

PIKKA DEVELOPMENT PROJECT

Project Description for Revisions to Permit POA-2015-00025 - Permit Mod. 9

1.0 INTRODUCTION

Oil Search (Alaska), LLC, a subsidiary of Santos Limited (Santos), is requesting a permit modification to the Pikka Development Project (Project) Nanushuk Drillsite C (NDC) components as a result of incremental advancements in project design, construction methods, and operational requirements. Santos is proposing to expand the NDC Pad, updating the NDC Access Road, and adding two pipeline valve pads on either side of the Kachemach River.

These modifications are within the scope of the Final Nanushuk Environmental Impact Statement (USACE 2018) and permit application evaluated by The U.S. Army Corps of Engineers (USACE). The proposed changes represent a 3.44 acre increase in Project footprint as described in Section 3 below and as shown on Figures 1 and 2.

USACE issued a Department of the Army (DA) permit to Santos for the Pikka Development Project (formerly known as the Nanushuk Project) on May 21, 2019, and followed with eight subsequent permit modifications, including several administrative modifications as provided in Table 1 below.

Table 1. Permit History

	Permanent Fill (acres)	Temporary Impacts (acres)	USACE Issued
Permit POA-2015-00025 (Original)	266.2	5.8	5/21/2019
POA-2015-00025 Mod. 1 Updates to DS2/NDB, TIP, water source access road, toe	1.9	0	11/15/2019
POA-2015-00025 Mod. 2 Updates to STP, STP Pipeline, Screeding	6.88	10.28	11/9/2020
POA-2015-00025 Mod. 3 Updates to Boat Launch, Pump house, pipeline, valve & tundra crossing pads	6.87	0	4/21/2021
POA-2015-00025 Mod. 4 Administrative update for Compensatory Mitigation Plan (CMP)	n/a	n/a	4/26/2022
POA-2015-00025 Mod. 5 Updates to Project, STP, & GSP	3.3	0	5/19/2023
POA-2015-00025 Mod. 6 Administrative update to extend permit expiration date	n/a	n/a	8/9/2023
POA-2015-00025 Mod. 7 Relocate EQ52 location	n/a	n/a	12/6/2023
POA-2015-00025 Mod. 8 NPF Pad Expansion	0.19	n/a	8/16/2024
Total:	285.34		

2.0 PROJECT STATUS

Since receipt of the DA permit, Santos began Project gravel placement during winter of 2019-2020 and began drilling operations at the Nanushuk Drillsite B (NDB) in 2023. Santos has also completed gravel placement for Project components required for startup of production including:

- Pikka Access Road
- NDB Pad and NDB Access Road
- Nanushuk Drillsite A (NDA) Access Road
- Nanushuk Processing Facility (NPF)
- Nanushuk Operations Pad (NOP)
- Tie-In Pad (TIP)
- Pikka Sales Oil Tie-in (SOT) Parking Pad and Platform
- Seawater Treatment Plant (STP) Facility
- Water Source Access Pad
- Pikka Infield Pipelines
- Pikka Pipelines (between NPF and TIP)
- STP Pipelines
- Gas Spur Pipeline (GSP)
- Mustang Road Improvements
- Pikka Boat Launch and the Boat Launch Access Road

The permit drawings approved in DA Permit Modification 1 and as updated by subsequent modifications have been revised to reflect the current status of the Pikka Development Project and the proposed modifications. The revised drawings distinguish between constructed project components and proposed components that are still to be constructed. A summary list of modifications is provided in Table 2 below.

Table 2. Permit Drawing Sheets

Sheet	Title	Modification Summary
1	Nanushuk Development Project Vicinity Map	NDC Pad, Road, and Pipeline updates
2	Sheet Index	NDC Pad, Road, and Pipeline updates
3	Adjacent Land Ownership	NDC Pad, Road, and Pipeline updates
4	Adjacent Land Ownership Contact Information	
5	Project Overview	NDC Pad, Road, and Pipeline updates
6	Nanushuk Processing Facility (NPF) Pad Layout	Includes Mod 8 Update to NPF, formerly the Central Processing Facility (CPF)
7	Nanushuk Processing Facility (NPF) Pad Sections	Includes Mod 8 Update to NPF, formerly the Central Processing Facility (CPF)
8	Nanushuk Drillsite A (NDA) Pad Layout	Formerly Drillsite (DS1)
9	Nanushuk Drillsite A (NDA) Pad Sections	Formerly DS1
10	Nanushuk Drillsite B (NDB) Pad Layout	Formerly DS2
11	Nanushuk Drillsite B (NDB) Pad Section	Formerly DS2
12	Nanushuk Drillsite C (NDC) Layout	Formerly DS3 NDC Update – Pad expansion & configuration
13	Nanushuk Drillsite C (NDC) Pad Sections	Formerly DS3 NDC Update – Pad expansion & configuration
14	Nanushuk Operations Pad (NOP) Layout	Formerly Operations Center Pad. Layout updated.
15	Nanushuk Operations Pad (NOP) Sections	Formerly Operations Center Pad
16	Tie-in Pad (TIP) Layout	Includes Mod 5 Update for SOT Parking Pad and Platform
17	Tie-in Pad (TIP) Sections	

Sheet	Title	Modification Summary
18	Boat Launch and Pad Plan	Includes Mod 3 Update to Boat Launch and Pad, formerly Boat Ramp
19	Boat Launch and Pad Sections	Includes Mod 3 Update to Boat Launch and Pad, formerly Boat Ramp
20	Infield Roads and Pipelines Overview	NDC Pad, Road, and Pipeline updates
21	Infield Roads and Pipelines SHT 1 of 4	
22	Infield Roads and Pipelines SHT 2 of 4	
23	Infield Roads and Pipelines SHT 3 of 4	NDC Update – Road Truck Turnaround and Staging
24	Infield Roads and Pipelines SHT 4 of 4	NDC Update – Pad expansion, Road, Pipeline reroute & valve Pads
25	Access Road and Pikka Pipeline Overview	Formerly Nanushuk Pipeline
26	Access Road and Pikka Pipeline SHT 1 of 8	NDC Road and Pipeline updates
27	Access Road and Pikka Pipeline SHT 2 of 8	
28	Access Road and Pikka Pipeline SHT 3 of 8	
29	Access Road and Pikka Pipeline SHT 4 of 8	
30	Access Road and Pikka Pipeline SHT 5 of 8	
31	Access Road and Pikka Pipeline SHT 6 of 8	
32	Access Road and Pikka Pipeline SHT 7 of 8	
33	Access Road and Pikka Pipeline SHT 8 of 8	
34	Typical Road Sections	
35	Typical Road Turnout	
36A	Road Turnouts with Tundra Access Ramps	
36B	Typical Valve Pad	Includes Mod 3 Update for Valve Pads
36C	Typical Valve Pad with Tundra Access Ramp	Includes Mod 3 Update for Valve Pads with Tundra Access Ramp
37	Cross Drainage Culvert Cross Sections	
38	Typical Single and Multiple Culvert Battery Sections	
39	Typical Fish Passage Culvert Cross Sections	
40	Pikka Pipeline Guided Pipe Support	
41	Pikka Pipeline Anchor Pipe Support	
42	NDA Pipeline Guided Pipe Support	
43	NDA Pipeline Anchorage Pipe Support	
44	NDB Pipeline Guided Support	
45	NDB Pipeline Anchorage Pipe Support	
46	NDC Pipeline Guided Pipe Support	
47	NDC Pipeline Anchorage Pipe Support	
48	MC7903 Freshwater Pipeline	
49	MC7903 Water Intake and Pump House Pad	Includes Mod 3 Update for Pump House Pad
50	MC7903 Water Intake and Pump House Pad Sections	Includes Mod 3 Update for Pump House Pad
51A	Typical Pipeline Road Crossing	
51B	Tundra Pad Pipeline Crossing	Includes Mod 3 Update for Tundra Pad Pipeline Crossing
51C	East Miluveach Pipeline Crossing	Includes Mod 3 Update for East Miluveach Pipeline Crossing
52	Typical Existing Road Pipeline Crossings	
53	Typical Buried Electrical and Fiber Optic Cable at Pipeline Crossing	
54	Typical Pikka Pipeline Crossing Over Existing Pipelines	
55	Pipeline River Crossings	

Sheet	Title	Modification Summary
56	Kachemach River Bridge	
57	Kachemach River Bridge Pier Sections	Updated to include potential 60" casing installation, in accordance with USCG permit
58	Miluveach River Bridge	
59	Miluveach River Bridge Pier Sections	Updated from 60" to 48" max steel casing as built
60	STP Pad and Screeding Layout	Includes Mod 2 STP Pad and Screeding
61	STP Sections A and B	Includes Mod 2 STP Pad
62	STP Sections C and D	Includes Mod 2 STP Pad
63	STP Outfall Pipe Details	Includes Mod 2 STP Outfall
64	STP Typical Dolphin	Includes Mod 2 STP Pad
65	STP and GSP Roads and Pipelines Overview	
66	STP-TIP Detail Sheet 1 of 5	Includes Mod 7 EQ 52 Relocation
67	STP-TIP Detail Sheet 2 of 5	
68	STP-TIP Detail Sheet 3 of 5	
69	STP-TIP Detail Sheet 4 of 5	
70	STP-TIP Detail Sheet 5 of 5	
71	SRY Pigging Platform Pad Plan and Section	Includes Mod 5 SRY Pigging Pad and Platform
72	SOT Parking Pad and Road Crossing Plan and Section	Includes Mod 5 SOT Parking Pad and Road Crossing
73	GSP Detail	Includes Mod 5 GSP
74	GSP Parking Pad and Road Crossing Plan and Section	Includes Mod 5 GSP Parking Pad and Road Crossing
75	Typical Equipment Pad Pipeline Crossing	Includes Mod 5 Equipment Crossing
76	Typical Access Existing Road Pipeline Crossing	Includes Mod 5
77	Bonding Cable Details	Includes Mod 5
78	Typical STP Anchor Support and Guide Support Elevations	Includes Mod 5
79	Typical GSP Anchor Support and Guide Support Elevations	Includes Mod 5
80	Fill Acreage and Volumes	NDC Pad, Road, and Pipeline updates
81	Fill Acreage and Volumes, Cont.	NDC Pad, Road, and Pipeline updates

3.0 PROPOSED MODIFICATIONS

Santos proposes to make the following necessary modifications to the Project infrastructure layout, resulting in an increased footprint that is outlined in Table 3 below.

Table 3. Proposed Modifications Summary

Project Component	Proposed Additional Footprint (acres)	Proposed Additional Gravel Impacts (cubic yards)	Component Location	Property Owner
NDC Road	Road: 0.24 acre increase (length: 0.03 mi increase)	2,000	Start: 70.288561, -150.533314 End: 70.266466, -150.734565; U011N006E S21-23, 28-31 U011N005E S25, 36	State of Alaska and Kuukpik Corporation
West NDC Valve Pad	0.5 acres	6,250	70.285332, -150.639043; U011N006E S29	Kuukpik Corporation

Project Component	Proposed Additional Footprint (acres)	Proposed Additional Gravel Impacts (cubic yards)	Component Location	Property Owner
East NDC Valve Pad	0.4 acres	6,250	70.280923, -150.655850; U011N006E S28	State of Alaska
NDC Pad	2.3 acre increase	32,000	70.264755, -150.749226 U011N005E S36 U011N006E S31	Kuukpik Corporation
Total Proposed	3.44 acre increase of gravel fill	46,500 cubic yards of gravel		

A description of each proposed Project modification is provided below and shown on Figure 1.

3.1 NDC Pad

Santos proposes to modify the footprint of the NDC Pad to accommodate updated safety and logistics considerations for operations, drilling, and completions activities. The modification will increase the pad footprint from the permitted 18 acres to 20.3 acres, an increase of 2.3 acres (Sheets 12-13 and 24). The gravel fill quantity will increase 32,000 cubic yards total, from 249,000 cubic yards to 281,000 cubic yards.

The purpose for the updated NDC pad expansion is to enhance both safety and operational efficiency that include:

- **Camp:** Reconfiguring the pad so that the drilling camp and workers are beyond the exposure radius of potential process safety events. This also positions the camp away from high-traffic operational areas on the pad.
- **Support Equipment:** Expanding the west side of the pad to accommodate well stimulation, completions, storage, and testing equipment. The additional space will also accommodate temporary and permanent production facilities. This space is needed as there are no existing gravel pads within 6 miles of the NDC Pad. The layout minimizes the need for repeated lifting, rig-up, rig-down, and equipment moves—thereby reducing operational risk and improving safety.
- **Site access/egress:** The increased pad footprint allows for optimized traffic flow, which has proven to reduce traffic-related incidents, and will enhance the overall efficiency of drilling and operations. Additional space and access along the exterior edges of the pad will allow personnel and equipment to access pad edges for snow push, storm water management, and side-slope maintenance.
- **Reduce heavy equipment congestion:** The NDC Pad modification will prevent vehicle congestion related risks and potential injuries as described in the Alaska Safety Handbook guidance for Safe Driving Rules (CPAI et al., 2022:53). This will also satisfy Santos policy to have heavy equipment use “pull-through only” parking spaces, where practicable. The pull-through maneuver is preferred for all vehicles on the North Slope to reduce risks associated with heavy-equipment backing. The proposed NDC Pad is designed to accommodate the approach angle and turning radius of a 300-barrel water truck (minimum interior wheel turning radius restricted to 70 feet) and will allow trucks to load/offload to the well stimulation area and drilling and production facilities without backing up before exiting the pad.
- **Emergency access:** During all phases of drilling and operations, adequate access to all areas of the pad is vital for emergency response (e.g., fire, medical, spill) to reach and exit the NDC

Pad quickly. The additional space on the NDC Pad will allow Santos to develop safety routes around congested or blocked areas, maintaining access to all work areas in the event of an emergency.

3.2 NDC Road

Due to the proposed NDC Pad footprint modification and drilling camp relocation, the NDC road has been extended 0.03 miles to meet the proposed NDC Pad, resulting in a 0.24 acre increase in footprint. This area falls within the previously permitted Project footprint but will increase the NDC road fill quantity by 2,000 cubic yards from the permitted 487,000 cubic yards to 489,000 cubic yards.

3.3 NDC Infield Pipeline and Kachemach River Valve Pads

Santos has advanced pipeline design and proposes a minor update to the location of the NDC Infield Pipeline to include two proposed pipeline valve access pads. The valve pads have been placed on either side of the Kachemach River Pipeline Bridge (Sheets 24 and 36B). The Alaska Department of Environmental Conservation (ADEC) 18 AAC 75 standard require crude oil pipelines utilize valving or vertical loops on either side of major river crossings. The valve pads will also allow year-round access for inspections and emergency response.

The two proposed valve pads will increase the total Project footprint by 0.9 acres (~12,500 cubic yards of gravel). The valve pad on the west side of the Kachemach River Bridge will be approximately 0.5 acres and the valve pad located on the east side of the bridge will be approximately 0.4 acres (Sheet 36B).

4.0 AVOIDANCE AND MINIMIZATION MEASURES

The Project has been designed to avoid and minimize the discharge of fill into wetlands and other waters.

4.1 Avoidance

The following measures will be taken to avoid impacts to aquatic ecosystems, including wetlands, to the greatest extent practicable:

- Placement of proposed fill is adjacent to the already permitted NDC Pad, pipeline, and access road. This concentrates gravel fill placement in areas already permitted for development and avoids additional impacts to undisturbed tundra areas.
- Gravel for the Project will either be stockpiled on uplands or be transported directly from the material site and placed within the permitted footprint.
- Single-season ice roads and ice pads will be used to support winter construction, avoiding the need for temporary fill during construction.

4.2 Minimization

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

- By expanding the permitted footprint of the NDC Pad, Santos will be able to accommodate completions, storage, well stimulation, and testing equipment; as well as temporary construction and production facilities, and avoid the need for a separate staging pad, therefore minimizing impacts to waters of the U.S. (WOUS).
- Tundra access ramps, that allow access over the pipeline, were removed from the valve pad design to further minimize impacts to WOUS. Since the Kachemach River Pipeline

Bridge is located upstream of the river and NDC access road, it was determined that tundra access ramps would not be required.

- The proposed NDC Pad was designed to the minimum requirements for safe practices and planned development activities. Santos has planned well spacing to the minimum standards that still meet Project surface and subsurface requirements.
- Fill material acquired for the Project will be clean fill material and sourced from one of the local existing mine sites.
- Gravel fill material will be placed during frozen conditions to minimize wetland disturbance.
- Water withdrawal for ice pad and ice road construction will be conducted in compliance with Alaska Department of Natural Resources (ADNR) water withdrawal authorizations and Alaska Department of Fish & Game (ADF&G) fish habitat permit stipulations.

4.3 Compensatory Mitigation

A compensatory mitigation plan (CMP) was approved for this Project and modified under file number POA-2015-00025-M4. The CMP is applicable to these proposed modifications and continues to provide appropriate and practicable compensatory mitigation to compensate for unavoidable loss of WOUS based on USACE’s watershed informed decision. Santos does not propose additional compensatory mitigation beyond what is being implemented under the approved plan.

5.0 LIST OF SELECTED CONCURRENCES, PERMITS, AND AUTHORIZATIONS

Table 4 is a list of selected approvals needed to construct the proposed modifications. USACE has initiated and conducted prior consultations for this project as required by the Endangered Species Act and Section 106 of the National Historic Preservation Act. The Biological Opinions and Letters of Concurrence from the US Fish and Wildlife Service are included in Table 4. The Alaska State Historic Preservation Office concurred with the USACE prior project findings of No Adverse Effect; file numbers for those findings are also included in Table 4.

Table 4. Select Concurrences, Permits, and Authorizations

Agency	Permit/Authorization	Status
ADNR Division of Oil and Gas (DOG)	Off Road and Tundra Travel Authorization	Received
ADNR DOG	Unit Plan of Operations LONS 19-003 Amendment	Pending
Alaska Department of Environmental Conservation (ADEC) Division of Water	401 Water Quality Certification	Pending
ADF&G	Fish Habitat Permit for Ice Road Crossings of Anadromous Water Bodies	Received
ADNR State Historic Preservation Office (SHPO)	SHPO Concurrences	Prior Concurrences File #2017-01353 File #2023-00259
North Slope Borough (NSB) Land Management Regulation (LMR)	Administrative Approvals	Pending
NSB LMR	Development Permit	Pending

NSB LMR Traditional Land Use Inventory (TLUI)	TLUI Clearance	Pending
Kuukpik Corporation	Kuukpik and Oil Search Land Use Agreement – Oct. 30, 2019	Approved
U.S. Coast Guard (USCG)	Section 9 Bridge Permit (Road Crossing)	1a-21-17
USCG	Section 9 Bridge Permit (Pipeline Crossing)	Pending
U.S. Fish and Wildlife Service (USFWS)	Incidental Take Regulations (ITR) and Letter of Authorization (LOA) for Polar Bear	Pending ¹
USFWS	Endangered Species Act (ESA) Section 7 Consultation	Biological Opinions Dated 3/4/2019 and 10/16/2020 Letter of Concurrence Dated 4/7/2023

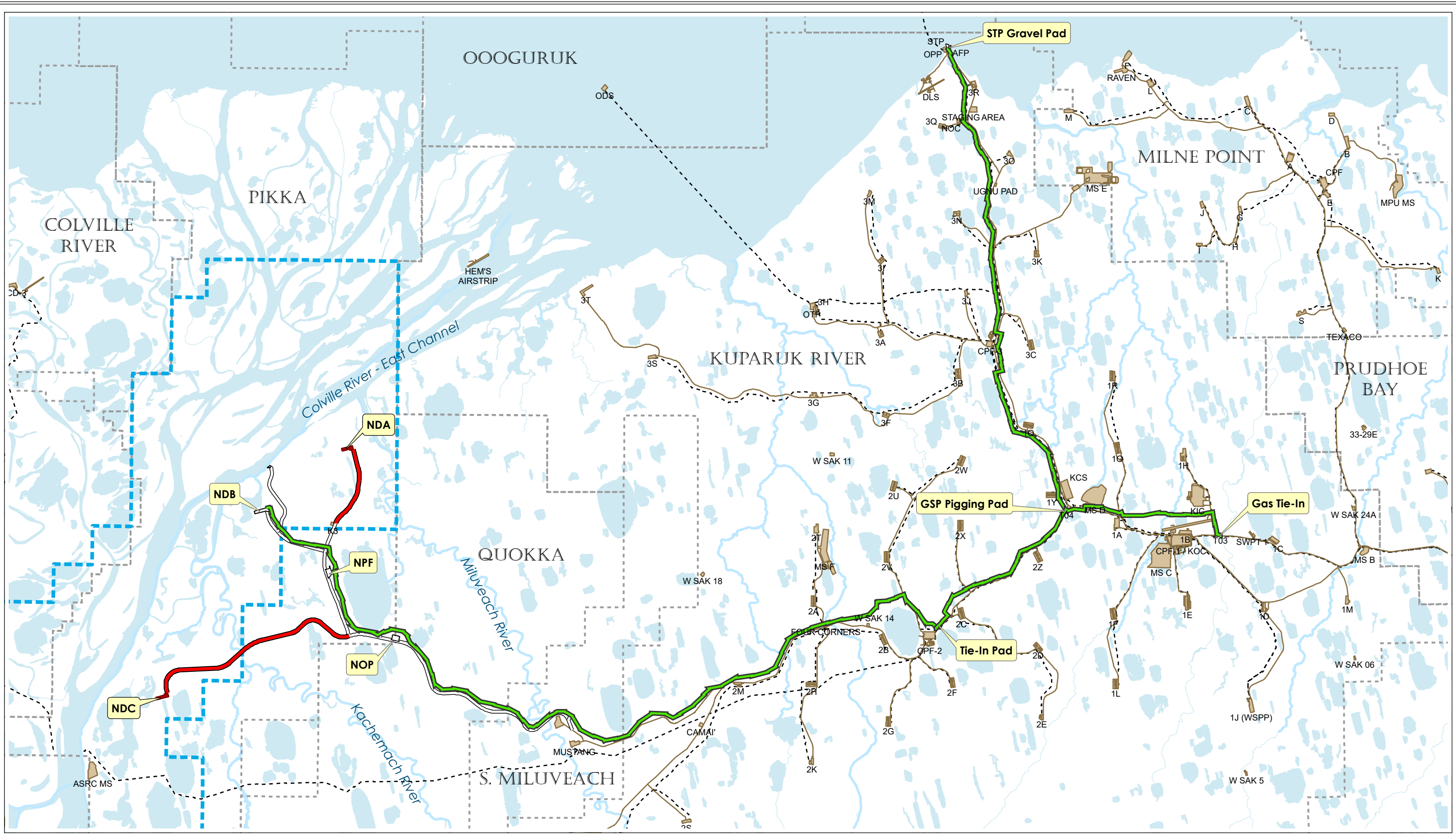
¹Current ITR 50 CFR 18, subpart J, and Santos LOAs 25-INC-03 and 25-INT-11 are valid through 8/5/2026. A new ITR petition is in progress and a request for LOA will be submitted under the new ITRs.

6.0 SUMMARY

Santos proposes to increase the permanent Project impacts approximately 3.44 acres. The proposed modifications were the result of incremental advancements in Project design, construction methods, and operational requirements. Table 2 summarizes the proposed modifications to the DA Permit for the Project. These changes are within the scope of the Project evaluated as part of the Final Nanushuk Environmental Impact Statement (USACE 2018) and permit application evaluated by USACE and represent a 3.44 acre increase in Project footprint.

Pikka Development Project

Proposed Revisions to POA-2015-00025 Permit Modification 9
Project Overview Figures
(Figures 1 – 2)

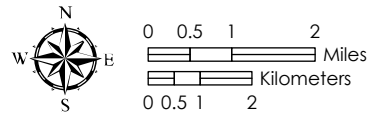


- PIKKA MAIN GRAVEL PADS
- PERMITTED - NOT BUILT
- PIKKA ROADS BUILT
- PIKKA ROADS PERMITTED - NOT BUILT
- PIKKA PIPELINES
- EXISTING PIPELINES
- EXISTING GRAVEL ROAD
- EXISTING GRAVEL PAD
- PRODUCTION UNIT
- KUUKPIK BOUNDARY
- NPR-A BOUNDARY

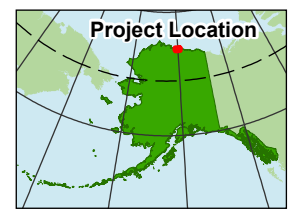
OIL SEARCH (ALASKA), LLC A SUBSIDIARY OF SANTOS LTD
 PIKKA DEVELOPMENT

PROJECT VICINITY

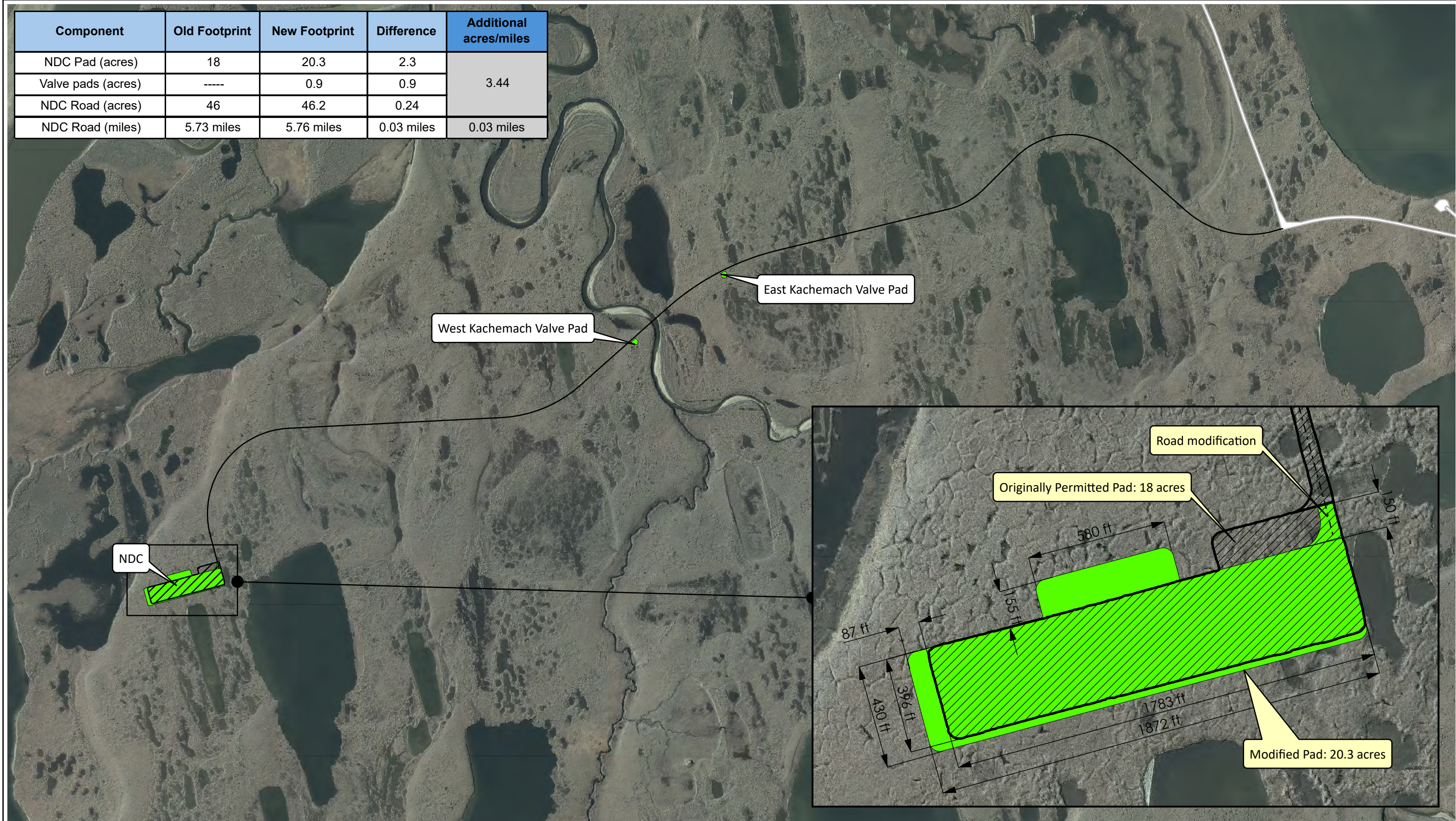
Figure 1



GCS: NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet
 Date: 3/23/2026 . By: JB
 Project: AP-DEV-ALGN-GEN_Pikka_projectOverview
 Layout: AP-DEV-PE-DF-M_ProjectVicinity
 Map Frame: AP-DEV-PE-DF-M_ProjectVicinity



Component	Old Footprint	New Footprint	Difference	Additional acres/miles
NDC Pad (acres)	18	20.3	2.3	3.44
Valve pads (acres)	-----	0.9	0.9	
NDC Road (acres)	46	46.2	0.24	0.03 miles
NDC Road (miles)	5.73 miles	5.76 miles	0.03 miles	



- MODIFIED GRAVEL
- PERMITTED GRAVEL
- GRAVEL ROADS/PADS BUILT

OIL SEARCH (ALASKA) LLC A SUBSIDIARY OF SANTOS LTD
 PIKKA DEVELOPMENT
PERMITTED NDC AREA WITH PROPOSED MODIFICATIONS

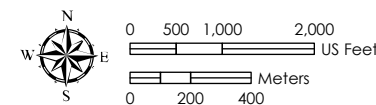


Figure 2

CS:NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet
 Created on: 3/17/2026, Created by: JB.
 Project: AP-DEV-ALGN_NDC
 Layout: AP-DEV-ALGN-GP-M_newNDC_modifications
 Map Frame: AP-DEV-ALGN-GP-M_newNDC_modifications

