into the prepared berth. The STP barge, which covers an area of 1.33 acres, will be moored in place and grounded (i.e., ballasted down with seawater to rest on the seafloor). The 182 linear feet of sheet pile will then be re-installed in front of the barge at the dock with vibratory hammers. The reinstalled sheet pile will contain a 60-foot-wide by 3-foot-tall opening to allow for water intake at the face of the barge. Re-installation of the sheet pile is expected to take less than 7 days and require an additional 32 temporary piles for the setting of the sheet pile template. This will be followed by the second fill event involving placement of approximately 25,000 cy of gravel fill in the 0.60-acre area surrounding the barge that was not filled by the first fill event. The overall construction sequence is shown in Sheet 8.

Once the STP barge is secured in place, connections within the fill footprint will be made to the proposed outfall line, the fuel gas line, and the proposed STP pipeline (see Section 2.2).

Water intake for the plant will occur through a rectangular opening in the sheet pile at the STP barge face. Screens will be installed to prevent fish entrapment and filter large organic matter (e.g., sticks, tundra matt, and other large items suspended or floating in the seawater).

The STP barge will be oriented north-northeast, with the intake facing directly seaward off the dock face. This siting will require no additional water intake structures on the seafloor, will not impact the water intake at the Kuparuk STP, and will not impact existing pipelines or fiber optic cables in the area. The siting will not impede or limit current use of Oliktok Point for infrastructure, staging, resupply, or module delivery for operators. The orientation of the STP barge will be perpendicular to the prevailing current to minimize potential ocean-induced damage to the structure and reduce the effect on subsea sediment migration. Lastly, the siting minimizes the extent of dredging needed, and consolidates impacts to WOUS in an area already affected by operations at Oliktok Dock.

Table 2 and Table 3 summarize all activities within WOUS for the placement and construction of the STP. All gravel operations and construction are anticipated to be complete by the end of 2023.

Table 2. STP Components and Fill Requirements in WOUS

Activity	Fill Type[a]	Permanent Footprint in WOUS (acres)	Fill Quantity (cy)	Temporary Impact in WOUS (acres)	Timing	Notes/Dimensions
Initial Sheet Pile Installation	-	<0.01	-	-	Winter 2021/2022	Approximately 2,167 linear feet of sheet pile will be installed in WOUS to create the dock face, surround the barge berth, and support gravel placement. The vast majority of the sheet pile (~2,112 linear feet) will be installed below MHW. In order to provide sheet pile templates during construction, 340 temporary piles will be installed below MHW.
Dolphin/Pile Installation	-	<0.01	-	-	Winter 2021/2022	Three 48-inch-diameter dolphin piles will be installed in WOUS (below MHW) to guide and moor the STP barge. One dolphin will be installed in uplands.
Trenching	-	-	-	<0.01	Winter 2021/2022	Approximately 30 cy of seafloor (below MHW) will be trenched to allow for the 12.75-inch-diameter STP outfall pipe. Trenched material will be sidecast on the seafloor and then placed on top of the pipe.
Seafloor Excavation	-	-	-	1.92[b]	Summer 2022	Approximately 12,000 cy of material below MHW will be excavated within the barge berth enclosed by sheet pile to create a depth of -9.5 feet MLLW.
Initial Fill Placement	Gravel	4.14	138,000	-	Summer 2022	Gravel fill will be placed to extend the surface of Oliktok Point and create a berth for the STP barge. See Table 3 for additional information.
Screeding	-	-	-	7.56[c]	Annually beginning summer 2023	Approximately 16,000 cy of material will be redistributed on the seafloor immediately north of the STP location.
Sheet Pile Removal	-	-	-	<0.01	Summer 2023	Approximately 182 linear feet of sheet pile in front of the barge berth will be removed to create an opening for the STP barge.
STP Barge Placement	Barge[d]	1.33	NA	-	Summer 2023	The barge will have the effect of fill, as it will raise the bottom elevation of 1.33 acres of the seafloor.
Re-installation of Sheet Pile	-	<0.01	-	-	Summer 2023	The 182 linear feet of sheet pile previously removed will be re-installed to protect the STP barge from ice floes and stabilize the gravel pad. Approximately 32 temporary piles will be installed below MHW to provide sheet pile templates.

Table 2. STP Components and Fill Requirements in WOUS						
Activity	**Fill Type[a]**	**Permanent Footprint in WOUS (acres)**	**Fill Quantity (cy)**	**Temporary Impact in WOUS (acres)**	**Timing**	**Notes/Dimensions**
Second Fill Placement	Gravel	0.60	25,000	-	Summer 2023	Fill will be placed around the STP barge to secure it in place. See Table 3 for additional information.
Total	**-**	**6.07**	**163,000**	**9.48**		

[a] Sheet piles and piles are not considered fill, but installation of these features is regulated by USACE under the Rivers and Harbors Act of 1899 when they are installed below MHW.

[b] The 1.92 acres excavated during summer 2022 will be filled during summer 2023.

[c] Impacts from screeding will occur annually beginning in 2023.

[d] Total barge weight is approximately 2,700,000 pounds and represents approximately 47,000 cy of fill.

Table 3. Gravel Fill Placement by Jurisdictional Boundary						
Activity	**Between high tide line (HTL) and mean high water (MHW)**		**Below mean high water (MHW)**		**Total (Below high tide line)**	
	Fill Footprint (acres)	**Fill Quantity (cy)**	**Fill Footprint (acres)**	**Fill Quantity (cy)**	**Fill Footprint (acres)**	**Fill Quantity (cy)**
Initial Fill Placement	0.09	3,000	4.05	135,000	4.14	138,000[1]
Second Fill Placement	<0.01	250	0.60	24,750	0.60	25,000
Total	**0.09**	**3,250**	**4.65**	**159,750**	**4.74**	**163,000**

[1] The 138,000 cy of fill does not include the 12,000 cy of fill excavated from the barge berth and then placed within the footprint adjacent to the barge berth.

Note: In tidal waters, the lateral extent of USACE jurisdiction under Section 404 of the CWA is the HTL, whereas the lateral extent of jurisdiction under Section 10 of the Rivers and Harbors Act of 1899 is the MHW.

2.2 STP Pipeline

The Project includes a 20-inch-diameter pipeline that will transport make-up water from the STP to OSA's make-up water pipeline previously permitted for the Nanushuk Project located northwest of Kuparuk CPF2 (see Sheet 3). Approximately 16.3 miles of the 16.5-mile-long pipeline from the STP to the connecting pipeline will be supported by newly installed VSMs. A 0.2 mile section of the proposed pipeline at Oliktok Dock will be buried within the gravel pad. Where the two pipelines connect, which is directly adjacent to the road to Kuparuk Drill Site 2W, the water will enter the previously permitted Nanushuk make-up water pipeline, supported on previously permitted Nanushuk Pipeline VSMs (Sheets 10-13).

Above-ground portions of the proposed pipeline will rest on horizontal support members (HSMs), each supported by one 12- to 20-inch-diameter pile VSM spaced approximately 55 to 65 feet apart (approximately 1,885 total VSMs; Sheet 14). Expansion loops to provide pipeline flexibility for thermal expansion will be located throughout the pipeline, as needed. For the vast majority (14.9 miles) of its length, the pipeline will be located parallel to and within 500 feet of existing pipe racks and roads, where practicable. At the STP, the pipeline will be buried within the existing Oliktok Dock gravel fill for 0.2 mile. From Oliktok Dock, the STP pipeline will parallel Oliktok Road and existing infrastructure above-ground for 10.2 miles. The proposed STP pipeline will then turn southwest across 1.6 miles of open tundra towards Kuparuk Drill Site 2W.

Once it reaches the drill site, the STP pipeline parallels the road to Kuparuk Drill Site 2W for 4.5 miles until it connects with the previously permitted make-up water pipeline for the Nanushuk Project. Once the pipelines are connected, make-up water will be able to flow from the STP to the Nanushuk Processing Facility.

The route from the STP to the Nanushuk Project pipeline was selected because it is the shortest route between the two locations that maximizes use of existing infrastructure and minimizes impacts to aquatic resources. Approximately 0.05 acre of WOUS will be filled for pipeline VSMs (Table 4).

Paralleling existing infrastructure for the majority of the route will minimize caribou disturbance and excessive snow drifting while facilitating access for visual pipeline inspection, monitoring, repairs, modifications, and testing. Locating the new pipeline close to the existing pipeline and road corridor will minimize impacts to the aquatic environment compared to having the two features spaced farther apart.

The pipeline and associated HSMs will be a minimum of 7 feet above the tundra surface to minimize impacts to permafrost and caribou. They will be less than 7 feet above the tundra only where pipelines intersect a road or pad.

External pipe walls will be coated with fusion-bonded epoxy. The pipeline will include an insulation system consisting of polyurethane foam insulation covered with an interlocked sheet-metal jacket. Pipelines will have a non-reflective finish to reduce reflectivity and the associated impacts to wildlife and visual resources.

Pipeline construction activities will occur via ice road during a single winter construction season in 2022/2023. VSM locations will be surveyed and drilled, followed by VSM installation into the pre-drilled holes using a sand slurry fill. Approximately 3-6 cy of sand slurry will be used per VSM. Drilling will occur from a 16.3-mile-long ice road and will result in cuttings being sidecast onto the ice around each VSM. The cuttings will then be removed to an upland or previously disturbed area.

The pipeline will be routed through casings within fill embankments at five road crossings and at Oliktok Point. Where the pipeline enters the fill embankment, the coated and insulated pipeline will be encased in a 30-inch-diameter structural steel pipe casing buried within the fill section. Casings for pipeline-road crossings will extend at least 2 feet beyond the road embankment toe (Sheet 15).

Table 4. STP Pipeline Fill Requirements in WOUS

Activity	Fill Type	Footprint in WOUS (acres)	Fill Quantity (cy)	Timing	Notes/Dimensions
Installation of STP Pipeline VSMs	Sand slurry	0.05	6,300[a]	Winter 2022/2023	16.3 miles of above-ground pipeline requiring approximately 1,885 VSMs

[a] VSM fill quantity ranges between 2.7 and 5.8 cy per VSM.

2.3 Summary of Temporary and Permanent Discharge to Waters of the U.S.

The Project will result in unavoidable temporary and permanent discharges into jurisdictional WOUS located within the Project area. Permanent discharges will affect a total of 6.12 acres of WOUS, including 6.07 acres resulting from gravel fill and barge infrastructure, and 0.05 acre resulting from installation of pipeline VSMs. Project development will require approximately

163,000 cy of clean gravel fill and 6,300 cy of sand slurry. Permanent impacts to WOUS and fill requirements are summarized in Table 5.

Table 5. Summary of Permanent Impacts to WOUS

Project Component	Fill Type	Footprint in WOUS (acres)	Fill Quantity (cy)
STP	Gravel	4.74	163,000
	Barge	1.33	NA
STP Pipeline	Sand slurry	0.05	6,300
Total		**6.12**	**169,300**

The Project will also include temporary discharges to 9.48 acres of seafloor due to trenching, excavating, screeding, and sheet pile removal. Temporary impacts to WOUS and fill requirements are summarized in Table 6.

Table 6. Summary of Temporary Impacts to WOUS

Project Component	Footprint in WOUS (acres)	Fill Quantity (cy)
Trenching	<0.01	30
Excavation	1.92[a]	-
Screeding[b]	7.56	16,000
Sheet pile Removal	<0.01	-
Total	**9.48**	**16,030**

[a] The 1.92 acres excavated during summer 2022 will be filled during summer 2023.

[b] Screeding impacts will occur annually beginning in summer 2023.

All Project facilities are designed and will be constructed to meet federal, state, and local regulatory requirements, industry standards, arctic oil field best practices, and other OSA internal standards.

3.0 SUPPORT INFRASTRUCTURE

Construction and support infrastructure for the STP and STP pipeline will be incorporated into the construction and support infrastructure of the Nanushuk Project. This includes incorporation into the logistics as well as applicable operational plans. The following infrastructure will be used to support the Project.

3.1 Gravel Source

An estimated 163,000 cy of gravel will be needed for construction of the STP. Clean gravel material for Project development will be obtained from one or more of the existing mine sites located on the North Slope within 25 miles of the Project area. Likely sources include Mine Sites C, E, and F. Permitting and operation of existing mine sites will be conducted by the mine owner or designated operator.

Gravel will be hauled during summer 2022 and 2023. All gravel mining, overburden and gravel stockpiling, and mine rehabilitation activities will be evaluated as part of the permitting and operation of the gravel mine, independent of the Project. Gravel will be loaded onto dump trucks

for transport to the STP. No gravel will be stockpiled in WOUS outside of the permitted footprint boundary. Gravel may be stockpiled in upland portions of Oliktok Point prior to placement within the permitted footprint boundary.

3.2 Camps and Workforce

Construction workers will reside at the Nanushuk Operations Pad or at a temporary construction camp. No new permanent camps are planned as part of this Project. Peak workforce during pipeline construction in winter 2022/2023 will be approximately 350 individuals. During winter 2021/2022 and summers 2022 and 2023, the workforce will be approximately 50 individuals. Once the STP is in operation, the full-time dedicated workforce will consist of 6-7 individuals, likely housed at the Nanushuk Operations Pad or the Nikaitchuq Operations Center.

3.3 Water Use

Operation of the STP will require approximately 330,000 to 350,000 barrels per day of seawater in order to produce approximately 150,000 barrels per day of make-up water that will be used as injection water for reservoir pressure maintenance. The remaining water will be discharged at the STP outfall pipe adjacent to the seawater intake. The STP will require a Clean Water Act Section 402 Alaska Pollutant Discharge Elimination System (APDES) permit for wastewater outfall into the Beaufort Sea.

Snowmelt and other runoff from the extended pad at Oliktok Point will be managed through implementation of standard Best Management Practices under a site-specific Storm Water Pollution Prevention Plan (SWPPP). The SWPPP is a requirement of the Construction General Permit issued by the Alaska Department of Environmental Conservation (ADEC) under the authority of Clean Water Act Section 402.

During construction, two types of ice roads and pads will be constructed: sea ice roads and pads, and freshwater ice roads and pads. Seawater will be used to create the sea ice pad (6.0 acres) and road (0.1 mile long) that will provide access to the sheet pile and dolphin locations. Non-potable freshwater from local permitted lakes will be used for the 16.3-mile-long freshwater ice road and pads to provide access for pipeline construction (see Section 3.4). The sea pad and ice road will require approximately 5 million gallons (MG) of seawater, while the freshwater ice road will require approximately 16.3 MG of freshwater. Water for ice roads and ice pads will be obtained from permitted surface water sources.

3.4 Ice Infrastructure

Approximately 16.4 miles of ice road and a 6.0-acre sea ice pad will be required for the Project. The 6.0-acre sea ice pad and 0.1 mile of sea ice road will be completed during winter 2021/2022 to support dolphin pile and sheet pile installation at Oliktok Point. The remaining 16.3 miles of onshore ice road will be needed for construction of the pipeline during winter 2022/2023. Single-season ice roads and pads do not require a Department of the Army permit.

Sea ice pads and roads are created by clearing and grading the snow and then pumping seawater through drilled holes in the ice until the desired thickness is achieved. Typically, sea ice roads and pads are 6 feet thick, including the thickness of the existing sea ice. If necessary, the top layer may be strengthened by a freshwater cap of ice.

The onshore ice roads will be a minimum of 6 inches thick and average approximately 12 inches thick due to terrain features. The ice roads will be constructed to support expected loads and protect the vegetation and organic soil beneath. The ice roads will be constructed to avoid sensitive vegetation, such as willows, that extend above the snow level, per NSB permit

stipulations. Ice roads will be wide enough (minimum of 20 feet) to safely accommodate two-way vehicular traffic and other traffic, as required. The ice road season varies each year depending on weather conditions and ice road completion times. The tundra-based ice road season lasts from approximately January through late April; however, it can be longer or shorter depending upon snow depth and soil temperature. In accordance with permits, ice road crossings of designated streams and rivers will be slotted, breached, or weakened upon completion of use to minimize flooding and associated scour upon the return of flowing waters in spring.

3.5 Fuel and Hazardous Substances

3.5.1 Handling and Storage

The STP will be powered by fuel gas brought in by a fuel gas pipeline. The pipeline will connect to the STP within the Oliktok Dock fill pad, follow a route parallel to the STP Pipeline, be supported by STP Pipeline HSMs, and will connect to a fuel gas pipeline supported by previously permitted VSMs directly adjacent to the STP Pipeline connection location.

One standby diesel generator and a diesel fuel storage tank will be located on-site for backup power. Backup power will be used only in case of emergencies to power lights and building heat.

Construction of the Project components will require the transport of diesel and gasoline from Deadhorse to the Project area to support activities during construction and operation. Dedicated temporary storage areas for diesel and gasoline will be defined and placed on ice pads for pipeline construction and at Oliktok Point for STP construction.

The handling and storage of fuels and hazardous substances for the STP will occur in compliance with state and federal regulatory guidance and will be incorporated into the OSA Spill Prevention, Control, and Countermeasure (SPCC) Plan. The SPCC Plan will comply with U.S. Environmental Protection Agency (EPA) regulations in 40 Code of Federal Regulations 112. All fuels and chemicals will be stored in appropriate primary containment. Secondary containment areas will be designed in compliance with all applicable permits and regulations.

3.5.2 Spill Prevention and Response

OSA will incorporate the STP and the STP pipeline into the SPCC plan for the Nanushuk Project. OSA will design and operate the Project to avoid and minimize the possibility of spills. Spill prevention measures considered throughout the design and engineering phase include a maintenance and inspection program as well as an employee spill prevention training program. Hydrostatic testing will validate the integrity of the pipeline prior to operation.

OSA has internal standards in place that provide guidance on spill prevention measures. These standards, in combination with compliance with all state, federal, and local regulations, will reduce the likelihood of a spill.

Pipeline spill prevention measures include multiple forms of leak detection, isolation valves or vertical loops, and regular maintenance and cleaning. Leak detection systems and surveillance will be compliant with American Society of Mechanical Engineers' codes and state and federal standards. The STP is equipped with pig launchers and receivers capable of handling in-line inspection tools, and maintenance and cleaning tools.

3.6 Waste Management and Disposal

A range of wastes will be generated during construction and operation. The Project will be incorporated into the Nanushuk Project Waste Management Plan to address the types and quantities, regulatory controls, and management options for solid and liquid wastes. OSA will also use other resources, such as the *Alaska Waste Disposal and Reuse Guide* (commonly known as the *Redbook*), to guide waste management decisions (BP and CPAI 2013). Key elements of the waste management approach will include:

- Full compliance with federal, state, and NSB waste management regulations
- Waste minimization through careful project planning and beneficial reclamation, reuse, and recycling when practicable
- Subsurface disposal of authorized waste streams
- Planning for changing types and volumes of wastes and seasonal transportation restrictions, particularly during the construction phase
- Evaluation of opportunities for product substitution to reduce hazardous waste
- Staff training on waste management and spill prevention procedures

3.6.1 Solid Waste

Non-hazardous solid waste will be trucked off-site and disposed of at the NSB landfill. Any waste receptacles stored outdoors will be managed to avoid potential wildlife interactions, via methods such as waste segregation and the covering of dumpsters, which will be outlined in the OSA Wildlife Avoidance and Interaction Plan.

3.6.2 Hazardous and Universal Waste

Hazardous and universal waste, as defined by the Resource Conservation and Recovery Act (RCRA), will be managed on-site in appropriate locations and containers prior to transport off-site for disposal or recycling. All hazardous waste generated by the Project will be handled by qualified persons and disposed of in accordance with regulations.

3.7 Power Generation

Power generation facilities within the STP will consist of gas-powered turbines. A diesel standby generator will provide backup power for lights and building heat.

3.8 Communications

Communication infrastructure will include a connection via fiber optic cable and a communications tower. The fiber optic cable will be suspended from STP Pipeline HSMs and connect the STP to the Nanushuk Operations Pad.

A single communications tower will be constructed on the gravel pad adjacent to the STP barge. The final height of the tower will be determined as part of Project engineering, but is likely to be approximately 120 feet and is not anticipated to require guy-wires. The tower will be equipped with Federal Aviation Administration (FAA)-compliant lighting, if required (see Section 3.9).

3.9 Lighting

A lighting plan will be developed as part of Project engineering and will be incorporated into the existing lighting plan for the Nanushuk Project. The STP and associated communications tower will be lit in accordance with applicable regulations and best practices. Outdoor lighting will be designed to be adequate for the location and the tasks being performed as defined in *The*

Lighting Handbook (IES 2011). OSA will minimize light visible from outside of Project facilities by using downward illumination such as downcast floodlights and excluding use of horizontally aimed floodlights; using lighting fixtures with lamps contained within the reflector; and shading externally facing windows on buildings.

4.0 LOGISTICS

Project area access will be required for:

- Gravel fill placement, dolphin and sheet pile installation, and pipeline construction
- Transportation of construction and operations supplies, materials, and personnel to the Project area
- Sealift of the STP barge
- Transport of solid waste to existing waste facilities in Deadhorse or elsewhere
- Emergency medical transportation
- Emergency response for spills and other events

Access to the Project area, the North Slope, and Nanushuk Operations Pad will occur via a combination of ground (gravel and/or ice road), marine, and air transport. Oliktok Road, in combination with existing infield roads, will be the primary means of transport for personnel, equipment, and supplies from existing facilities, including Deadhorse and the Dalton Highway, to the Project area during construction and operation. Existing infield roads will provide year-round access from Deadhorse and the Nanushuk Operations Pad to Oliktok Point. Single-season ice roads will be used to support sheet pile and dolphin pile installation as well as to provide access to the pipeline route during pipeline construction. Ground transportation vehicles may include long-haul trucks (semi-trailers), single unit short-haul trucks, crew cab pickup trucks, passenger vans, personnel buses, light commercial trucks, water/fuel/waste tanker trucks, field service trucks, heavy-haul tractor/trailers, self-propelled motorized transports, and wheel-mounted cranes.

The STP barge will be sealifted as a dry tow on a heavy lift vessel to just outside of the barrier islands near the Project site at Oliktok Point, where it will be offloaded. It will then be brought to the project site and positioned into the prepared berth by two tugboats. Sealift delivery of the STP barge will follow standard routes of travel along the west and north coasts of Alaska to Oliktok Point.

During construction and operations, the commercial airport in Deadhorse, approximately 39 miles away, will support air transport of project personnel, small materials, and supplies to the North Slope. Personnel and materials flown into Deadhorse will be driven to the Project area via the existing road system.

Helicopter use is not anticipated for construction or operation of the Project. However, the Nanushuk Operations Pad includes space for a helipad, and helicopters may be used in the event of health or safety emergencies.

5.0 OPERATIONAL PLANS

OSA will incorporate the STP and STP pipeline into a variety of construction and operational plans to provide guidance to OSA employees and contractors. Existing plans that will be updated to include the Project include:

- SPCC Plan
- Snow Removal Plan

- Wildlife Avoidance and Interaction Plan
- Polar Bear Interaction Plan
- Waste Management Plan
- SWPPP

Additional plans may be developed as Project permitting progresses.

6.0 SCHEDULE

Construction will begin in the fourth quarter (Q4) 2021 and will be completed by Q4 2023, a 3-year period. During this time, construction will be intermittent, as described in Section 2.0.

Operations will begin in Q2 2024 and continue through the 30-year design life of the Project. Operations will include one annual screeding event occurring between June and August.

7.0 PERMIT REQUIREMENTS

Table 7 lists the permits, authorizations, and approvals from federal, state, and local agencies that may be required for the Project.

Table 7. Potential Permits, Authorizations, and Approvals

Agency	Permits/Authorizations/Plans	Scope and Jurisdiction
FEDERAL		
USACE	Department of the Army CWA Section 404/Rivers and Harbors Act Section 10 Permit Consultation with USFWS and NMFS under Section 7 of the Endangered Species Act	Section 404: discharge of fill into WOUS, including wetlands Section 10: structures or work in navigable waters
USEPA	CWA Section 404/10 permit	Reviews during the USACE permitting process
USEPA	SPCC Plan required under Section 311 of the CWA	Authorization required for storage of over 660 gallons of fuel in a single container or over 1,320 gallons in aggregate in tanks above ground
USFWS	Marine Mammal Protection Act	Authorization when action may result in incidental and intentional “take” of a marine mammal
USFWS	Endangered Species Act Section 7 Consultation	Consultation regarding threatened and endangered species under USFWS jurisdiction
NMFS	Marine Mammal Protection Act	Authorization when action may result in incidental “take” of a marine mammal
NMFS	Endangered Species Act Section 7 Consultation	Consultation regarding threatened and endangered species under NMFS jurisdiction
NMFS	Magnuson-Stevens Act EFH Consultation	Consultation regarding areas designated as EFH
USAF	Land authorization	Authorization for the STP Pipeline to travel over land owned by USAF and selected by the NSB.
STATE		
ADEC DAQ	Minor Air Permit	Required for construction and operation of stationary sources of air pollutants.

Table 7. Potential Permits, Authorizations, and Approvals		
Agency	**Permits/Authorizations/Plans**	**Scope and Jurisdiction**
ADEC DW	CWA Section 401 Water Quality Certificate	Water quality concurrence/waiver needed for USACE Section 404 permit and ADEC APDES permit
ADEC DW	CWA Section 402 APDES Permit and General Construction Permit	For discharges into surface water including the ocean. This includes stormwater discharges from construction activities as well as wastewater discharges from industrial activities.
ADF&G DH	Title 16 Fish Habitat Permit	For activities that may affect fish habitat or passage
ADNR SHPO	National Historic Preservation Act Section 106 Consultation	Consultation to consider effects on historic, prehistoric, or archeological sites
ADNR DMLW	Temporary Water Use Authorization	Approval of temporary water uses for the construction of ice roads and pads
ADNR DMLW	Tidelands Permit and Land Use Permit	Activities on state-owned land, including screeding in state waters, ice road construction, and off-road travel
ADNR DOG	AS 38.05.850 Easement	For project components located on state lands outside of a state oil and gas lease (i.e., the STP site)
LOCAL		
NSB	Industrial Development & Use Permit	Approval for development project in NSB
NSB	Right-of-way and/or easements	Activities on land owned by the NSB
NSB	Certificate of Inupiat History, Language, and Culture/ TLUI Clearance (Form 500)	Confirmation that Project area does not have identified TLUI sites/establishment of buffer zones for identified TLUI sites

Notes: USACE: U.S. Army Corps of Engineers; WOUS: Waters of the U.S.; EPA: U.S. Environmental Protection Agency; USFWS: U.S. Fish and Wildlife Service; NMFS: National Marine Fisheries Service; EFH: Essential Fish Habitat; USAF: U.S. Air Force; ADEC: Alaska Department of Environmental Conservation; DAQ: (ADEC) Division of Air Quality; DW: ADEC Division of Water; APDES: Alaska Pollutant Discharge Elimination System; SPCC: Spill Prevention, Containment, and Countermeasure; ADF&G DH: Alaska Department of Fish and Game Division of Habitat; ADNR: Alaska Department of Natural Resources; SHPO: State Historic Preservation Officer; DMLW: ADNR Division of Mining Land & Water; DOG: ADNR Division of Oil and Gas; AS: Alaska Statute; SPCS: ADNR State Pipeline Coordinator's Section; NSB: North Slope Borough; TLUI: Traditional Land Use Inventory

8.0 SITE CLOSURE

As leaseholder and operator, OSA, in conjunction with other working interest owners, will assume primary responsibility for site closure upon completion of production activities. Site closure will be conducted in accordance with federal and state permits and state leases, general requirements in the ADNR Division of Oil and Gas North Slope Areawide Lease Mitigation Measures, and requirements stipulated by the NSB as part of the development permit.

9.0 REFERENCES

IES (Illuminating Engineering Society). 2011. *The Lighting Handbook*, 10th Edition.

BP Exploration (Alaska) Inc. (BP) and ConocoPhillips Alaska, Inc. (CPAI). 2013. A*laska Waste Disposal and Reuse Guide*. Revision 9, February 2013. Accessed at http://nasupplierhsse-staging.bpglobal.com/Alaska/Alaska.aspx on December 3, 2019.

LGL Alaska Research Associates Inc., and Environmental Science and Engineering Inc. 1990. Coastal oceanography of the Alaska Beaufort Sea. Appendix B. Pages B1– B74 [In] J. M. Colonell and B. J. Gallaway, editors. An assessment of marine environmental impacts of West Dock Causeway. Prepared for Prudhoe Bay Unit Owners represented by ARCO Alaska, Inc., Anchorage.

USACE (U.S. Army Corps of Engineers). 2017. USACE Alaska District Tidal Data. Revised April 17, 2017. Accessed at https://www.poa.usace.army.mil/Portals/34/docs/regulatory/TidalData.pdf on November 7, 2019.

———. 2019. POA-2015-00025: Department of the Army Permit issued to Oil Search Alaska, LLC, for the Nanushuk Project Plan. Issued on May 21, 2019, and expires on May 31, 2025.

Seawater Treatment Plant

Nanushuk Project

USACE Permit Application Figure Set
(Sheets 1-16)

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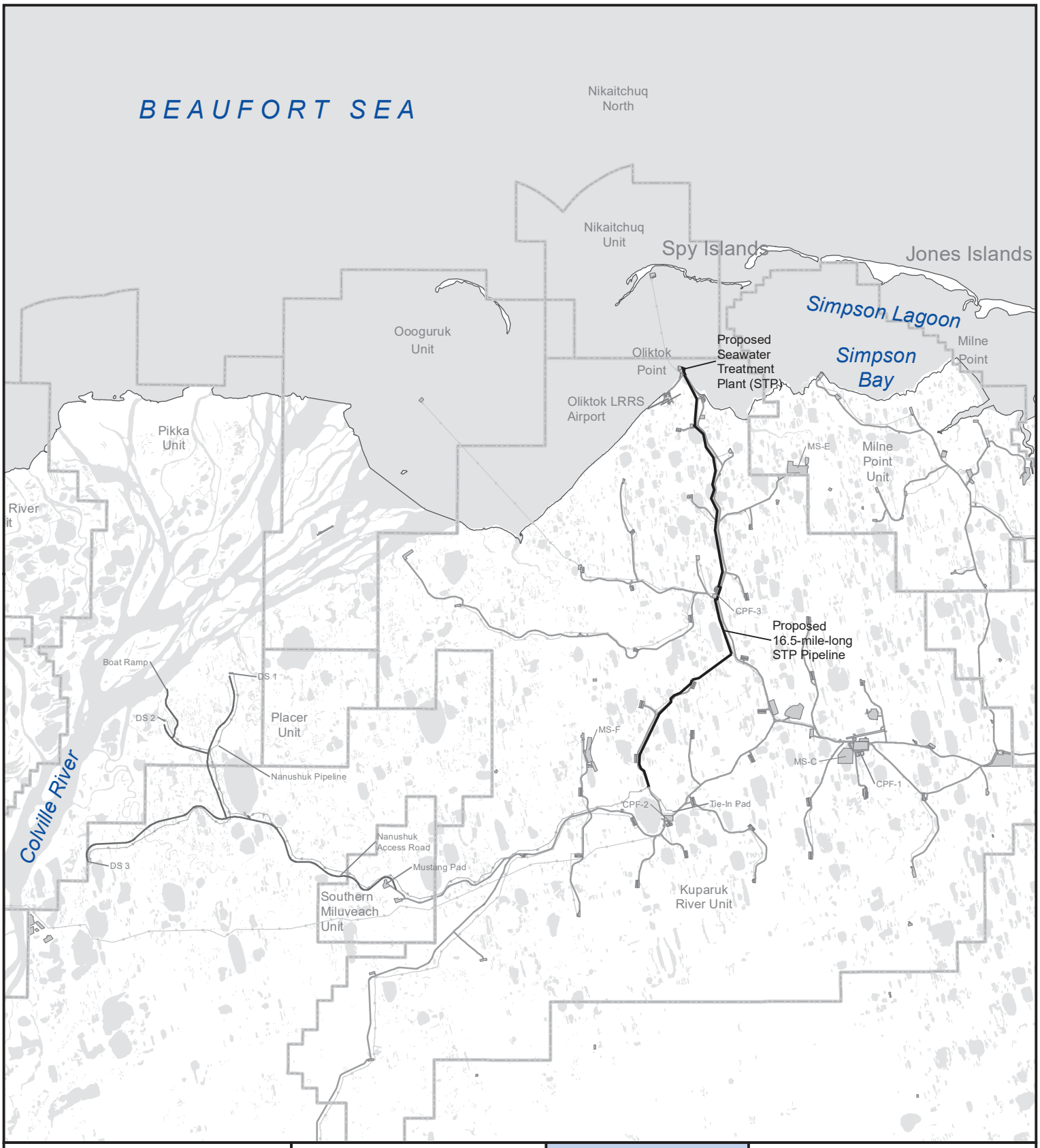
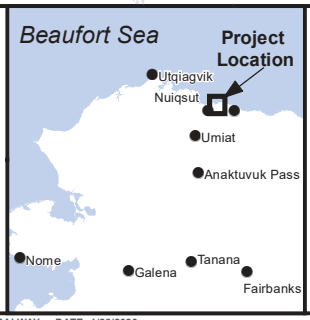


Vicinity Map

0 2 4 Miles

HORIZONTAL DATUM:
NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet

- Proposed STP
- Proposed STP Pipeline
- Oil and Gas Unit Boundaries
- Existing Facilities
- Existing Roads
- Existing Pipelines
- Waterbodies



APPLICANT: Oil Search Alaska, LLC

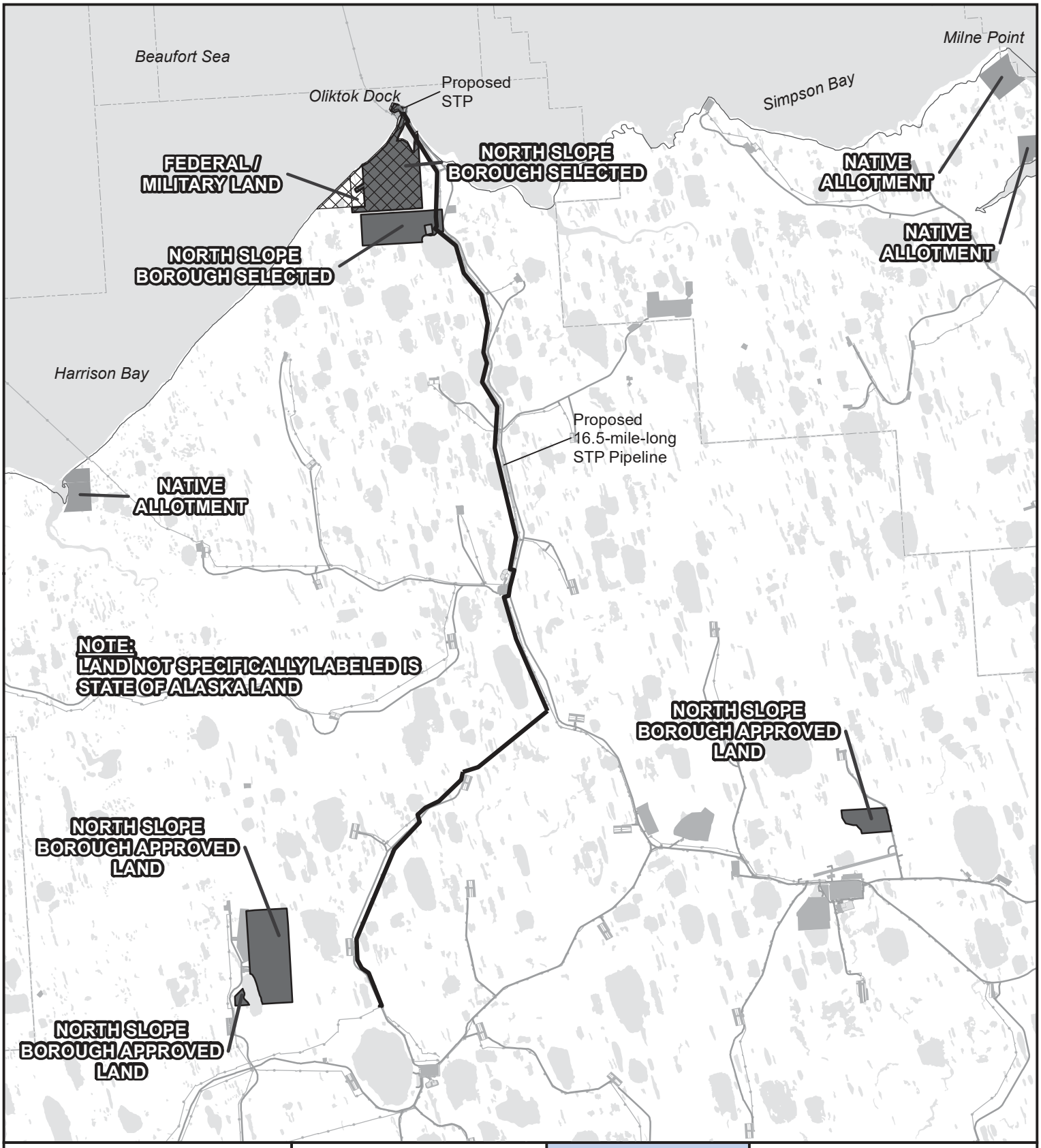
FILE NO: TBD

WATERWAY: Beaufort Sea

COUNTY: North Slope Borough
STATE: Alaska

SHEET 1

DATE: February 2020



Adjacent Land Owners

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HORIZONTAL DATUM:
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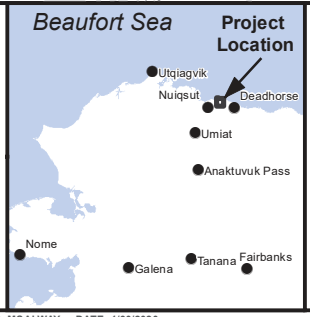
- Proposed STP
- Proposed STP Pipeline
- North Slope Borough Land
- Native
- Federal Ownership
- Existing Facilities
- Waterbodies



APPLICANT: Oil Search Alaska, LLC

FILE NO: TBD

WATERWAY: Beaufort Sea

COUNTY: North Slope Borough
STATE: Alaska

SHEET 2

DATE: February 2020

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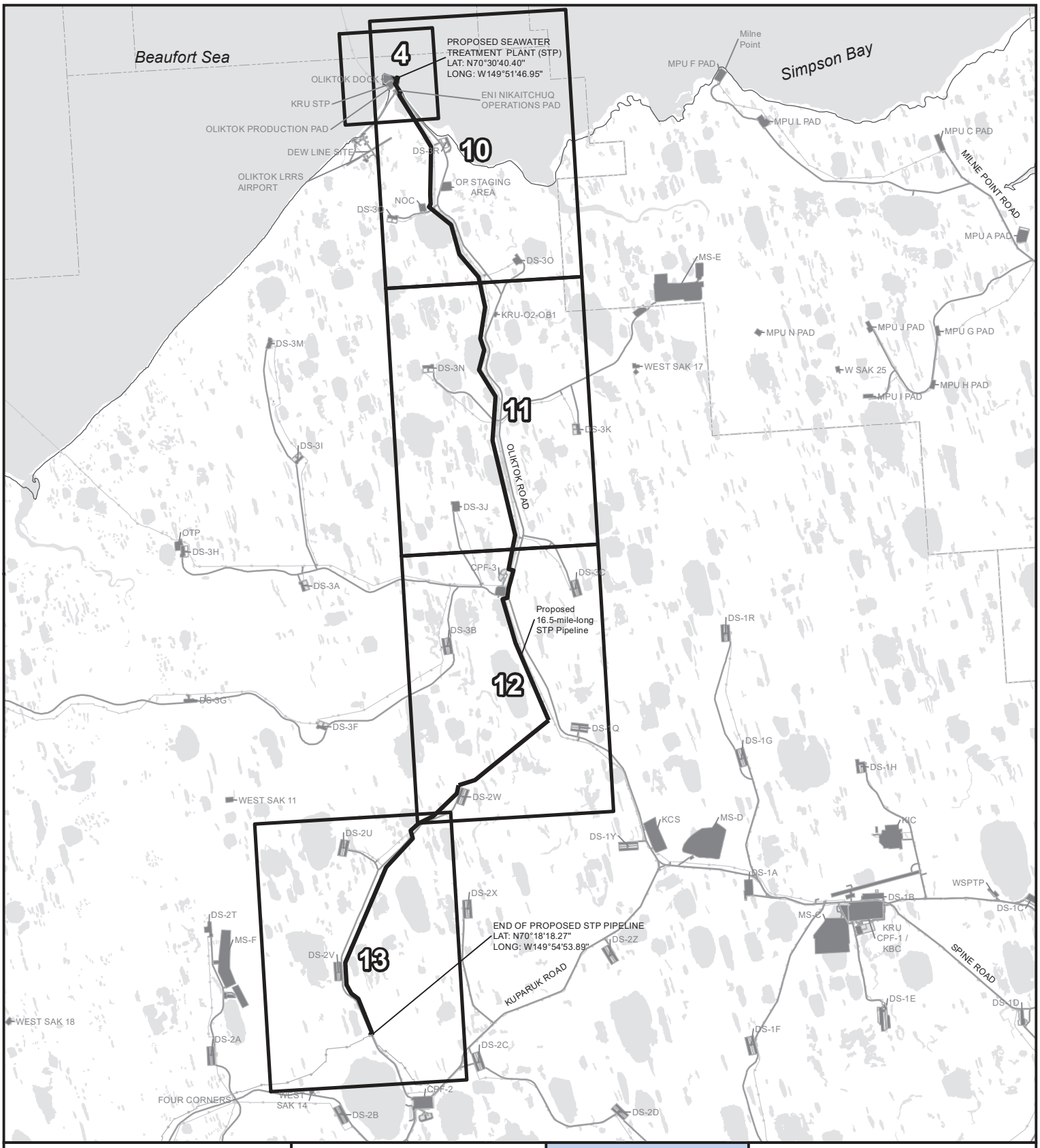


Project Components

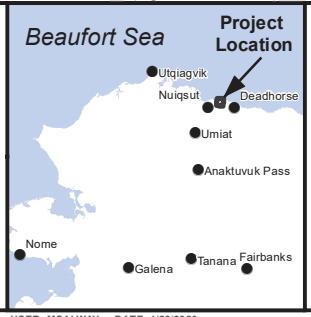
Proposed STP

Proposed STP Pipeline

10 Sheet Extent

0 1 2 Miles

HORIZONTAL DATUM:
NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



APPLICANT: Oil Search Alaska, LLC

FILE NO: TBD

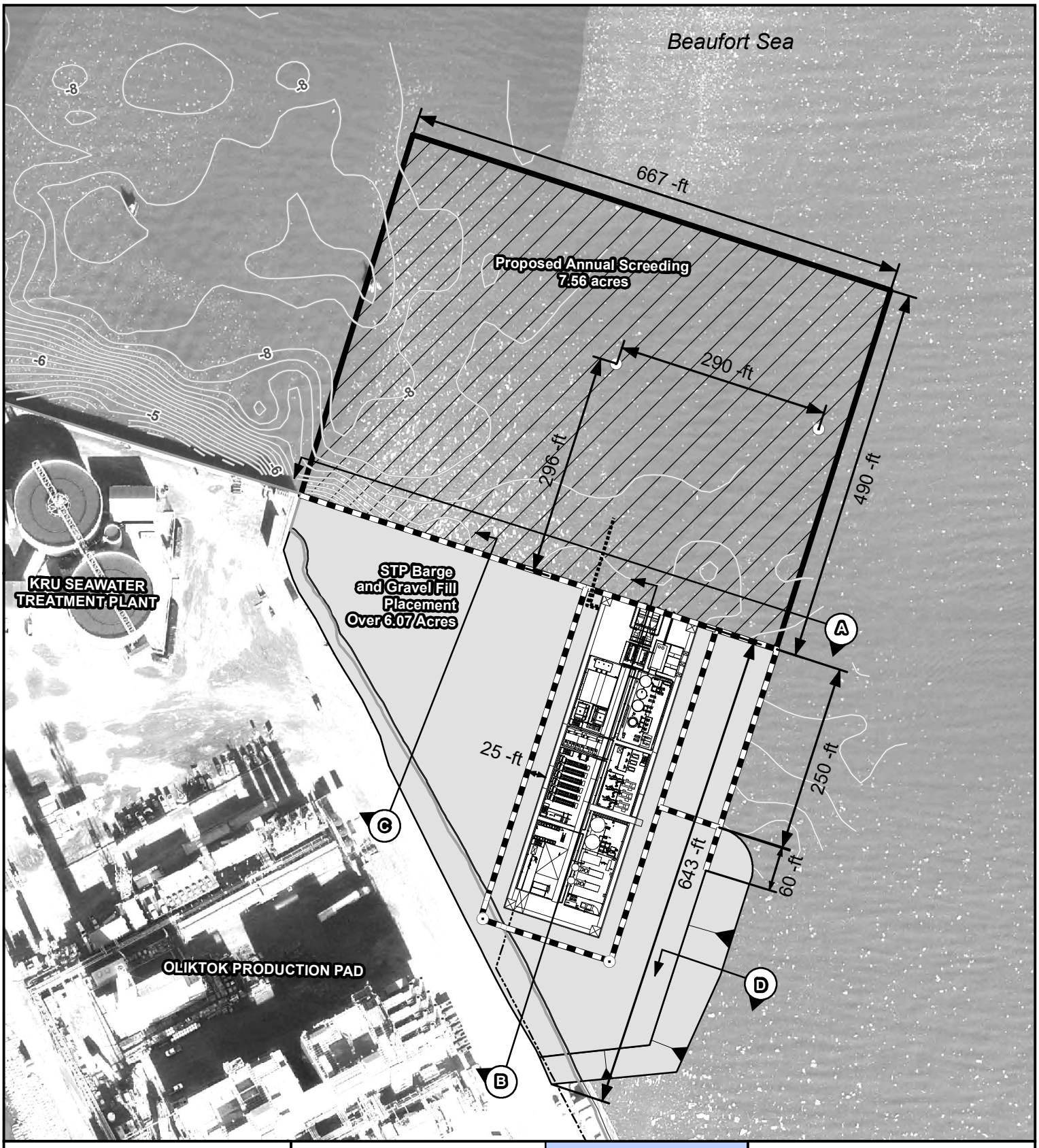
WATERWAY: Beaufort Sea

COUNTY: North Slope Borough
STATE: Alaska

SHEET 3

DATE: February 2020

PATH: O:\97935_OIL_SEARCH_ALASKA\10195645_EED_DA_STP_SUPPORTSRVCS\7.2_WP\MAP_DOCS\PERMIT_404\SH3_PROJECTCOMPONENTS.MXD - USER: MSALWAY - DATE: 1/28/2020

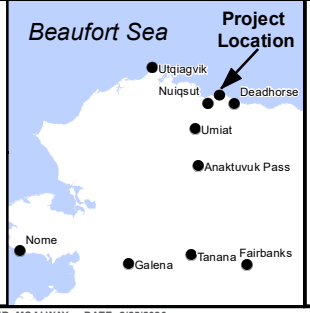


STP Pad Layout – Plan View

0 100 200 Feet

HORIZONTAL DATUM:
NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet

- Bathymetric Contours
- Dolphin Piles
- High Tide Line
- Mean High Water Line
- STP Outfall Pipe
- Buried STP Pipeline
- Sheetpile
- Proposed Gravel Pad
- Proposed Screeding
- Proposed STP Barge (430' x 132')



APPLICANT: Oil Search Alaska, LLC

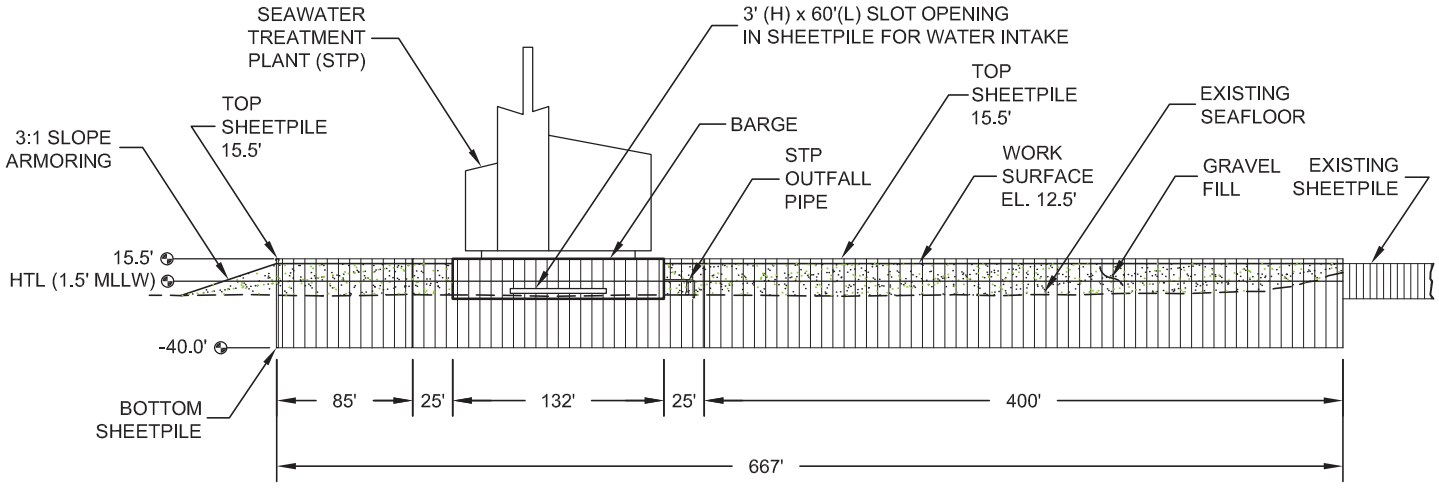
FILE NO: TBD

WATERWAY: Beaufort Sea

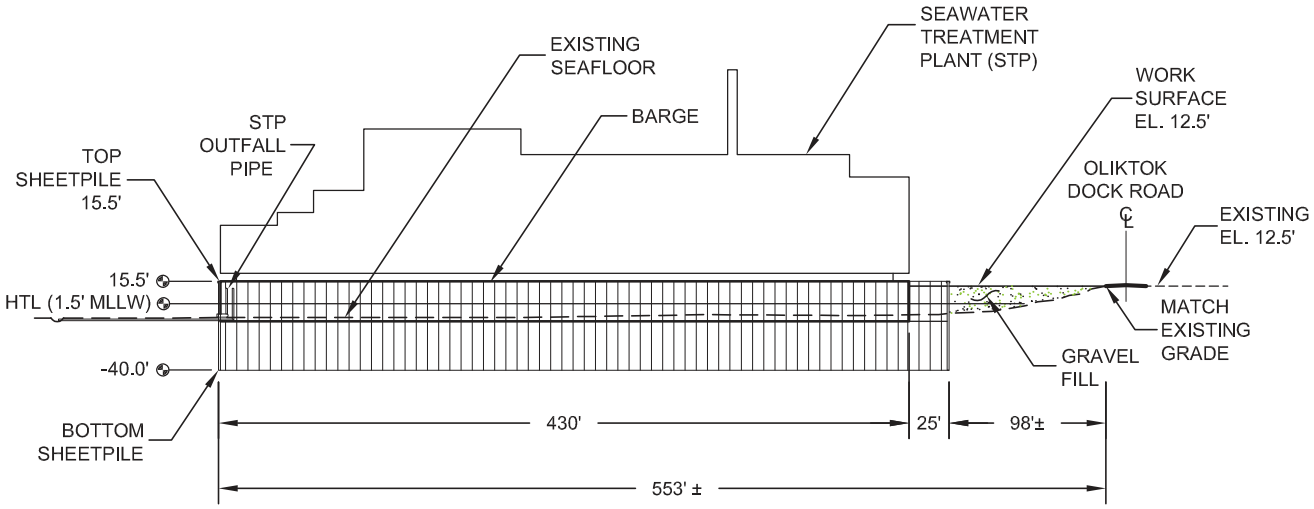
COUNTY: North Slope Borough
STATE: Alaska

SHEET 4

DATE: February 2020



SECTION A-A



SECTION B-B

NOT TO SCALE

Vertical Datum = MLLW

Sections A and B

APPLICANT: Oil Search Alaska, LLC

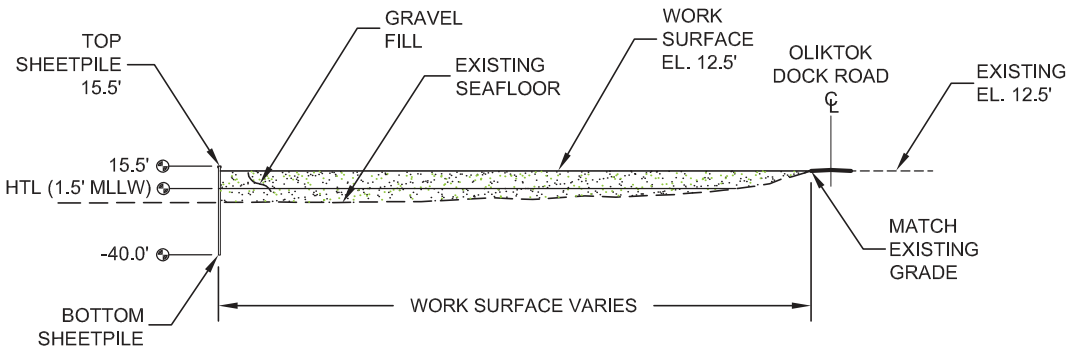
FILE NO: TBD

WATERWAY: Beaufort Sea

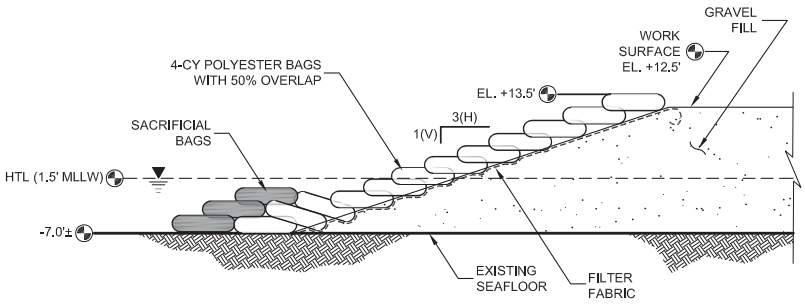
COUNTY: North Slope Borough
STATE: Alaska

SHEET 5

DATE: February 2020



SECTION C-C



SECTION D-D

NOT TO SCALE

Vertical Datum = MLLW

Sections C and D

APPLICANT: Oil Search Alaska, LLC

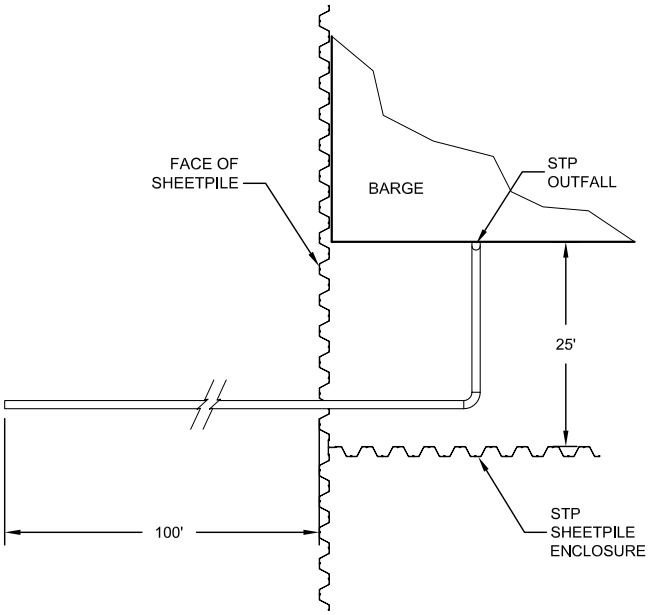
FILE NO: TBD

WATERWAY: Beaufort Sea

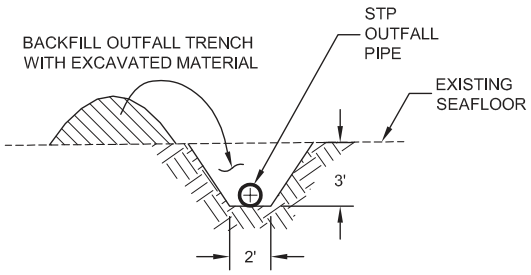
COUNTY: North Slope Borough
STATE: Alaska

SHEET 6

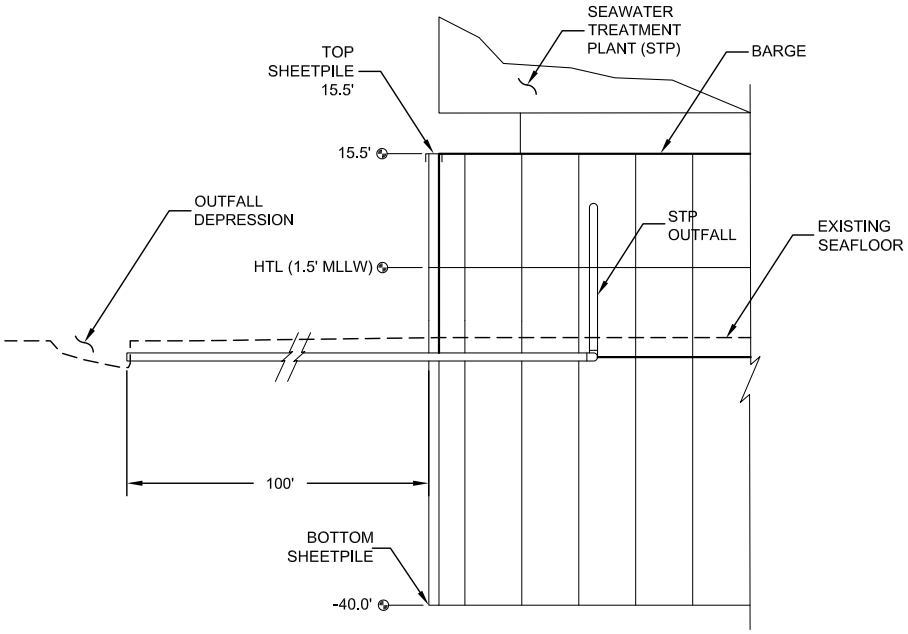
DATE: February 2020



OUTFALL PIPE - PLAN VIEW



TRENCH - SECTION



OUTFALL PIPE - PROFILE VIEW

NOT TO SCALE

Vertical Datum = MLLW

Outfall Pipe Details

APPLICANT: Oil Search Alaska, LLC

FILE NO: TBD

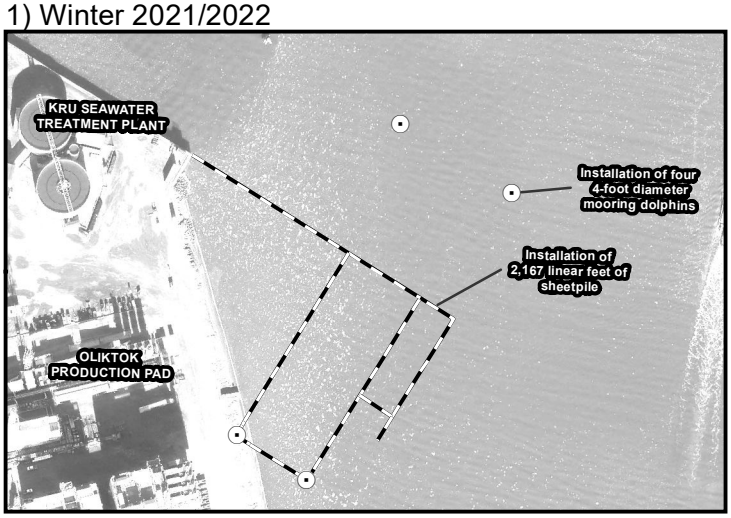
WATERWAY: Beaufort Sea

COUNTY: North Slope Borough
STATE: Alaska

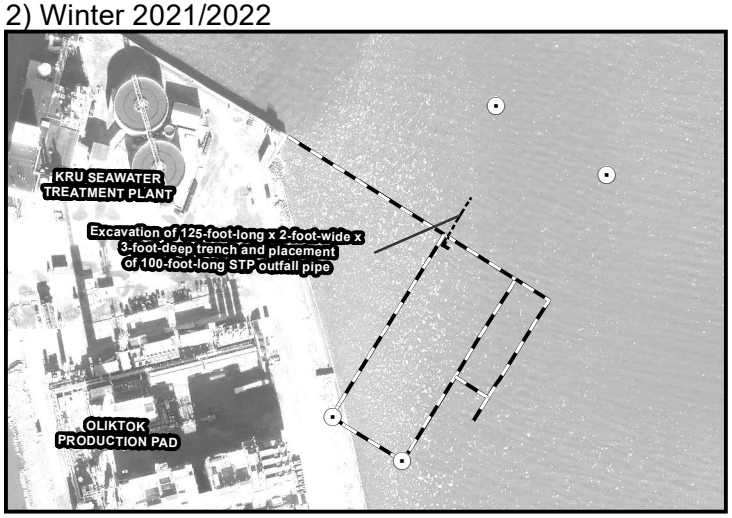
SHEET 7

DATE: February 2020

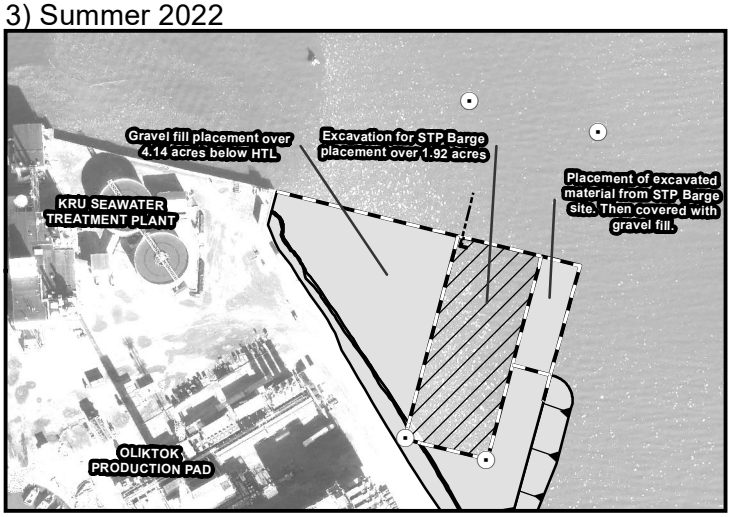
1) Winter 2021/2022



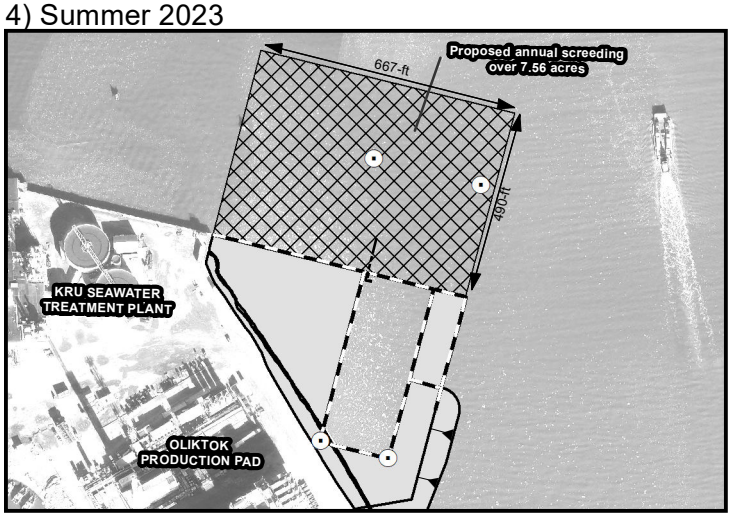
2) Winter 2021/2022



3) Summer 2022



4) Summer 2023



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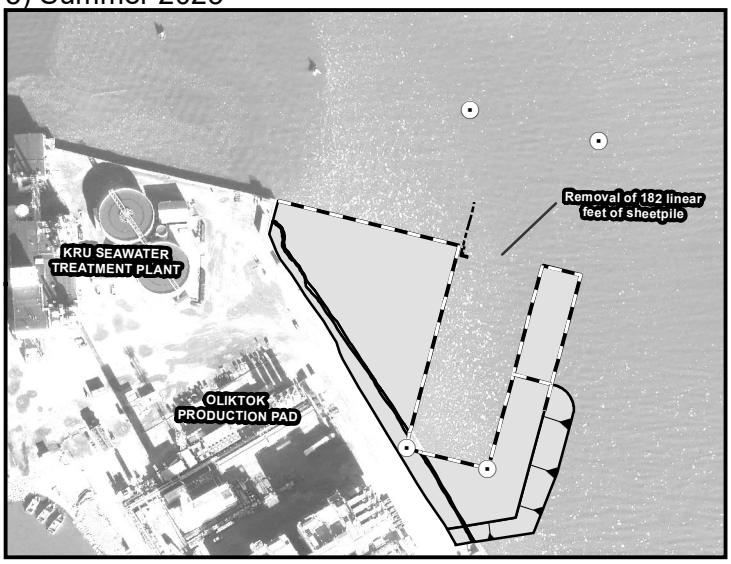

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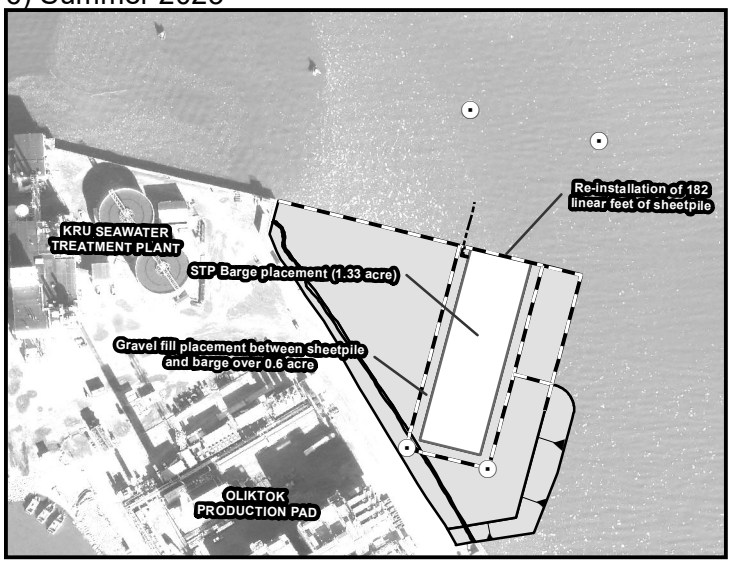
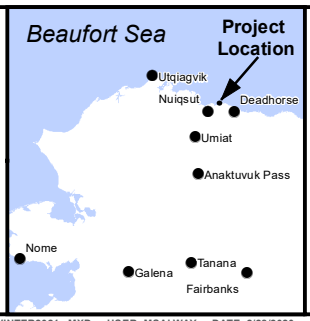


STP Site Preparation – Construction Sequence

- Sheetpile
- Dolphin Pile
- STP Outfall Pipe
- Excavation
- Gravel pad
- Screeding
- Seawater Treatment Plant

0 250 500 Feet

HORIZONTAL DATUM:
NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



APPLICANT: Oil Search Alaska, LLC

FILE NO: TBD

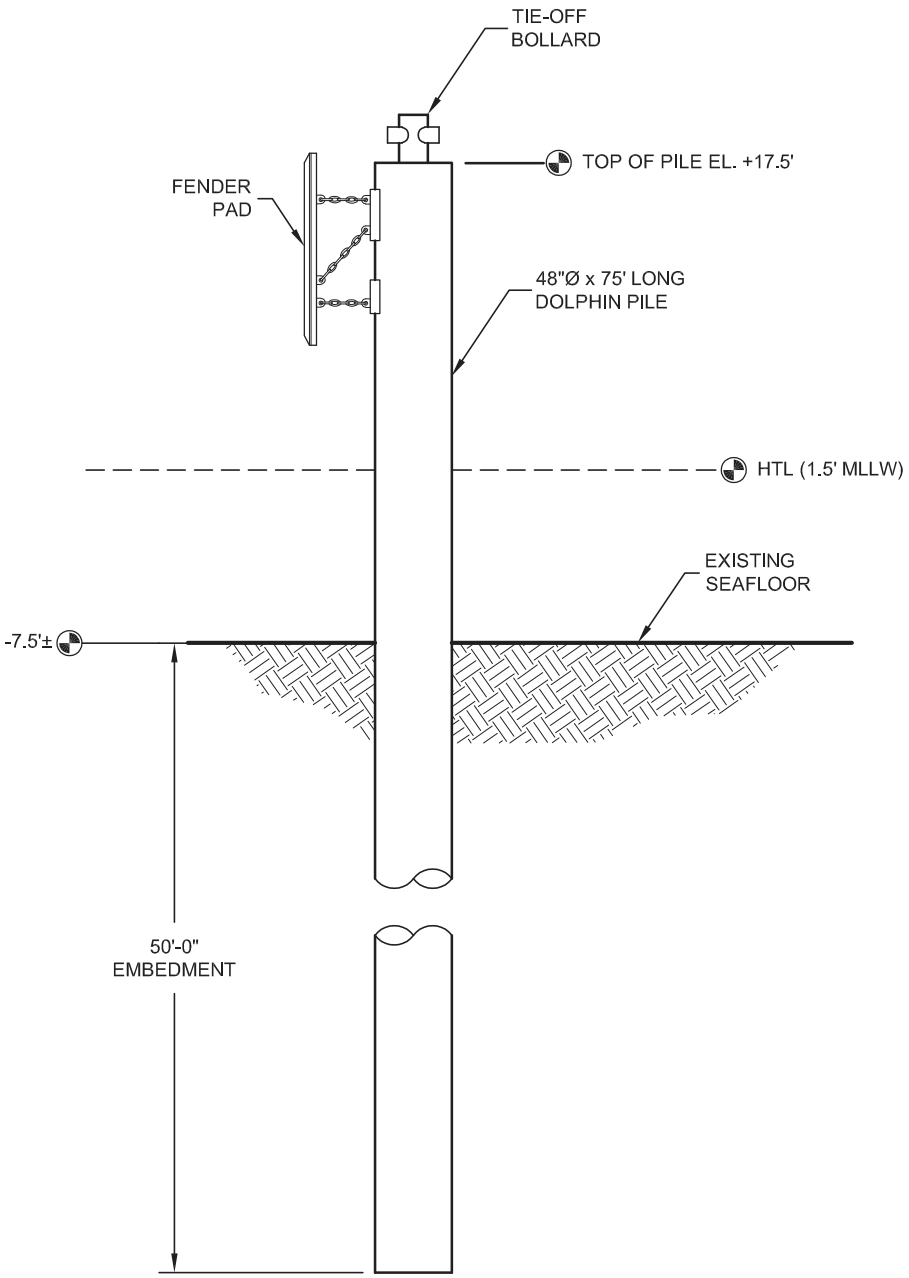
WATERWAY: Beaufort Sea

COUNTY: North Slope Borough
STATE: Alaska

SHEET 8

DATE: February 2020

PATH: O:\97935_OIL_SEARCH_ALASKA\10195645_EED_DA_STP_SUPPORTSRVCS\7.2_WP\MAP_DOCS\PERMIT_404\SH8_CONSTRUCTIONSEQUENCE_WINTER2021_.MXD - USER: MSALWAY - DATE: 2/28/2020



TYPICAL DOLPHIN

NOT TO SCALE

Vertical Datum = MLLW

Typical Dolphin

APPLICANT: Oil Search Alaska, LLC

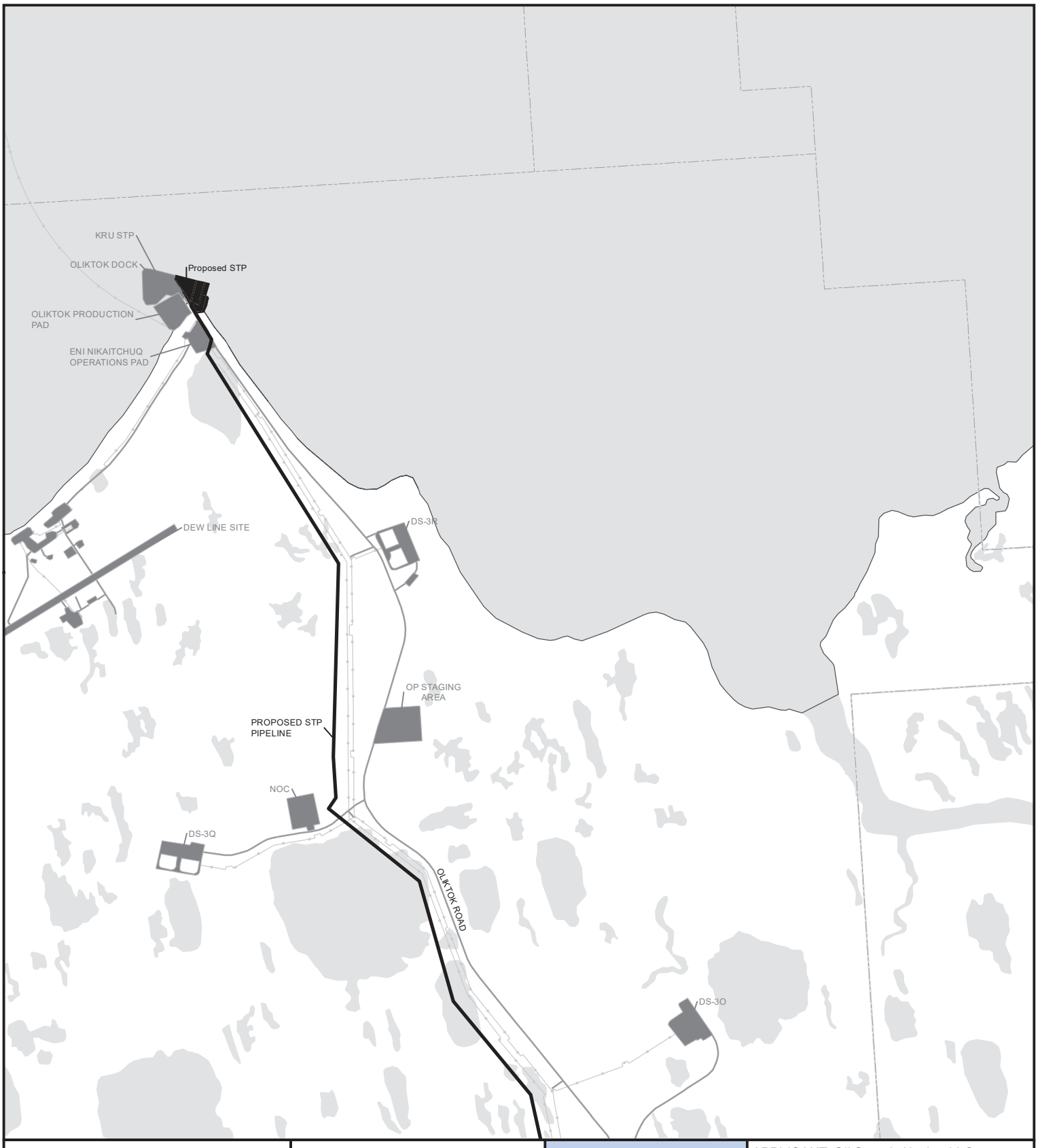
FILE NO: TBD

WATERWAY: Beaufort Sea

COUNTY: North Slope Borough
STATE: Alaska

SHEET 9

DATE: February 2020

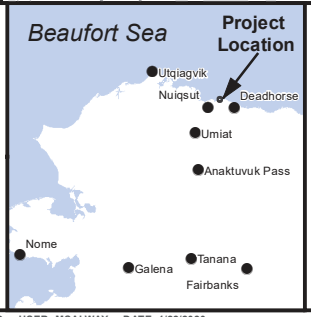


STP Pipeline Layout – Plan View

0 0.25 0.5 Miles

HORIZONTAL DATUM:
NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet

- Proposed STP Pipeline
- Proposed STP and Gravel Pad
- Existing Facilities
- Existing Roads
- Existing Pipelines
- Wetlands
- Waterbodies



APPLICANT: Oil Search Alaska, LLC

FILE NO: TBD

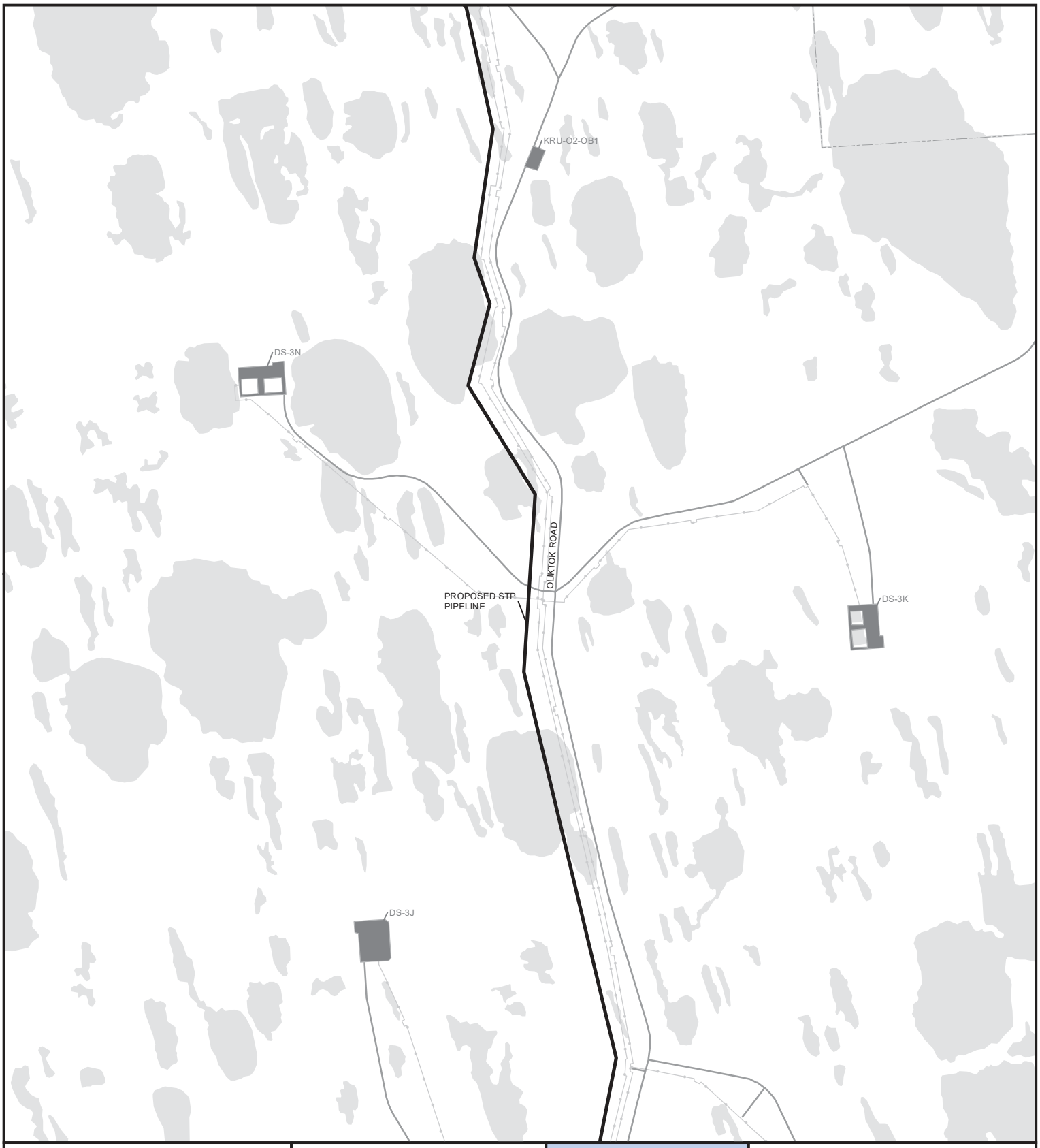
WATERWAY: Beaufort Sea

COUNTY: North Slope Borough
STATE: Alaska

SHEET 10

DATE: February 2020

PATH: O:\97935_OIL_SEARCH_ALASKA\10195645_EED_DA_STP_SUPPORTSRVCS\7.2_WP\MAP_DOCS\PERMIT_404\SH10_14_PIPEPLINEPLANVIEW.MXD - USER: MSALWAY - DATE: 1/22/2020

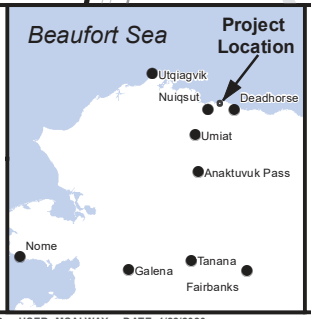


STP Pipeline Layout – Plan View

- Proposed STP Pipeline
- Existing Facilities
- Existing Roads
- Existing Pipelines
- Wetlands
- Waterbodies

0 0.25 0.5 Miles

HORIZONTAL DATUM:
NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet



APPLICANT: Oil Search Alaska, LLC

FILE NO: TBD

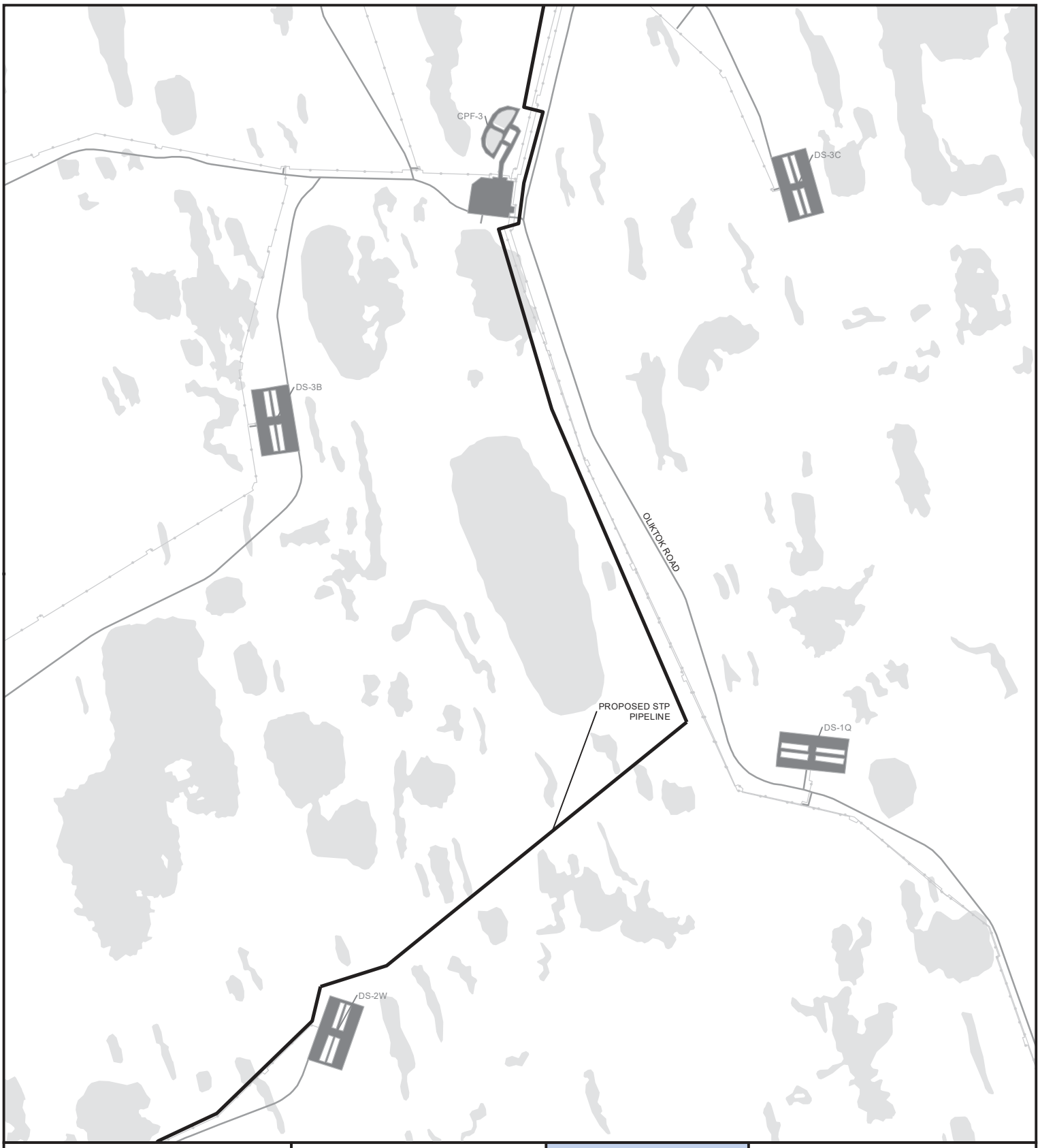
WATERWAY: Beaufort Sea

COUNTY: North Slope Borough
STATE: Alaska

SHEET 11

DATE: February 2020

PATH: O:\97935_OIL_SEARCH_ALASKA\10195645_EED_DA_STP_SUPPORTSRVCS\7.2_WP\MAP_DOCS\PERMIT_404\SH10_14_PIPEPLINEPLANVIEW.MXD - USER: MSALWAY - DATE: 1/22/2020

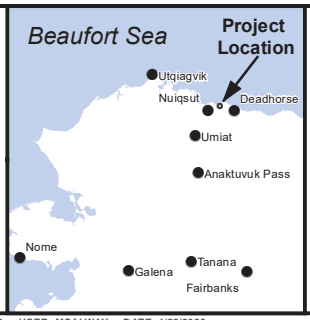


STP Pipeline Layout – Plan View

0 0.25 0.5 Miles

HORIZONTAL DATUM:
NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet

- Proposed STP Pipeline
- Existing Facilities
- Existing Roads
- Existing Pipelines
- Wetlands
- Waterbodies



APPLICANT: Oil Search Alaska, LLC

FILE NO: TBD

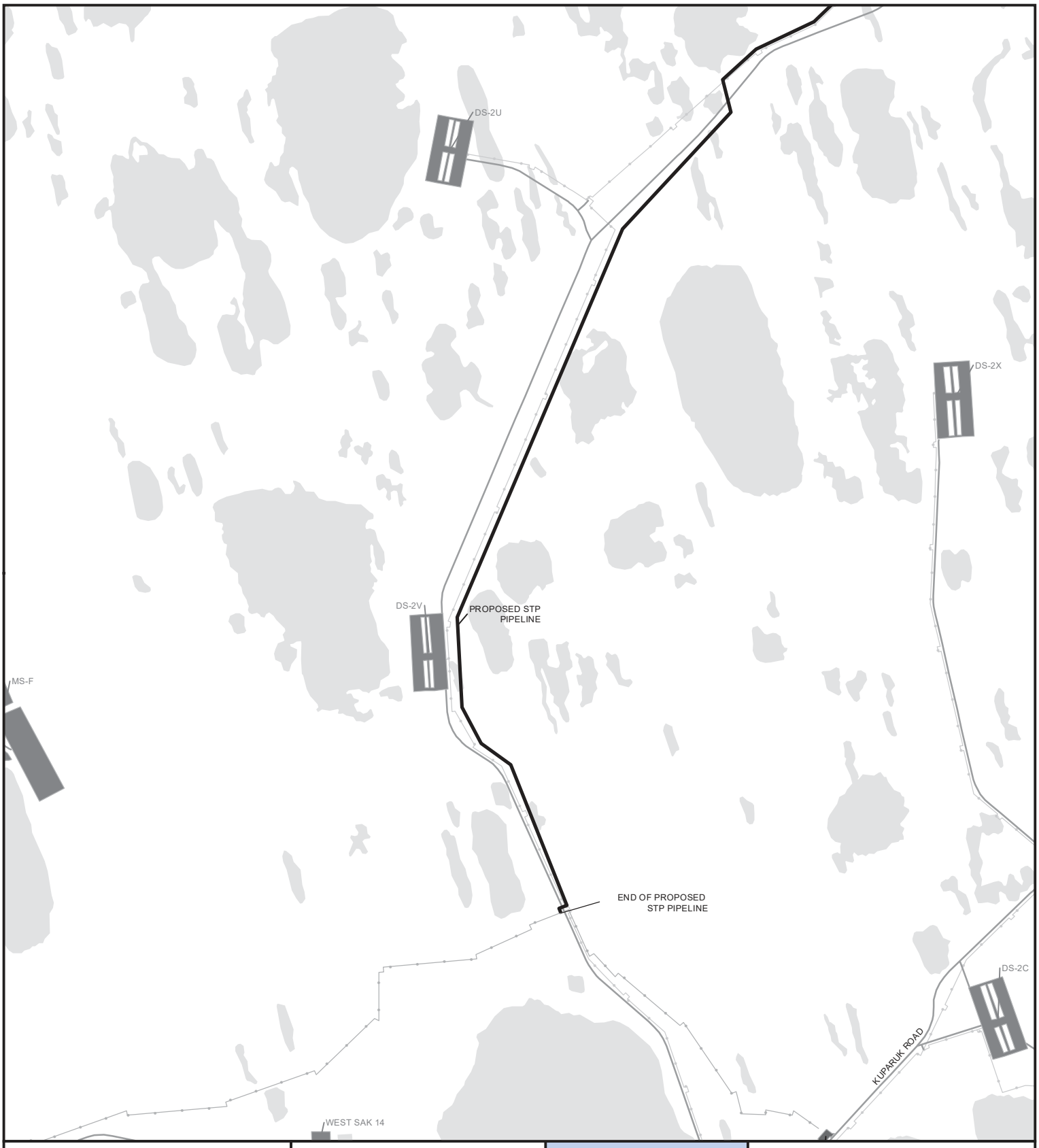
WATERWAY: Beaufort Sea

COUNTY: North Slope Borough
STATE: Alaska

SHEET 12

DATE: February 2020

PATH: O:\97935_OIL_SEARCH_ALASKA\10195645_EED_DA_STP_SUPPORTSRVCS\7.2_WP\MAP_DOCS\PERMIT_404\SH10_14_PIPEPLINEPLANVIEW.MXD - USER: MSALWAY - DATE: 1/22/2020

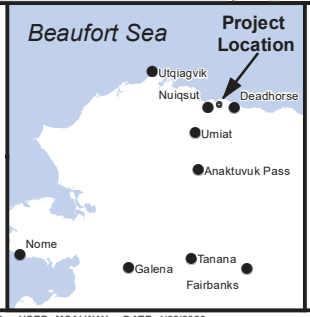


STP Pipeline Layout – Plan View

0 0.25 0.5 Miles

HORIZONTAL DATUM:
NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet

- Proposed STP Pipeline
- Existing Facilities
- Existing Roads
- Existing Pipelines
- Wetlands
- Waterbodies



APPLICANT: Oil Search Alaska, LLC

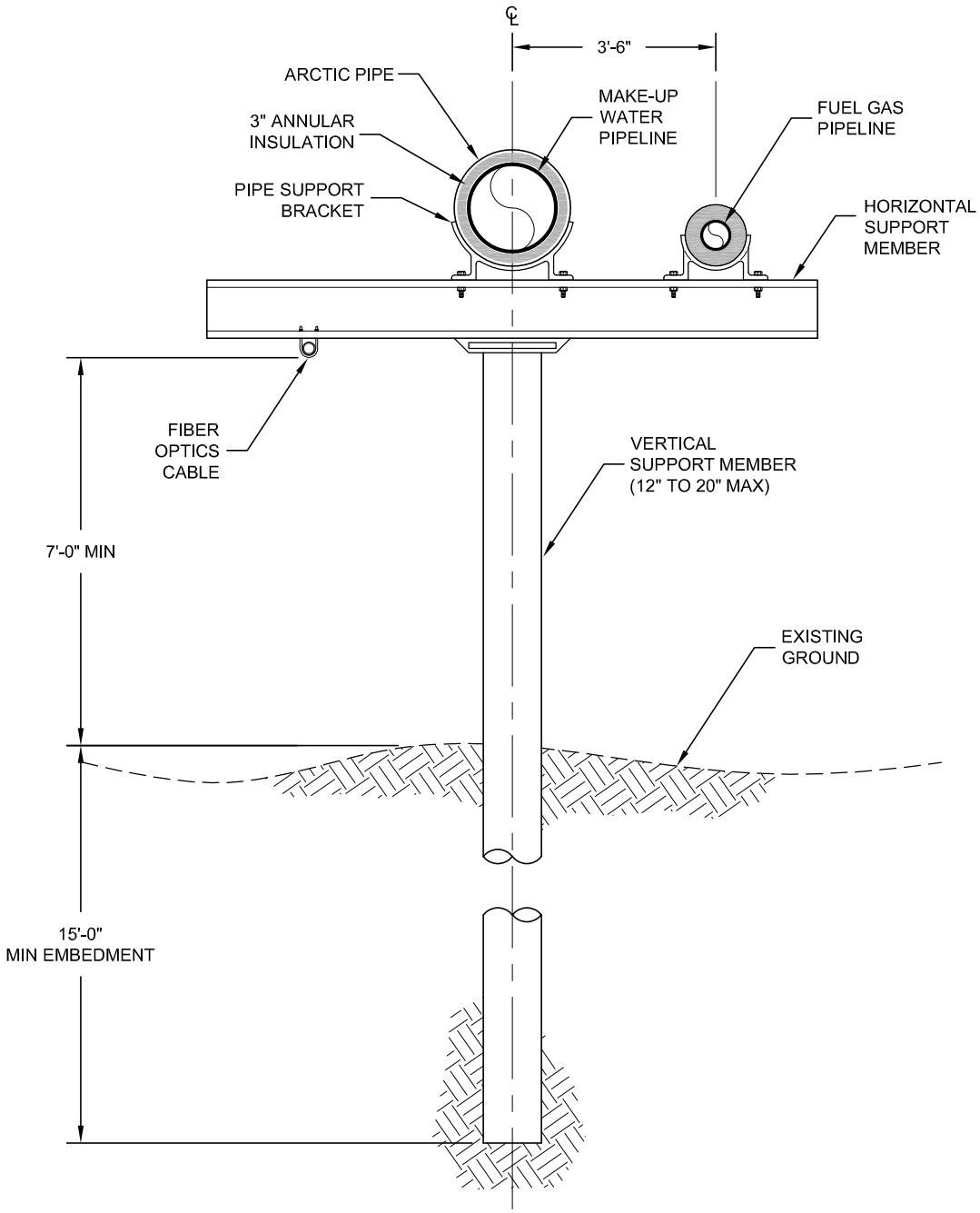
FILE NO: TBD

WATERWAY: Beaufort Sea

COUNTY: North Slope Borough
STATE: Alaska

SHEET 13

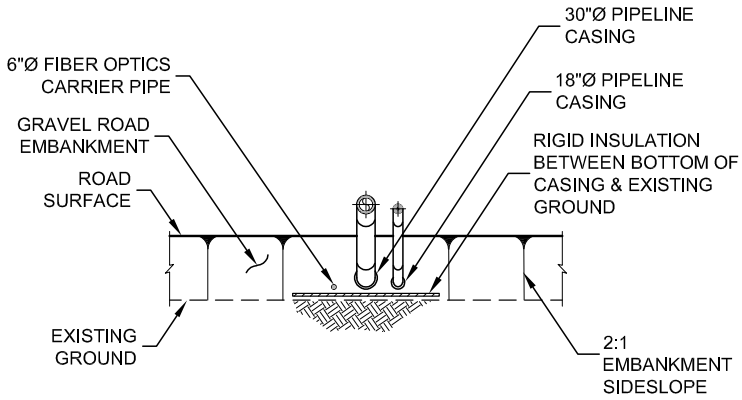
DATE: February 2020



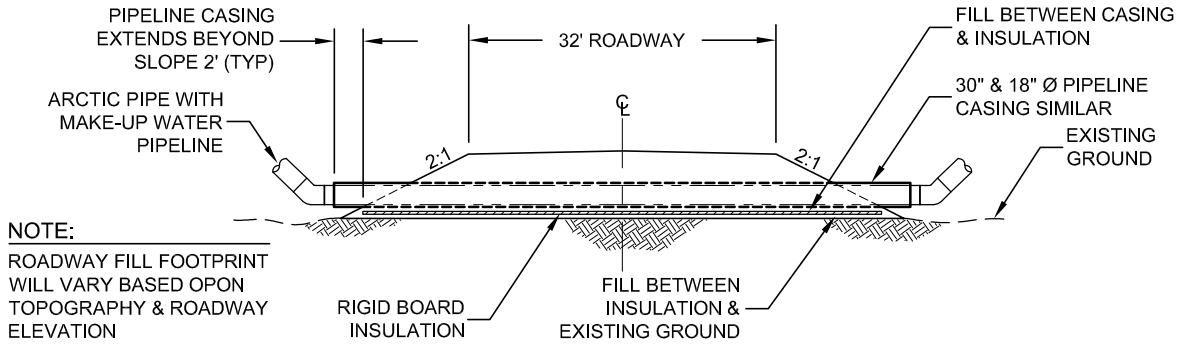
TYPICAL VERTICAL SUPPORT MEMBER (VSM) PROFILE

NOT TO SCALE

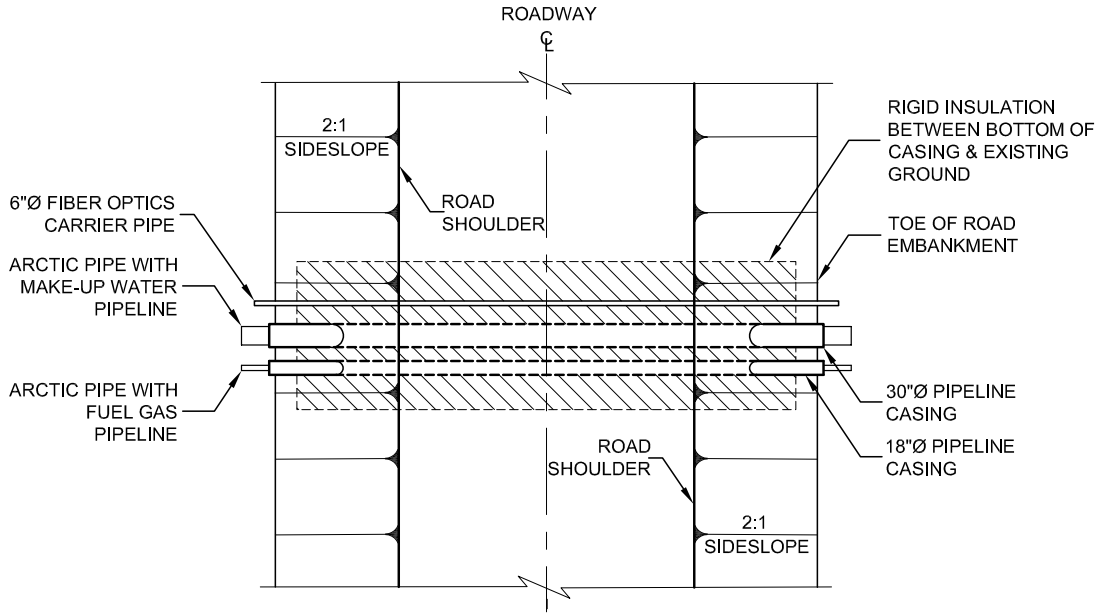
Typical Vertical Support Member (VSM)		APPLICANT: Oil Search Alaska, LLC FILE NO: TBD WATERWAY: Beaufort Sea COUNTY: North Slope Borough STATE: Alaska SHEET 14 DATE: February 2020



EXISTING ROAD CROSSING PROFILE



EXISTING ROAD CROSSING SECTION



EXISTING ROAD CROSSING PLAN

NOT TO SCALE

Typical STP Pipeline Road Crossing

APPLICANT: Oil Search Alaska, LLC

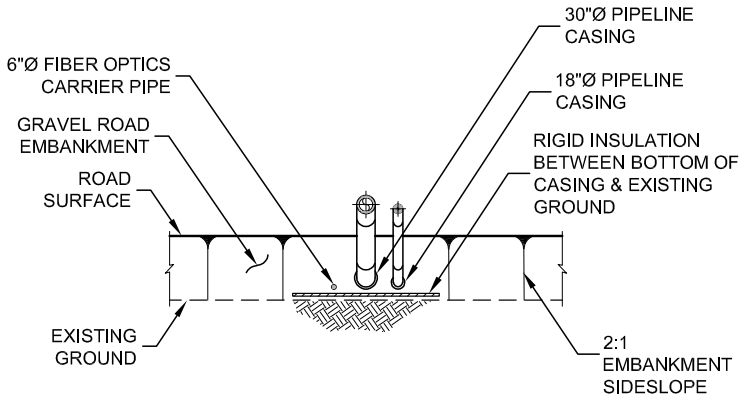
FILE NO: TBD

WATERWAY: Beaufort Sea

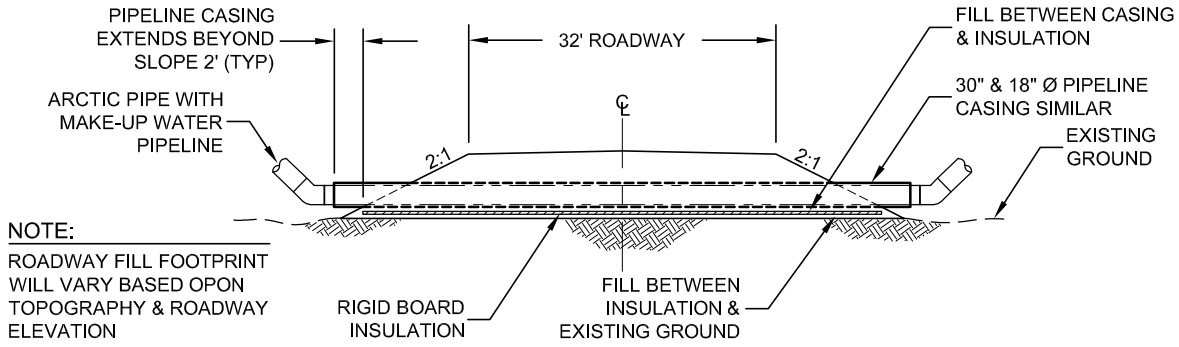
COUNTY: North Slope Borough
STATE: Alaska

SHEET 15

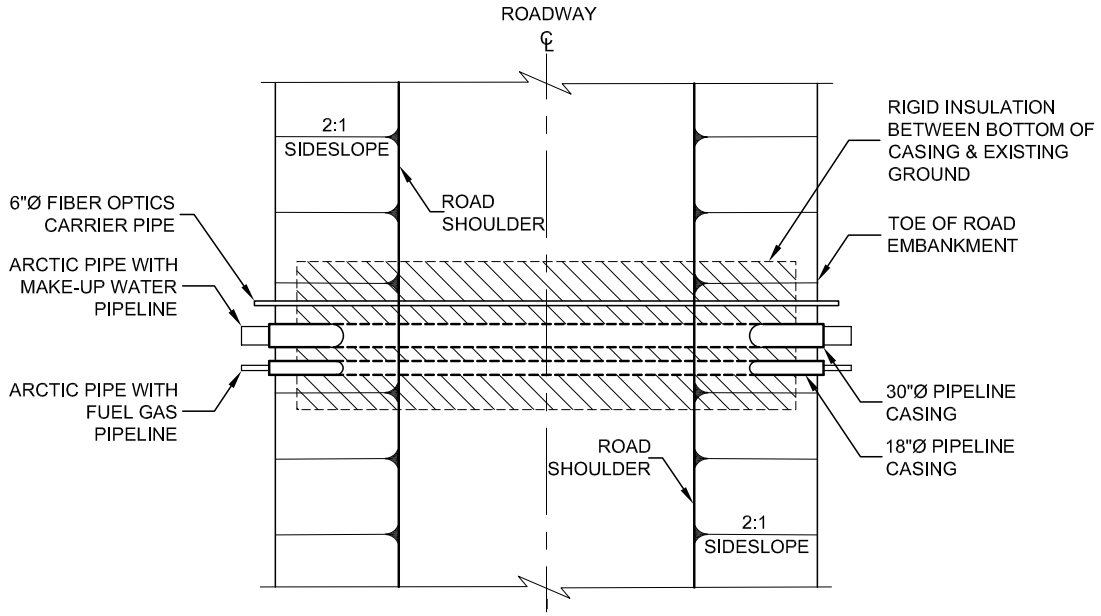
DATE: February 2020



EXISTING ROAD CROSSING PROFILE



EXISTING ROAD CROSSING SECTION



EXISTING ROAD CROSSING PLAN

NOT TO SCALE

Typical STP Pipeline Road Crossing

APPLICANT: Oil Search Alaska, LLC

FILE NO: TBD

WATERWAY: Beaufort Sea

COUNTY: North Slope Borough
STATE: Alaska

SHEET 15

DATE: February 2020

Seawater Treatment Plant

Applicant Proposed Mitigation Statements

Submitted by:

Oil Search

March 2020

Applicant Proposed Mitigation Statements

Background:

These mitigation statements have been prepared as an attachment to the Department of the Army (DA) permit application for impacts to Waters of the U.S. (WOUS) under jurisdiction of the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. Oil Search (Alaska), LLC (OSA), is proposing to construct a Seawater Treatment Plant (STP) and pipeline (collectively, the Project) that would have unavoidable permanent impacts to 6.12 acres of WOUS, including 0.05 acre of impact to wetlands. This information is provided to satisfy Box 23 of ENG Form 4345.

Applicant's Proposed Mitigation:

1. Avoidance of impacts to aquatic ecosystems, including wetlands:

The following measures will be taken to avoid impacts to the greatest extent practicable:

- The STP has been sited adjacent to existing infrastructure at Oliktok Dock. The STP will have a seawater intake at the face of the barge on which the STP rests, thereby avoids the need for extensive dredging for the seawater intake structure.
- Stockpiling of gravel for STP construction will occur on uplands. Gravel will either be stockpiled on Oliktok Point or be transported directly from the material site and placed within the Project footprint.
- All excavated materials from the seafloor will be reused within the Project footprint to avoid the need to dispose of the material within WOUS outside of the Project area and to reduce the volume of gravel to be mined and hauled to the site.
- Single-season ice roads and pads will be used to support winter 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 WOUS. The sidecasting will not change the bottom elevation of WOUS or replace any portion of WOUS with dry ground. The drilling cuttings will be removed once VSM installation is complete.

2. Minimization of unavoidable impacts to WOUS, including wetlands:

The following measures will be taken to minimize impacts to the greatest extent possible:

- Impacts to special aquatic sites (wetlands) have been limited to 0.05 acre.
- All fill material acquired for the Project will be clean fill material. The fill material will be free of 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.

- Siting the STP adjacent to Oliktok Dock, which currently supports the Kuparuk STP and is accessible by gravel road, will consolidate impacts to WOUS and limits those impacts to waters that are already disturbed by ongoing activities at the dock.
- Approximately 90 percent of the STP pipeline is located adjacent to existing disturbances to minimize impacts to relatively undisturbed areas.
- Installing sheetpile will protect the STP from ice floes, stabilize the gravel pad, prevent sloughing, eliminate fill associated with side slopes, and minimize turbidity and sedimentation during fill placement.
- This STP is situated perpendicular to the prevailing current to minimize potential ocean-induced damage to the structure and reduce the effect on subsea sediment migration.
- All discharges from the STP into the Beaufort Sea will be regulated through an Alaska Department of Environmental Conservation (ADEC) Alaska Pollutant Discharge Elimination System Individual Permit in order to minimize impacts to water quality.
- The pipeline will be elevated above grade on VSMs to reduce impacts to permafrost and flow patterns of surface waters.
- The pipeline will be externally coated with fusion-bonded epoxy under the shop-applied insulation to minimize or eliminate the need for tundra travel to perform external corrosion inspections of the pipeline.
- Construction of single-season ice roads and pads will minimize the need for annual withdrawal of water for ice road construction. In accordance with permits, ice road crossings of designated streams and rivers will be slotted, breached, or weakened upon completion of use to minimize flooding and associated scour upon the return of flowing waters in spring.
- OSA will develop an ADEC-approved Stormwater Pollution Prevention Plan to be implemented prior to Project construction.
- OSA will develop a Snow Removal Plan to prevent soil or debris from being discharged into WOUS outside of any authorized fill areas.
- OSA will develop a Waste Management Plan to address the types and quantities, regulatory controls, and management options for solid and liquid wastes.
- 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.

Applicant Proposed Mitigation Statements

Additional Avoidance and Minimization Measures:

Cultural Resources/Subsistence:

- The STP and associated pipeline will not impact documented cultural resources.
- Summer construction activities, including transport of the STP barge to Oliktok Dock, will be coordinated with the Alaska Eskimo Whaling Commission to minimize impacts to the marine mammal subsistence harvest.
- In order to obtain Incidental Harassment Authorization and Letter of Authorization issued by NMFS and USFWS, OSA will develop a Marine Mammal Monitoring Program (4MP) to ensure that all activities have the least practicable adverse impact on affected marine mammal species.
- In order to obtain Incidental Harassment Authorization and Letter of Authorization issued by NMFS and USFWS, OSA also will develop a Plan of Cooperation with the nearest affected communities to the locations of open water and over-ice activities to ensure the activities have no unmitigable adverse impacts to any Alaska Native subsistence uses.

Vegetation:

- Single-season ice roads will be routed and constructed to minimize impacts to sensitive vegetation such as willow, per North Slope Borough (NSB) requirements.

Wildlife:

- VSMs will be aligned with the VSMs from adjacent pipelines to avoid the creation of a “fence” in order to minimize impacts to caribou.
- The pipeline will be separated from Oliktok Road to minimize caribou disturbance and excessive snow drift accumulation and to reduce the risk of vehicle impacts to the pipeline.
- The pipeline and horizontal support members will be a minimum of 7 feet above tundra surface, except where pipelines intersect a road or pad, in order to minimize impacts to caribou and other terrestrial wildlife.
- A Polar Bear Interaction Plan and Marine Wildlife Avoidance and Interaction Plan are developed to provide personnel with guidance to minimize the possibility of wildlife interactions and impacts to bears and human safety.
- Lighting of the STP facility will be designed to minimize the impact of lighting on visual aesthetics and minimize the occurrence of bird strikes. The facility lighting will minimize light visible from outside of Project facilities by using downward illumination such as downcast floodlights and excluding use of horizontally aimed floodlights, locating mast poles away from the pad edge, using lighting fixtures with lamps contained within the reflector, and shading externally facing windows on buildings.
- Pipelines will have a non-reflective finish to reduce reflectivity and potential impacts to wildlife from visual disturbances.

- Water withdrawal for ice pad and ice road construction will be conducted in compliance with water withdrawal authorizations and fish habitat permit stipulations to maintain adequate lake volumes in fish-bearing lakes.
- Screens will be installed at the STP water intake to prevent fish entrapment and filter large organic matter (e.g., sticks, tundra matt, and other large items suspended or floating in the seawater).
- Following Section 7 Consultation with the National Marine Fisheries Service and U.S. Fish and Wildlife Service, OSA will implement agency-recommended mitigation measures or mandatory terms and conditions (including the use of Protected Species Observers) to avoid and/or minimize impacts from screeding, gravel fill placement, pile and sheet pile installation, marine transport, and operations to species listed under the Endangered Species Act such as spectacled eiders, Steller's eiders, polar bears, bowhead whales, Beringia Distinct Population Segment (DPS) bearded seals, Arctic ringed seals, blue whales, fin whales, Western North Pacific gray whales, Western North Pacific DPS and Mexico DPS humpback whales, North Pacific right whales, sperm whales, and Western DPS Steller sea lions, as well as designated critical habitats, as appropriate.

Spill Prevention and Response Planning:

- External pipeline walls will be coated with fusion-bonded epoxy. The pipeline will include an insulation system consisting of polyurethane foam insulation covered with an interlocked sheet metal jacket. The STP facility will include pig launchers and receivers capable of handling in-line inspection tools, and maintenance and cleaning tools.
- Where the pipeline crosses road embankments, the coated and insulated pipeline will be encased in structural steel pipe casings buried within the roadway section. Casings for pipeline-road crossings will extend a minimum of 2 feet beyond the road embankment toe.
- The pipeline is designed to be above ground, allowing for better access for leak detection, maintenance, and potential spill response.
- Periodic surveillance of the OSA pipelines will be conducted in accordance with federal regulatory and American Society of Mechanical Engineers (ASME) B31.4 requirements and in accordance with ADEC regulations (18 Alaska Administrative Code 75). Leak detection systems and surveillance will be compliant with ASME codes and state and federal standards.
- All fuel and hazardous substances used by the Project will be handled and stored on-site in compliance with state and federal regulatory guidance and the Project's Spill Prevention, Control, and Countermeasures (SPCC) Plan. All fuels and chemicals will be stored in appropriate primary containment areas. Secondary containment areas will be designed in compliance with all applicable permits and regulations.

- Fuels and other products will be transported to the Project area using a licensed, commercial transporter following U.S. Department of Transportation regulations for safe transport of materials to minimize spill risk.
- Trained North Slope employees and contractors who are familiar with North Slope oilfields will be employed, providing personnel who are familiar with industry requirements regarding environmental and regulatory compliance standards. Personnel will be trained on Nanushuk operational plans, including oil handler training, waste management, snow removal, spill prevention, and wildlife interaction, which will minimize the potential for impacts during daily operations.

3. Compensation for unavoidable impacts to WOUS, including wetlands:

OSA has designed the Project to avoid and minimize adverse effects to aquatic resources and other environmental resources to the maximum extent practicable, as described above. Direct impacts from the Project will result in a nominal loss of 0.05 acre of wetlands from VSM installation and 6.07 acres of marine waters from STP construction, for a total of 6.12 acres of permanent impact to WOUS. All other impacts to marine waters will be temporary. No formal compensatory mitigation is proposed for Project activities.