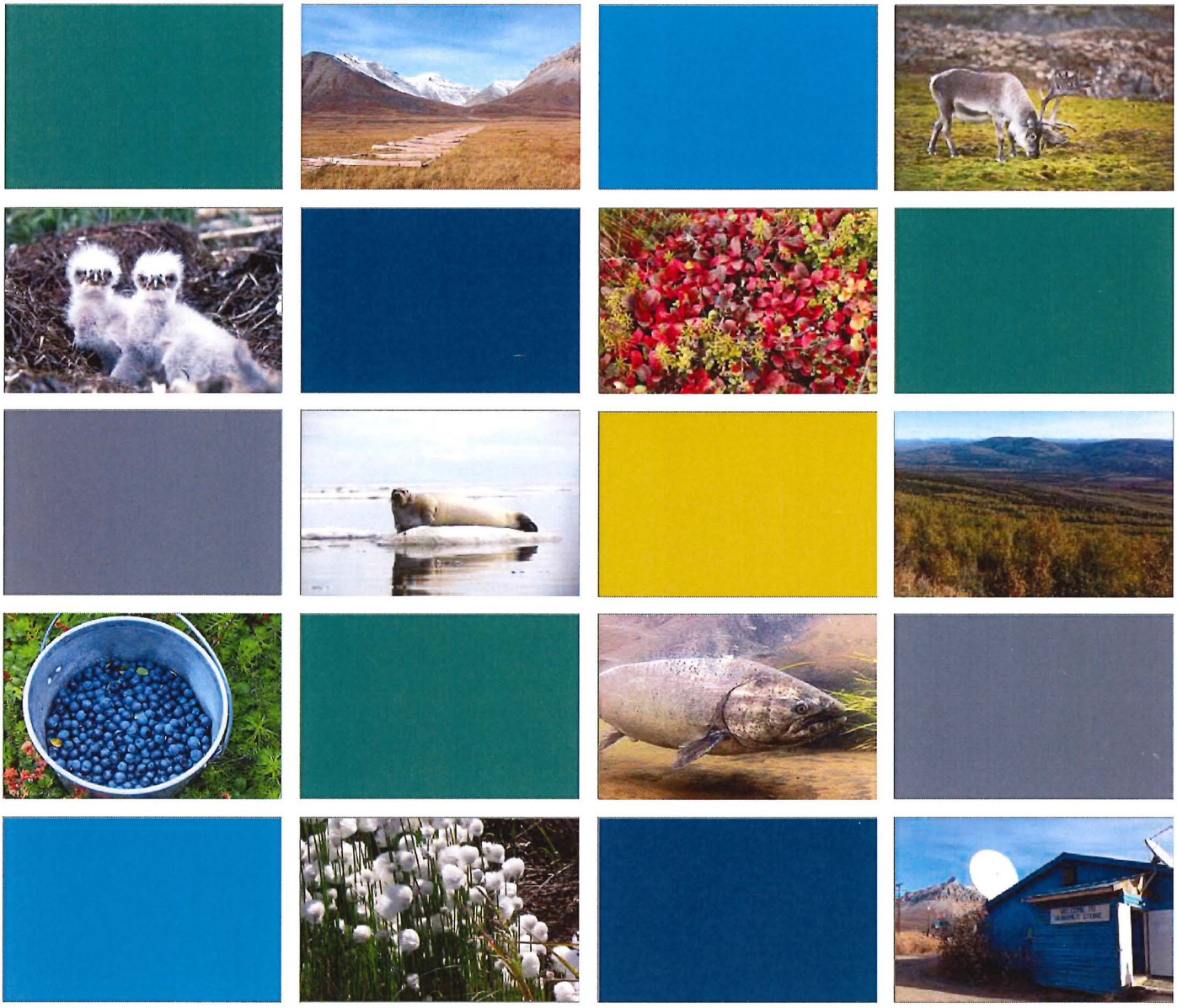
Appendix A

Comments on the Draft Supplemental EIS and 404 Permit Application

- Page Intentionally Left Blank -



Prepared for:

US Army Corps of Engineers
Alaska District

Alaska Stand Alone Pipeline Project

Supplemental Environmental Impact Statement

Public Comment Analysis Report

September 2018

ERM

The business of sustainability

- Page Intentionally Left Blank -

Alaska Stand Alone Pipeline Project
Supplemental Environmental Impact Statement
Public Comment Analysis Report

U.S. Army Corps of Engineers

September 2018

ERM Alaska, Inc.
825 West 8th Avenue
Anchorage, Alaska 99501
T: (907) 258-4880
F: (907) 258-4033

The business of sustainability

ERM

- Page Intentionally Left Blank -

TABLE OF CONTENTS

Acronyms and Abbreviations iv

1. Introduction 1
   - **1.1. Introduction 1**
   - **1.2. Purpose and Need 1**
   - **1.3. Description of the Project Area 4**
   - **1.4. Description of the Public Process 4**
     - **1.4.1. Public Comment Period Meeting Notices 5**
     - **1.4.2. Public Meetings 6**
2. Comment Issue Summary 7
   - **2.1. Source and Number of Public Comments 8**
   - **2.2. Issues Identified During Public Comment Period 9**
   - **2.3. Comment Summary Statements and Responses 9**
3. Response to Comments and the SEIS Process 16
4. Contact 17
5. References 18

List of Tables

Table 1 Newspapers and Radio Stations 5

Table 2 Dates and Locations of Public Meetings 6

Table 3 Issue Codes and Descriptions 7

Table 4 Public Comment Index 11

List of Figures

Figure 1 Number of Comment Summary Statements on Issues Raised during Public Comment Period 10

List of Attachments

- **A: Federal Register and Public Notices**
- **B: Public Announcements**
- **C: Meeting Sign-in Sheets**
- **D: Comment Summary Statements and Responses Report**
- **E: Meeting Transcripts**
- **F: Comments on Final SEIS**
- **G: Government to Government Consultation**
- **H: Project Changes in Response to Comments**

- Page Intentionally Left Blank -

ACRONYMS AND ABBREVIATIONS

ADEC ..... Alaska Department of Environmental Conservation
ADF&G ..... Alaska Department of Fish and Game
AGDC..... Alaska Gasline Development Corporation
AS..... Alaska Statute
ASAP ..... Alaska Stand Alone Pipeline
BLM ..... Bureau of Land Management
CFR ..... Code of Federal Regulations
CNG..... Compressed Natural Gas
ENSTAR..... ENSTAR Natural Gas Company
EPA ..... U.S. Environmental Protection Agency
FNSB..... Fairbanks North Star Borough
FR ..... Federal Register
GHG..... greenhouse gas
LNG ..... liquefied natural gas
MMscfd ..... million standard cubic feet per day
MP..... milepost
NEPA..... National Environmental Protection Act
NOA ..... Notice of Availability
NPP..... National Park and Preserve
NPS ..... National Park Service
ROD ..... Record of Decision
SEIS..... Supplemental Environmental Impact Statement
U.S..... United States
USACE ..... U.S. Army Corps of Engineers

- Page Intentionally Left Blank -

RECORD OF REVISIONS

Revision Date	Author	Revision Summary
August 2018	USACE	Administrative edit to remove outdated reference to Final SEIS public notice (page 16)
September 2018	USACE	Added reference throughout the document to comments from cooperating agencies received during the 30-day public notice of the Final SEIS (Section 1.1, 2.1) Added/updated the following attachments: A: Federal Register and Public Notices B: Public Announcements F: Comments on Final SEIS G: Example Government to Government Consultation Initiation Letter

- Page Intentionally Left Blank -

1. INTRODUCTION

1.1. Introduction

The United States (U.S.) Army Corps of Engineers (USACE), Alaska District, Regulatory Division is preparing a Supplemental Environmental Impact Statement (SEIS) to assess the impacts of constructing the Alaska Stand Alone Pipeline (ASAP) Project described in Section 1.2. An essential step in the National Environmental Protection Act (NEPA) process is public comment as required under 40 Code of Federal Regulations (CFR) 1506.6(a), which provides an opportunity for the public and agencies to express their views and help identify issues to be addressed in the SEIS.

This document represents a public record and summary of the public comment period activities. Summaries of the substantive comments that were received during the public comment period are also provided in this report. A careful and deliberate approach has been undertaken to ensure that all substantive public comments are reviewed, considered, and responded to.

At this stage in the development of the SEIS, comments on the Draft SEIS (USACE, 2017) have been collected and reviewed; they are summarized in this report. Responses to comment summaries are included in Attachment D, appended to the FSEIS as required under NEPA. If comments resulted in changes to the Draft SEIS, an indication of where those changes made is included in the Final SEIS.

Comments on the Final SEIS will be reviewed and considered by USACE during development of the Record of Decision (ROD); however, specific responses will not be provided by USACE. For additional information on future steps in the SEIS process, see Section 3.

1.2. Purpose and Need

The proposed ASAP Project would deliver North Slope natural gas to Fairbanks, Southcentral, and other communities in Alaska. The applicant's stated purpose of the proposed Project is to provide Alaskans with a stable, affordable, long-term supply of natural gas for heating and powering their homes and businesses. The purpose of the Alaska Gasline Development Corporation (AGDC) (*i.e.*, the Project sponsor and applicant) is established in Alaska Statute (AS) 31.25.005, which states that the corporation shall, for the benefit of the state, to the fullest extent possible:

- *…Develop and have primary responsibility for developing natural gas pipelines…and other transportation mechanisms to deliver natural gas in-state for the maximum benefit of the people of the state;*
- *When developing natural gas pipelines…and other transportation mechanisms to deliver natural gas in-state, provide economic benefits in the state and revenue to the state;*

- *Assist the Department of Natural Resources and the Department of Revenue to maximize the value of the state's royalty natural gas, natural gas delivered to the state as payment of tax, and other natural gas received by the state;*
- *Advance an in-state natural gas pipeline…in a safe, prudent, economical, and efficient manner, for the purpose of making natural gas…available to Fairbanks, the Southcentral region of the state, and other communities in the state at the lowest rates possible;*
- *…Endeavor to develop natural gas pipelines …to deliver natural gas…to public utility and industrial customers in areas of the state to which the natural gas…may be delivered at commercially reasonable rates; and*
- *Endeavor to develop natural gas pipelines …that offer commercially reasonable rates for shippers and access for shippers who produce natural gas…*

The proposed ASAP Project would help meet the statewide demand for improved access to an energy source that is clean, reliable, and affordable. In 2013, the Alaska State Legislature enacted Senate Bill 23, authorizing the Alaska Industrial Development and Export Authority to finance a project to provide some Fairbanks North Star Borough (FNSB) communities with liquefied natural gas (LNG) by truck until an in-state gas pipeline could be developed (AS 44.88.010(a)).

Improved access to natural gas would help to improve air quality in the Fairbanks area, which is adversely affected by widespread combustion of wood and coal. Electricity is distributed to the Fairbanks area by the Golden Valley Electric Association and is supplied by 10 generation plants fueled by 35 percent natural gas, 28 percent coal, and 25 percent oil. Construction of a second coal power plant in Healy has increased the baseload of coal-fired generation and contributes to long-term stability. Fairbanks is currently classified as an air quality Non-attainment Area by the Alaska Department of Environmental Conservation (ADEC) and the U.S. Environmental Protection Agency (EPA). The Fairbanks air quality Non-attainment is described in detail in documents provided on ADEC's Division of Air Quality website: http://dec.alaska.gov/air/pm2-5_ak.htm. Infrastructure for local gas distribution is currently being developed in and around Fairbanks, and a reliable supply of natural gas would result in cleaner air, as well as more affordable heating and electric power generation.

The proposed ASAP Project would provide up to 500 million standard cubic feet per day (MMscfd) of natural gas from North Slope gas reserves to in-state markets, which would meet current and projected future in-state energy demands (AGDC, 2014; Northern Economics, Inc., 2010), as well as help improve air quality in the Fairbanks area. The proposed ASAP Project would transport natural gas; therefore, it would be accessible to communities adjacent to the line that choose to tap into it and develop the required infrastructure for its use. The proposed Project would make expansion of commercial and industrial enterprises possible statewide. It would also provide a substantial number of jobs to Alaskans and economic benefit to the State of Alaska through royalties.

AGDC (2016)[1] presented an overview of the current and future (2040) natural gas demand for the proposed Project Area by demand segment[2] as follows:

- Current Demand: 214 MMscfd – Southcentral area current demand
- Future Demand: 332.4 to 422 MMscfd – Total
    - 243 to 295 MMscfd – Southcentral area future demand
    - 41 to 50 MMscfd – Fairbanks area[3] future demand
    - 15 to 17 MMscfd – Interior power generation
    - 30 to 40 MMscfd – Mining operations
    - 3.4 to 20 MMscfd – Small communities within 50 miles of pipeline

With an estimated supply of 500 MMscfd of natural gas to in-state markets, the natural gas supply provided by the proposed ASAP pipeline would meet the current demand (214 MMscfd) as well as the estimated future demand (332.4 to 422 MMscfd) in Alaska.

The public benefit of the proposed ASAP Project is the potential for delivery of a long-term, reasonably priced supply of natural gas to Southcentral, Fairbanks, and other Alaskan communities for:

- Heating homes, public safety facilities, military bases, and businesses.
- Generating electrical energy.
- Continuing economic stability and growth by supporting industrial users.
- Accommodating future population growth and increased commercial usage served by the existing ENSTAR Natural Gas Company's distribution system, and for the Fairbanks/North Pole area and other Railbelt communities.
- Improving air quality in the Fairbanks area, which is currently classified as an air quality Non-attainment Area by ADEC and EPA (see ADEC Division of Air Quality website: https://dec.alaska.gov/air/PM2-5_AK.htm).
- Promoting Compressed Natural Gas (CNG) as a substitute for gasoline and diesel fuel used by cars and trucks in Fairbanks; for use by communities along the Parks Highway, including tour buses in Denali National Park and Preserve (NPP); and for use by Anchorage and communities on the Kenai Peninsula.
- Providing CNG for distribution to rural Alaska communities via the Yukon and Tanana rivers and marine barges from Cook Inlet.

[1] Report based on publicly available information regarding historical natural gas use, capacities, generation assets, gas purchase contracts, and other public documents to develop the forecast results discussed herein.
[2] Includes southcentral natural gas utilities, southcentral electric utilities, industry (Cook Inlet field operations, Tesoro oil refinery, and other small consumers)
[3] Includes Fairbanks Natural Gas and Interior Natural Gas Utility

- Facilitating the development of infrastructure to allow more economic development of mining and oil and gas projects.

In many regions in Alaska, there is no long-term source of fuel other than heating oil. Alaska's North Slope has more than 30 trillion cubic feet of conventional natural gas reserves. A pipeline is a proven and efficient way to transfer this energy source and develop it for the benefit of Alaskans. AGDC's proposed action meets the goal of providing a stable, long-term supply of clean, affordable energy to both developed and developing markets within Alaska, including Southcentral, Fairbanks, and the Railbelt.

1.3. Description of the Project Area

The proposed Project Area spans from Prudhoe Bay in northern Alaska to Point MacKenzie in southcentral Alaska. Beginning in Prudhoe, the pipeline corridor generally parallels the Trans-Alaska Pipeline System and the Dalton highway northwest of Fairbanks. At Livengood, the corridor continues on the west side of Fairbanks and Nenana. The corridor bypasses Denali National Park and Preserve to the east and generally parallels the Parks Highway to Willow. Southwest of Big Lake, the corridor connects to ENSTAR's distribution system at milepost (MP) 39 of the Beluga Pipeline. A lateral line to Fairbanks runs east along Murphy Dome and ends on the west side of University of Alaska Fairbanks.

1.4. Description of the Public Process

Scoping activities began on August 1, 2014, when the Notice of Intent was published in the *Federal Register* (79 FR 44758) for the scoping comment period, which ended on October 14, 2014.

On June 30, 2017, the Notice of Availability (NOA) was published in the *Federal Register* (82 FR 29859 and 82 FR 39424) announcing the public comment period for the Draft SEIS, which ended on August 29, 2017. Attachment A provides a copy of the NOA.

The aim of the public comment process is to invite potentially affected and interested individuals, agencies, and groups to help:

- Share information and identify concerns about the proposed action;
- Define a range of alternatives;
- Determine and define the scope of issues to be examined;
- Identify other environmental and consultation requirements;
- Gather additional information regarding potential effects of the proposed action; and
- Inform and identify potentially interested parties.

Central to the public comment process is to gather input on the proposed action and alternatives presented in the Draft SEIS.

A basic principle of public participation is reporting back to stakeholders about the process in which they take part. In keeping with a transparent process, this Public Comment Analysis Report has been posted on the website (http://www.asapeis.com) and those who are included in the email list received an email notification of such posting.

Public comments were received through August 29, 2017, and are summarized in this Public Comment Analysis Report. Comment analysis materials are included as attachments and include:

- Attachment A: Federal Register and Public Notices
- Attachment B: Public Announcements
- Attachment C: Meeting Sign-in Sheets
- Attachment D: Comment Summary Statements and Responses Report
- Attachment E: Meeting Transcripts
- Attachment F: Comments on FSEIS

1.4.1. Public Comment Period Meeting Notices

Public notices for public comment meetings were announced in the newspapers in Table 1. The public notices outlined the general purpose of the meeting, meeting times and locations, and the agenda for the meetings. Public notices were published 30 days in advance of each meeting and again 7 days prior to the meeting date. Public service announcements were also made several times leading up to each meeting on local radio stations listed in Table 1.

Table 1 Newspapers and Radio Stations

Newspaper Notices	**Dates of Publication**
Alaska Dispatch News 1001 Northway Dr. Anchorage, AK 99508 907-257-4200	June 30, 2017 and July 25, 2017
Arctic Sounder PO Box 241582, Anchorage, AK 99524 907-770-0820	June 15, 2017 and July 6, 2017
Fairbanks Daily News-Miner PO Box 70710, Fairbanks, AK 99707 907-456-6661	June 20, 2017 and July 13, 2017
Radio Station Public Service Announcements	
KUAC fm 312 Tanana Drive, Fairbanks, AK 99775 907-474-7491	KIAM am/fm PO Box 474, Nenana, AK 99760 907-832-5426
KBRW am/fm 1695 Okpik St. Barrow, AK 907-852-6811	KTNA fm PO Box 300, Talkeetna, AK 99676 907-733-1700

1.4.2. Public Meetings

Public meetings were held in 11 Alaska communities. Meetings were held between 5:30 p.m. and 8:30 p.m.; except for Anchorage where the meeting was held between 6:30 p.m. and 9:30 p.m. Table 2 shows the dates and locations of these meetings. Official transcripts from the public meetings are included as Attachment E.

Table 2 Dates and Locations of Public Meetings

Date	Location	Venue	Venue Address
July 17, 2017	Barrow	Inupiat Heritage Center	5421 North Star Street Barrow, AK 99723
July 18, 2017	Nuiqsut	Kisik Community Center	PO Box 89148 Nuiqsut, AK 99789
July 20, 2017	Fairbanks	Westmark Hotel	813 Noble Street Fairbanks, AK 99701
July 25, 2017	Bettles/ Evansville	Evansville Community Hall	PO Box 26087 Bettles Field, AK 99726
July 26, 2017	Wiseman	Community Center of Wiseman	Wiseman, AK
July 28, 2017	Minto	Tentatively scheduled at Minto Lake View Lodge	Lake View Road Minto, AK 99758
August 1, 2017	Anchorage	APU Lecture Hall	4101 University Drive Anchorage, AK 99508
August 2, 2017	Healy	Tri-Valley Community Center	1 Healy Spur Road Healy, AK 99743
August 3, 2017	Cantwell	Cantwell Community Hall	Cantwell, AK 99729
August 4, 2017	Trapper Creek	Trapper Creek Community Park Facility	East TC Park Circle
August 18, 2017	Willow	Willow Community Center	PO Box 1027 Willow, AK 99688

2. COMMENT ISSUE SUMMARY

The analysis of public comments was a multi-stage process that included coding, sorting, and summarizing public comment submissions into categories based on common themes. The goal of this process was to ensure that each substantive comment pertinent to the Draft SEIS was analyzed. Substantive comments constitute assertions, suggested alternatives or actions, data, background information, or clarifications relating to the Draft SEIS document or its preparation. Analysts then assigned each substantive comment to an issue category (see Table 3).

Table 3 Issue Codes and Descriptions

Code	Issue Text	Description
ACC	Access to Land/Property	Comments that discuss property/land access.
ACK[a]	Acknowledged	Acknowledges the receipt of the communication that may be related to another topic other than the proposed ASAP Project.
AIR	Air Quality or Emissions/Climate Change/Greenhouse Gases	Comments related to air quality, air emissions, climate change, or greenhouse gas (GHG) emissions.
AKN	Alaska Native Issues	Comments on the analysis of the cultural and social impacts of the alternatives on Alaska Natives.
ALT	Alternatives	Comments that support or reject the preferred alternative or suggest new alternatives or alignments.
CUL	Archeological/ Cultural Resources	Comments regarding the archeological/cultural resources impacts of the Project.
ECO	Economy	Comments regarding economic impacts of the proposed Project.
EDI	Editorial	Comments providing suggestions for improving the organization and readability of the document as well as accuracy of the content.
EFF	Effects of the Proposed Project/ Analysis of Effects	Comments on the potential effects of the proposed Project, analysis of effects (including direct, indirect, and cumulative), or the methods developed to analyze the alternatives.
ENG	Engineering/Project Design/Project Description	Comments discussing Project engineering, Project design (including gas composition), or proposed changes.
FISH	Fish	Comments regarding fish and fish habitat.
GEO	Soils, Geology, Permafrost	Comments regarding soils, geology, and permafrost.
HAZ	Hazardous Material	Comments regarding potential risks related to hazardous materials or handling of hazardous materials associated with the proposed Project.
HIA	Health Impacts	Comments related to the health impact assessment in the NEPA process or concern about health impacts.

Code	Issue Text	Description
INA	Inadequate Information to Assess Effects/Unclear Information	Comments stating the information provided in the analysis of the alternatives or potential effects is inadequate, inaccurate, or confusing.
LNG	LNG pipeline	Comments comparing ASAP to the LNG pipeline project.
MIT	Mitigation/ Monitoring	Comments related to mitigation and monitoring associated with the proposed Project.
NEPA	National Environmental Policy Act	Comments regarding the NEPA and SEIS process.
NOI	Noise	Comments regarding noise concerns.
NOTE	Notification of Meeting	Comments regarding notification issues.
PER	Permits	Comments on permits and the permitting process.
PUR	Project Purpose and Need	Comments regarding the Project purpose and need.
REC	Recreation	Comments regarding recreation concerns.
RFI	Request for Information	Comments requesting information including maps, presentations, or descriptions of locations.
SPILL	Spills (Oil Spills, Response, or Planning)	Comments related to potential oil spills, spill response, or planning.
SUB	Subsistence	Comments on potential impacts to subsistence activities.
VIS	Visual Resources	Comments regarding visual/scenic resources.
WAS	Trash/Waste	Comments regarding effects of trash/waste during construction and operation.
WET	Wetlands/Water	Comments regarding wetlands, streams, rivers, or associated vegetation.
WLD	Wildlife	Comments regarding potential effects on wildlife or wildlife-related issues with the proposed pipeline.

[a] These comments are not included in the total as substantive to the proposed action.

A second review of the comments within each issue category was conducted to identify specific subcategories. These subcategories were then synthesized into succinct "Comment Summary Statements" that intend to capture the particular concern within each issue category. Comment Summary Statements are not intended to replace actual comments. Rather, they summarize the range of concerns on a specific issue.

2.1. Source and Number of Public Comments

Comments submitted during the Draft SEIS public comment period came from the following sources:

- Public meetings
- Written comments received by U.S. mail to USACE – CEPOA – RD, Ms. Sandy Gibson, PO Box 6898, JBER, AK 99506-0898

- Via email to asapeiscomments@erm.com (a link was also provided on the website at http://www.asapeis.com)

A total of 81 submissions were received in addition to 26 from public hearings (including verbal testimony and comment forms). These submissions generated a total of 750 substantive comments: 75 from public hearing testimony and 675 from emails and letters.

Comments from cooperating agencies received during the 30-day public notice of the Final SEIS have been included in Attachment A, along with responses from AGDC.

2.2. Issues Identified During Public Comment Period

In all, 30 issues were raised by stakeholders during the Draft SEIS comment period. These issues are defined in Table 3. Figure 1 presents the number of comment summary statements raised by stakeholders on specific issues during the public comment period.

Table 4 is an index that provides a list of numbered issue codes associated with specific submissions received.

2.3. Comment Summary Statements and Responses

Attachment D contains comment summary statements and responses developed from substantive comments received during the Draft SEIS comment period.

Those who submitted comments can use Table 4 in conjunction with Attachment D to determine which summary statements represent their comment(s) and the associated responses. First, use Table 4 to locate the sender's name, review the correlating issue codes listed, and then see Attachment D for the list of summary statements and responses, which are organized by general issue and number.

Figure 1 Number of Comment Summary Statements on Issues Raised during Public Comment Period

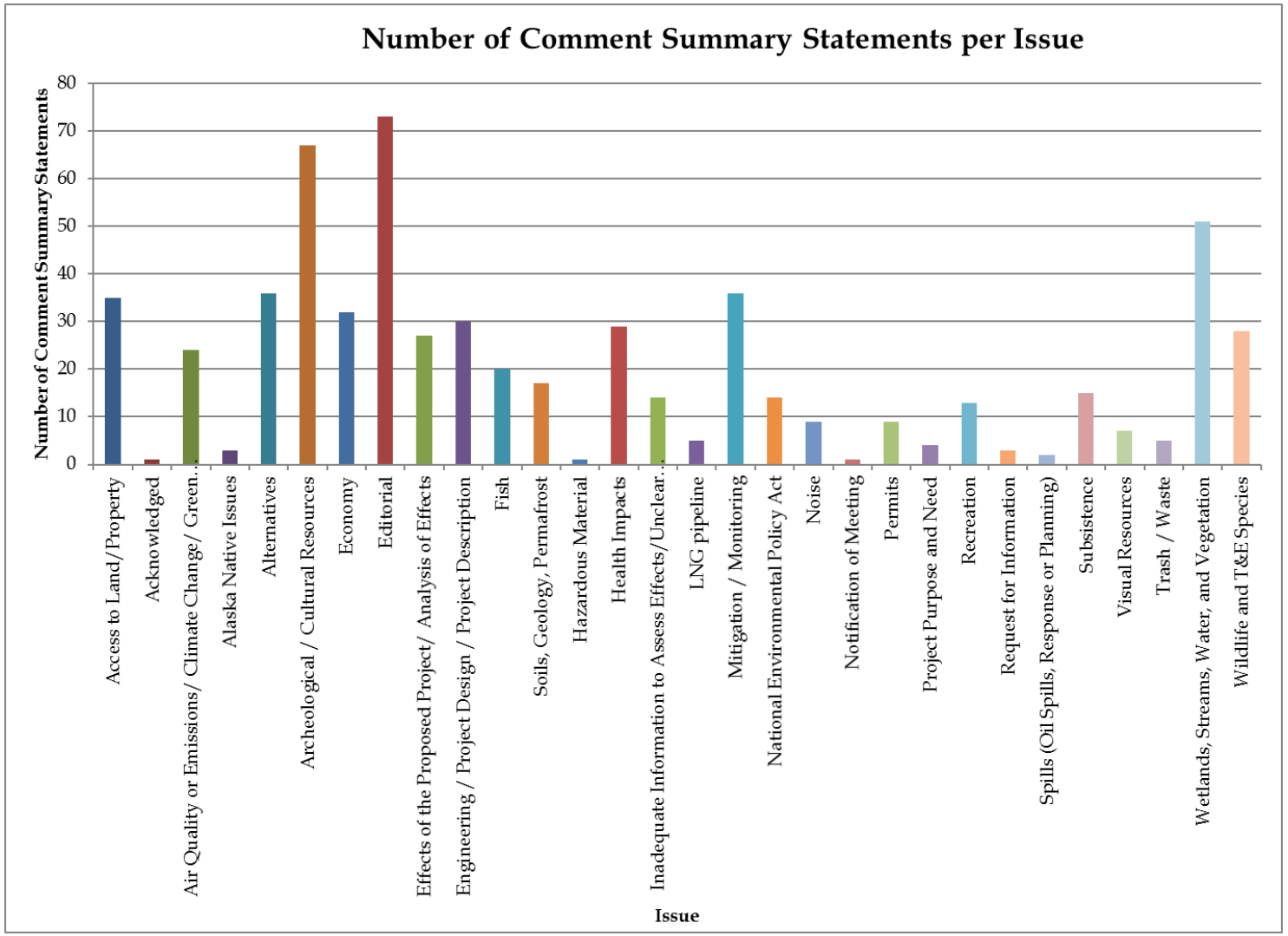


Table 4 Public Comment Index

Sender Name	Affiliation	Issue Code(s)
Ahmakak	None	ACK_1
Ahnupkana	None	HIA_1, SUB_7, WLD_4
Allnutt	EPA	AIR_20, AIR_22, AIR_9, ALT_27, ALT_7, ALT_8, EFF_24, EFF_25, EFF_26, EFF_27, ENG_24, ENG_26, INA_10, INA_11, INA_12, INA_13, INA_9, MIT_30, MIT_31, MIT_32, MIT_33, MIT_34, MIT_35, MIT_36, WET_10, WET_27, WET_32, WET_49, WET_50, WET_9
Anderson	Ahtna, Inc	ACC_6, ECO_9, ENG_27, INA_1, MIT_18, NEPA_1, SPILL_1, SUB_2, WLD_2
Bale	Denali Citizens Council	ALT_33, ALT_34, ECO_20, ECO_21, MIT_9, PUR_3, VIS_3
Balsiger	NMFS	FISH_3, FISH_4
Boelman	Columbia University Lamont-Doherty Earth Observatory	ACC_5
Boeve	Willow Area Community Organization	NOTE_1
Bond	None	AKN_1, RFI_2, WET_3
Boothby	Matanuska Susitna Borough, Planning and Land Use	PER_3
Bovee	Ahtna Inc	ACC_6, INA_1, NEPA_1, SUB_2, WLD_2
Bret-Harte	University of Alaska Fairbanks	ACC_5
Bronowski	None	ACC_7, ECO_7, NEPA_2, PUR_1
Brower	None	MIT_2, SUB_4
Brower	North Slope Borough (Mayor)	ALT_1, ALT_32, ENG_4, ENG_7, ENG_8, MIT_8, WLD_3
Brower, Eunice	Native Village of Nuiqsut	HIA_3, SUB_5
Casto	None	ACC_18
Charles	None	REC_4
Charles, Steve	Willow Trail Committee	ALT_30, REC_4
Chavez	None	ACC_1
Chester	None	ALT_35
Christian	Mechanical Contractors of Fairbanks Inc	ALT_1, ALT_2
Clay	None	ENG_6, NEPA_4
Conn	USFWS	ALT_35, ALT_36, ECO_22, EDI_1, EFF_5, EFF_6, EFF_7, MIT_10, MIT_11, MIT_12, MIT_13, MIT_14, MIT_15, NEPA_10, WET_7, WLD_5
Cooper	None	WET_1
Costello	Evansville Tribal Council	ECO_1
Crosby	None	ACC_1, ALT_12, INA_2, LNG_3, MIT_6, NEPA_5, NEPA_6, PUR_2, REC_3
Desmond	Western Mechanical, Inc	ALT_1, ALT_2

Sender Name	Affiliation	Issue Code(s)
Dick	None	ALT_20
Dorrepaal	Umeå University Department of Ecology and Environmental Science	ACC_5, ALT_28
Dupey	None	ECO_8, EFF_3, WET_4
Fernando	None	ACC_3
Fitzhugh	Hawk Consultants LLC	ALT_1, ALT_2
Fournier	None	ECO_4
Frankevich	National Parks Conservation Association	ALT_29, ECO_19
George	None	SUB_1, SUB_8
Glatt	None	ALT_1, ALT_4, ECO_3
Gough	Towson University	ACC_5
Grenier	None	ECO_14
Guthrie	None	REC_1
Hobrle	None	ENG_1
Holland	None	LNG_1
Houchen	Brena, Bell & Clarkson Attorneys at Law	ACK_1
Hugo	None	WAS_3
Itta	Native Village of Nuiqsut	AKN_3, ECO_8, MIT_4
Johnson	BLM	AIR_10, ALT_22, CUL_31, CUL_32, CUL_33, CUL_34, CUL_35, CUL_36, CUL_37, CUL_38, CUL_39, CUL_40, CUL_41, CUL_42, CUL_43, CUL_44, CUL_45, CUL_46, CUL_47, CUL_49, CUL_50, EDI_73, ENG_29, GEO_16, MIT_19, MIT_20, MIT_21, MIT_22, MIT_23, MIT_24, MIT_25, REC_10, REC_11, REC_12, REC_13, REC_9, VIS_7, WET_38, WET_39, WET_40, WET_41, WET_42, WLD_20, WLD_21
Johnson	U.S. Department of the Interior	ACK_1, ENG_28, GEO_5, GEO_6, WET_33, WET_34, WET_35, WET_36, WET_37, WLD_18, WLD_19
Johnson	USFWS	ALT_35, ALT_36, EFF_23, EFF_5, EFF_6, EFF_7, ENG_30, GEO_15, MIT_11, MIT_12, MIT_13, MIT_14, NEPA_10, WET_47, WET_48, WLD_19, WLD_23, WLD_24, WLD_5
Justice	None	REC_1
Kassel	Fairbanks North Star Borough (Mayor)	ALT_18, ECO_23, EFF_8, HIA_2, NEPA_12, PUR_4
Knight	City of Valdez (Mayor)	ALT_5, NEPA_11, PUR_4
Lamb	Alaska Energy Authority	ALT_1
Lundstrum	None	ACC_1
Mack	ADNR	ALT_1, ALT_2
MacKinnon	Associated General Contractors of Alaska	ALT_1, ALT_2
McLaren	University of Texas at El Paso	ACC_5

Sender Name	Affiliation	Issue Code(s)
Moderow	None	ACC_16, ALT_26, INA_5, NEPA_9, VIS_2 , WET_6
Morgan	None	ECO_8
Mulligan	Alaska Chamber	ALT_1
Murkowski	U.S. Senate	ALT_24, ECO_16, ECO_17
Murrell	ADEC	AIR_11, AIR_12, AIR_13, AIR_14, AIR_15, AIR_16, AIR_17, AIR_18, AIR_19, AIR_21, AIR_23, AIR_24, AIR_5, AIR_6, EDI_63, EDI_64, EDI_65, EDI_66, EDI_67, EFF_10, EFF_11, EFF_12, EFF_13, EFF_14, EFF_15, EFF_16, EFF_17, EFF_18, EFF_19, EFF_20, EFF_21, HAZ_1, HIA_29, LNG_4, LNG_5
Murrell	ADEC - Division of Water - Wastewater Discharge Authorization Program	PER_4, PER_8, SPILL_2, WAS_5, WET_46
Murrell	ADF&G	ACC_34, EDI_58, EDI_59, FISH_10, FISH_11, FISH_12, FISH_13, FISH_14, FISH_15, FISH_16, FISH_17, FISH_18, FISH_19, FISH_20, PER_9, SUB_11, WET_43, WET_44, WET_45, WLD_22
Murrell	ADNR	FISH_9
Murrell	DHSS	EDI_60,EDI_61,EDI_62,HIA_10,HIA_11,HIA_12,HIA_13,HIA_14,HIA_15,HIA_16,HIA_17,HIA_18,HIA_19,HIA_20,HIA_21,HIA_22,HIA_23,HIA_24,HIA_25,HIA_26,HIA_27,HIA_28,HIA_4,HIA_5,HIA_6,HIA_7,HIA_8,HIA_9,MIT_26,MIT_27,MIT_28,MIT_29, SUB_12,SUB_13,SUB_14,SUB_15
Murrell	DNR-DGGS	AIR_7, ALT_35, ECO_27, EFF_22, GEO_10, GEO_11, GEO_12, GEO_13, GEO_14, GEO_7, GEO_8, GEO_9, WET_51
Murrell	DNR-OHA-SHPO	CUL_19, CUL_28, CUL_48, CUL_51, CUL_52, CUL_53, CUL_54, CUL_55, CUL_56, CUL_57, CUL_58, CUL_59, CUL_6, CUL_60, CUL_61, CUL_62, CUL_63, CUL_64, CUL_65, CUL_66, CUL_67, CUL_9, EDI_72
Murrell	DNR-Water	EDI_68, EDI_69, EDI_70, EDI_71
Navarre	AGDC Community Advisory Committee	ALT_1, ECO_18
Nukapigak, Edward	Nuiqsut Whaling Captain	INA_3, MIT_3, NEPA_7, SUB_5, SUB_6, WLD_4
Nukapigak, Robert	None	INA_4, MIT_5, NEPA_8
Oxley	Willow Area Community Organization	ACC_15, ALT_25
Parker	Fairbanks North Star Borough, Community Platting	PER_3, PER_5
Public	None	ALT_3
Rastetter	University of Chicago Marine Biological Laboratory	ACC_5, ALT_6

Sender Name	Affiliation	Issue Code(s)
Reakoff	Western Interior Regional Advisory Council to the Federal Subsistence Board (Chairman)	ACC_10, ACC_8, ACC_9, ALT_13, ALT_15, ALT_16, EFF_2, ENG_2, FISH_1, FISH_2, SUB_3, WLD_1, WLD_3
Federal Subsistence Board (Chairman)	US Department of the Interior	ACC_10, ACC_8, ACC_9, ALT_13, ALT_15, ALT_16, EFF_2, ENG_2, FISH_1, FISH_2, SUB_3, WLD_1, WLD_3
Richards	AGDC	ACC_17, ACC_19, ACC_20, ACC_21, ACC_22, ACC_23, ACC_24, ACC_25, ACC_26, ACC_27, ACC_28, ACC_29, ACC_30, ACC_31, ACC_32, ACC_33, AIR_1, AIR_2, AIR_3, AIR_4, AIR_8, ALT_2, ALT_31, CUL_1, CUL_10, CUL_11, CUL_12, CUL_13, CUL_14, CUL_15, CUL_16, CUL_17, CUL_18, CUL_2, CUL_20, CUL_21, CUL_22, CUL_23, CUL_24, CUL_25, CUL_26, CUL_27, CUL_29, CUL_3, CUL_30, CUL_4, CUL_5, CUL_7, CUL_8, ECO_24, ECO_25, ECO_26, ECO_28, ECO_29, ECO_30, ECO_31, ECO_32, EDI_10, EDI_11, EDI_12, EDI_13, EDI_14, EDI_15, EDI_16, EDI_17, EDI_18, EDI_19, EDI_2, EDI_20, EDI_21, EDI_22, EDI_23, EDI_24, EDI_25, EDI_26, EDI_27, EDI_28, EDI_29, EDI_3, EDI_30, EDI_31, EDI_32, EDI_33, EDI_34, EDI_35, EDI_36, EDI_37, EDI_38, EDI_39, EDI_4, EDI_40, EDI_41, EDI_42, EDI_43, EDI_44, EDI_45, EDI_46, EDI_47, EDI_48, EDI_49, EDI_5, EDI_50, EDI_51, EDI_52, EDI_53, EDI_54, EDI_55, EDI_56, EDI_57, EDI_6, EDI_7, EDI_8, EDI_9, EFF_1, EFF_9, ENG_10, ENG_11, ENG_12, ENG_13, ENG_14, ENG_15, ENG_16, ENG_17, ENG_18, ENG_19, ENG_20, ENG_21, ENG_22, ENG_23, ENG_25, ENG_9, FISH_5, FISH_6, FISH_7, FISH_8, GEO_1, GEO_17, GEO_2, GEO_3, GEO_4, INA_14, INA_6, INA_7, INA_8, MIT_16, MIT_17, NEPA_13, NEPA_14, NOI_1, NOI_2, NOI_3, NOI_4, NOI_5, NOI_6, NOI_7, NOI_8, NOI_9, PER_6, PER_7, REC_5, REC_6, REC_7, REC_8, SUB_10, SUB_9, VIS_4, VIS_5, VIS_6, WAS_4, WET_11, WET_12, WET_13, WET_14, WET_15, WET_16, WET_17, WET_18, WET_19, WET_20, WET_21, WET_22, WET_23, WET_24, WET_25, WET_26, WET_28, WET_29, WET_30, WET_31, WET_8, WLD_10, WLD_11, WLD_12, WLD_13, WLD_14, WLD_15, WLD_16, WLD_17, WLD_25, WLD_26, WLD_27, WLD_28, WLD_6, WLD_7, WLD_8, WLD_9
Rowe	University of New Hampshire	ACC_5
Sattler	Tanana Chiefs Conference	ACC_12, AKN_2, NEPA_3

Sender Name	Affiliation	Issue Code(s)
Smolden, Carrie	None	REC_4
Smoldon, Carrie	None	ECO_15, EFF_4, REC_4
Smoldon, Todd	None	MIT_7
Stackhouse	None	ALT_14, ECO_5, ECO_7
Stinson	Price Gregory International Inc	ALT_1
Strasenburgh	None	ACC_14, ALT_10, ALT_11, ALT_9, LNG_2, MIT_1, REC_2 , VIS_1, WET_5
Swanson	Evansville Tribal Council	ECO_6, ENG_3
Tansy	None	ACC_11, ACC_6
Therriault	Alaska Industrial Development and Export Authority, Interior Energy Project	ALT_1, ECO_10
Thompson	Evansville Tribal Council (First Chief)	RFI_1
Thorne	None	ACC_4, ALT_13, ECO_1, WET_2
Titus	Village of Minto (Second Chief)	ACK_1, ECO_1, ECO_11, ECO_12, SPILL_1
Troyer	None	REC_1
Turnbull	None	ALT_23
Veats	None	WAS_1, WAS_2, WLD_1
Wait	None	RFI_3
Walker	Denali Borough (Mayor)	ALT_7
Walsh	Petrotechnical Resources of Alaska LLC	ALT_1, ALT_2
Weiser, Josh	None	ACC_2, ACK_1, ALT_14, ALT_21, PER_2
Weiser, Vera	None	ACC_2, SPILL_1
Wilder	None	ECO_13
Woods	Manley Hot Springs (Chief)	ALT_3, ECO_2
Wuttig	Alyeska Pipeline	ACC_13, ALT_17, ALT_19, ENG_4, ENG_5, PER_1

3. RESPONSE TO COMMENTS AND THE SEIS PROCESS

In accordance with the NEPA process, the Final SEIS has been modified based on comments received during the Draft SEIS public comment period. For example, specific comments resulted in changes to the proposed pipeline route or location of ancillary facilities such as access roads or camps.

USACE, along with the cooperating agencies, has analyzed and responded to substantive comments received in response to the Draft SEIS. These comments and responses have been assimilated and published in this Public Comment Analysis Report. Table 1.10-2 in the FSEIS captures the issues identified during the comment period and where in the Final SEIS those comment topics are discussed

4. CONTACT

For further information regarding this Public Comment Analysis Report or other aspects of the ASAP Project SEIS, please contact:

Jason Berkner
Project Manager
USACE – CEPOA – RD
P.O. Box 6898, 2204 3rd. St.
JBER, AK 99506
jason.r.berkner@usace.army.mil

References

AGDC (Alaska Gasline Development Corporation). (2014). *Alaska Stand Alone Pipeline/ASAP – Plan of Development*. Revision 3. 001-C-22-PRO-W-0001. June 20, 2014. Website: http://asapgas.agdc.us/pdfs/documents/pod2014/POD%20Rev%203_Final_07-22-2014_COMBINED.pdf. Accessed October 9, 2014.

AGDC. (2016). *Alaska Stand Alone Pipeline/ASAP Project – Environmental Evaluation Document*. 001-C-22-GRD-W-0055. July 15, 2016. Website: http://asapgas.agdc.us/documents.html.

Northern Economics Inc. (2010). *In-state Gas Demand Study Vol. 1: report prepared for TransCanada Alaska Co. LLC*. January.

USACE (U.S. Army Corps of Engineers). (2017). *Alaska Stand Alone Pipeline Project Draft Supplemental Environmental impact Statement*. June 2017. Website: http://www.asapeis.com/docs.html.

ATTACHMENT A

Federal Register and Public Notices

- Page Intentionally Left Blank –

and homes. This area has been subject to past sand placement activities sponsored by both the VBHI and the Corps. The Corps has placed several million cubic yards of suitable material on this shoreline since 1991 as part of a Federal navigation project. To address its erosion issue, the VBHI desires to implement a long-term beach and dune stabilization strategy to include installation of a single terminal groin at the western end of South Beach. The proposed terminal groin would be expected to perform the following functions: (1) Reduce inlet-directed sand losses from beach fill projects; and (2) stabilize shoreline alignment along the westernmost segment of South Beach in such a manner that alongshore transport rates are reduced. The terminal groin would serve as a ''template'' for fill material placed eastward (of the proposed terminal groin). The proposed groin has been designed as a ''leaky'' structure (*i.e.,* semi-permeable) so as to provide for some level of sand transport to West Beach (located northward and downdrift of the proposed groin).

2. Issues. There are several potential environmental and public interest issues that are addressed in the FEIS. Additional issues may be identified during the public review process. Issues initially identified as potentially significant include:

a. Potential impacts to marine biological resources (benthic organisms, passageway for fish and other marine life) and Essential Fish Habitat.

b. Potential impacts to threatened and endangered marine mammals, reptiles, birds, fish, and plants.

c. Potential for shoreline changes on West Beach of Bald Head Island and adjacent areas.

d. Potential impacts to Navigation, commercial and recreational.

e. Potential impacts to the long-term management of the oceanfront shorelines.

f. Potential effects on regional sand sources and sand management practices.

g. Potential effects of shoreline protection.

h. Potential impacts on public health and safety.

i. Potential impacts to recreational and commercial fishing.

j. Potential impacts to cultural resources.

k. Cumulative impacts of future dredging and nourishment activities.

3. Alternatives. Several alternatives are being considered for the proposed project. These alternatives, including the No Action alternative, were further formulated and developed during the scoping process and are considered in the FEIS. A summary of alternatives under consideration are provided below:

- Alternative #1: No-Action (includes component of Status-Quo)
- Alternative #2: Retreat
- Alternative #3: Beach Nourishment/ Disposal with Existing Sand Tube Groinfield to Remain in Place
- Alternative #4: Beach Nourishment/ Beach Disposal and Sand Tube Groinfield Removal
- Alternative #5: Terminal Groin with Beach Nourishment/Beach Disposal (Sand Tube Groinfield Remaining)
- Alternative #6: Terminal Groin with Beach Nourishment/Disposal (Removal of Sand Tube Groinfield)

4. Scoping Process. Project Review Team meetings were held to receive comments and assess concerns regarding the appropriate scope and preparation of the DEIS. Federal, state, and local agencies and other interested organizations and persons participated in these Project Review Team meetings.

The Corps has completed consultation with the United States Fish and Wildlife Service under the Endangered Species Act and the Fish and Wildlife Coordination Act and with the National Marine Fisheries Service under the Magnuson-Stevens Act and Endangered Species Act. Also, the Corps has initiated consultation with the National Marine Fisheries Service under the Endangered Species Act and the Fish and Wildlife Coordination Act. Additionally, the EIS assesses the potential water quality impacts pursuant to Section 401 of the Clean Water Act, and is coordinated with the North Carolina Division of Coastal Management (DCM) to insure the projects consistency with the Coastal Zone Management Act. The COE has coordinated closely with DCM in the development of the EIS to ensure the process complies with State Environmental Policy Act (SEPA) requirements, as well as the NEPA requirements. The Final EIS has been designed to consolidate both NEPA and SEPA processes to eliminate duplications.

6. Availability of the FEIS. The FEIS has been published and circulated. The FEIS for the proposal can be found at the following link, *http://www.saw.usace.army.mil/Missions/RegulatoryPermitProgram/PublicNotices.aspx,* under the VBHI Terminal Groin Project.

Dated: July 23, 2014.

Scott McLendon,

Chief, Regulatory Division.

[FR Doc. 2014–18256 Filed 7–31–14; 8:45 am]

BILLING CODE 3720–58–P

DEPARTMENT OF DEFENSE

Department of the Army, Corps of Engineers

Intent To Prepare a Draft Supplemental Environmental Impact Statement (DSEIS) for the Alaska Gasline Development Corporation (AGDC)'s Proposed Alaska Stand Alone Pipeline (ASAP) Utility-Grade Natural Gas Transportation Pipeline

AGENCY: U.S. Army Corps of Engineers, DoD.

ACTION: Notice of Intent.

SUMMARY: The Alaska District, U.S. Army Corps of Engineers (Corps) intends to prepare a DSEIS to identify and analyze the potential impacts associated with the construction of the proposed ASAP utility grade natural gas transportation pipeline. The Corps is the lead federal agency and currently the National Park Service (NPS), U.S. Fish and Wildlife Service (USFWS), U.S. Bureau of Land Management (BLM), U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration (PHMSA), U.S. Environmental Protection Agency (EPA), and the State of Alaska Department of Natural Resources State Pipeline Coordinator's Office (SPCO) are participating as cooperating agencies in the DSEIS development process. The Supplemental Environmental Impact Statement (SEIS) will be used as a basis for the Corps permit decision and to ensure compliance with the National Environmental Policy Act (NEPA). The Corps will be evaluating a permit application for work under Section 10 of the Rivers and Harbors Act, Section 404 of the Clean Water Act, and Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. Because ASAP would require decisions and actions by other federal agencies (such as right-of-way grants and other permits), this DSEIS will also fulfill the NEPA requirements for those cooperating federal agencies.

FOR FURTHER INFORMATION CONTACT: Questions about the proposed action and the DSEIS can be answered by: Ms. Mary Romero, Regulatory Division, telephone: (907) 753–2773, toll free in AK: (800) 478–2712, fax: (907) 753–5567, email: *asapeiscomments@usace.army.mil,* or mail: U.S. Army Corps of Engineers, CEPOA–RD, Post Office Box 6898, JBER, Alaska 99506–0898. Additional information may be obtained at *www.asapeis.com.*

SUPPLEMENTARY INFORMATION:

1. The permit applicant, the AGDC, has proposed, ''The purpose of the

Alaska In-State Gas Pipeline (now known as ASAP) is codified in state law as one of the projects the Alaska Gasline Development Corporation (AGDC) is directed to develop. As stated in state law, AGDC ''shall, for the benefit of the state, to the fullest extent possible, . . . develop, finance, construct, and operate an in-state natural gas pipeline in a safe, prudent, economical, and efficient manner, for the purpose of making natural gas, including propane and other hydrocarbons associated with natural gas other than oil, available to Fairbanks, the Southcentral region of the state, and other communities in the state at the lowest rates possible.'' (Alaska Statute 31.25.005(4)).

The ASAP Project would be comprised of a natural gas conditioning facility (GCF) near Prudhoe Bay capable of producing 500 MMscfd of utility-grade natural gas; a 36-inch, 727-mile long, 1,480 psig subsurface natural gas pipeline connecting the GCF to the existing ENSTAR pipeline system in the Matanuska-Susitna Borough; and a 12-inch, 29-mile long, 1,480 psig, subsurface lateral line connecting the mainline to Fairbanks. The GCF would be constructed from modules delivered to the existing West Dock causeway in Prudhoe Bay. Facilitating transport and offload of these modular components will require modifications to dock head 3, winter dredging of a navigational channel to a 10-ft depth, nearshore dispersion of dredge material over bottomfast ice, channel screeding, and use of a temporary ballasted barge bridge during offload. The proposed pipeline would be buried except at possible fault crossings, elevated bridge stream crossings, pigging facilities, and block valve locations. Because the pipeline system would be designed to transport utility-grade natural gas, access to smaller communities would be possible. The ASAP route would generally parallel the Trans-Alaska Pipeline System (TAPS) and Dalton Highway corridor to near Livengood, northwest of Fairbanks. At Livengood, the route would continue south, to the west of Fairbanks and Nenana. The pipeline would bypass Denali National Park and Preserve to the east and would then generally parallel the Parks Highway corridor to Willow, continuing south to its connection with ENSTAR's distribution system at MP 39 of the Beluga Pipeline southwest of Big Lake. The Fairbanks Lateral tie-in would be located approximately two miles south of the Chatanika River, crossing at MP 439 of the mainline. From the mainline tie-in, the Fairbanks Lateral pipeline would traverse east over Murphy Dome, following the Murphy Dome and Old Murphy Dome Roads, and then extend southeast into Fairbanks.

2. *Alternatives:* The Corps will evaluate alternatives including the no action alternative, the proposed action alternative, and other on-site and off-site alternatives. The proposed project and the alternatives to its proposed size, design, and location will be developed through the EIS process and considered along with those routes and variations discussed in the 2012 FEIS.

3. *Scoping Process:* The scoping period will begin on August 1, 2014, and end on October 14, 2014.

a. The Corps invites full public participation to promote open communication on the issues surrounding the proposal. All federal, state, Tribal, local agencies, and other persons or organizations that have an interest are urged to participate in the NEPA scoping process. Scoping meetings will be held to receive public input on the proposed purpose and need of the project, to identify significant issues and to discuss proposed alternatives. The scoping process will help to further explain the purpose and need plus the alternatives to be reviewed in the DSEIS.

b. Scoping Meetings

Public scoping meetings will be held 5:30–8:30 p.m. on the following dates and locations (exceptions indicated in parentheses). Please check the project Web site (*www.asapeis.com*) for potential updates to scoping meeting dates and locations:

1. Healy, Monday, August 18, 2014; Tri-Valley Community Center, Usibelli Spur Rd, Healy, AK 99743;

2. Nenana, Tuesday, August 19, 2014; Nenana Native Village Tribal House, PO Box 369, Nenana, AK 99760;

3. Cantwell, Wednesday, August 20, 2014; Cantwell Community Hall, Cantwell, AK 99729;

4. Talkeetna, Thursday, August 21, 2014; Talkeetna Alaska Lodge, 23601 Talkeetna Spur Rd, Talkeetna, AK 99676;

5. Willow, Monday, August 25, 2014; Willow Community Center, PO Box 1027, Willow, AK 99688;

6. Anchorage, Tuesday, August 26, 2014 (to be held 6:30–9:30 p.m.); UAA Consortium Library, Room 307, Anchorage, AK 99508;

7. Kenai, Wednesday, August 27, 2014; Quality Inn, 10352 Kenai Spur Highway, Kenai, AK 99611;

8. Seward, Thursday, August 28, 2014; KM Rae Building at UAA-Seward Campus, 125 Third Ave, Seward, AK 99664;

9. Fairbanks, Tuesday, September 2, 2014; Westmark Hotel, 813 Noble St, Fairbanks, AK 99701;

10. Wiseman, Wednesday, September 3, 2014; Community Center of Wiseman, Wiseman, AK 99701;

11. Minto, September 4, 2014; (Tentatively scheduled at Minto Lake View Lodge), Lake View Rd, Minto, AK 99758;

12. Anuktuvuk Pass, Wednesday, September 10, 2014 (to be held 1:00–4:00 p.m.); Anuktuvuk Pass Community Center, Anaktuvuk Pass, AK 99721;

13. Barrow, Wednesday, September 17, 2014; Inupiat Heritage Center, PO Box 69, Barrow, AK 99723; and

14. Nuiqsut, Thursday, September 18, 2014; Kisik Community Center, PO Box 89148 Nuiqsut, AK 99789.

Comments can be made through oral testimony or as written comments during scoping meetings. Comments can also be submitted to the Corps by October 14, 2014 via mail or email (*asapeiscomments@usace.army.mil*) (see **FOR FURTHER INFORMATION CONTACT**). We request that you include in your comments: (1) Your name, address, and affiliation (if any); and (2) Any background documents to support your comments as you think necessary.

4. The lands along the proposed pipeline corridor and one or more of its alternatives are owned by numerous entities; including, federal and state governments, the State of Alaska, and private land holders. Federal land managers include the BLM, NPS and the Department of Defense. Private landholders include Native corporations, Native allottees, and land owned by other private individuals.

5. The DSEIS will analyze the potential social, economic, and environmental impacts to the affected areas with particular focus on elements of the pipeline route that are new and different from the route analyzed in the 2012 FEIS. The following major issues will be analyzed in depth in the DSEIS: Construction of the liquid natural gas delivery system, operation, and maintenance and its affect upon the surrounding communities and environment including: essential fish habitat; threatened and endangered species including critical habitat; cultural resources; socioeconomics; and secondary and cumulative impacts.

6. It is anticipated that the DSEIS will be available in spring 2015 for public review. A second public comment period will occur once the FSEIS is released. For updates to the project schedule and for additional details, please go to the project Web site (*www.asapeis.com*).

Dated: July 25, 2014.

Michael Salyer,

North Branch Chief, Alaska District, U.S. Army Corps of Engineers.

[FR Doc. 2014–18266 Filed 7–31–14; 8:45 am]

BILLING CODE 3720–58–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

Combined Notice of Filings

Take notice that the Commission has received the following Natural Gas Pipeline Rate and Refund Report filings:

Filings Instituting Proceedings

Docket Numbers: RP14–1119–000.
Applicants: Dauphin Island Gathering Partners.
Description: Negotiated Rates 7–22–14 to be effective 8/1/2014.
Filed Date: 7/23/14.
Accession Number: 20140723–5061.
Comments Due: 5 p.m. ET 8/4/14.

Docket Numbers: RP14–1120–000.
Applicants: Transcontinental Gas Pipe Line Company.
Description: S–2 Tracker Filing Effective 2014–08–01 to be effective 8/1/2014.
Filed Date: 7/23/14.
Accession Number: 20140723–5101.
Comments Due: 5 p.m. ET 8/4/14.

Docket Numbers: RP14–1121–000.
Applicants: Tallgrass Interstate Gas Transmission, L.
Description: Neg Rate 2014–07–23 DCP Midstream to be effective 7/24/2014.
Filed Date: 7/23/14.
Accession Number: 20140723–5134.
Comments Due: 5 p.m. ET 8/4/14.

Any person desiring to intervene or protest in any of the above proceedings must file in accordance with Rules 211 and 214 of the Commission's Regulations (18 CFR 385.211 and 385.214) on or before 5 p.m. Eastern time on the specified comment date. Protests may be considered, but intervention is necessary to become a party to the proceeding.

Filings in Existing Proceedings

Docket Numbers: RP14–247–002.
Applicants: Sea Robin Pipeline Company, LLC.
Description: Sea Robin 2014 Rate Settlement.
Filed Date: 7/23/14.
Accession Number: 20140723–5114.
Comments Due: 5 p.m. ET 8/4/14.

Any person desiring to protest in any of the above proceedings must file in accordance with Rule 211 of the Commission's Regulations (18 CFR 385.211) on or before 5 p.m. Eastern time on the specified comment date.

The filings are accessible in the Commission's eLibrary system by clicking on the links or querying the docket number.

eFiling is encouraged. More detailed information relating to filing requirements, interventions, protests, service, and qualifying facilities filings can be found at: *http://www.ferc.gov/docs-filing/efiling/filing-req.pdf*. For other information, call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

Dated July 24, 2014.

Nathaniel J. Davis, Sr.,

Deputy Secretary.

[FR Doc. 2014–18140 Filed 7–31–14; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

Combined Notice of Filings #1

Take notice that the Commission received the following electric rate filings:

Docket Numbers: ER07–771–007.
Applicants: Louisville Gas & Electric Company, Kentucky Utilities Company.
Description: Annual Schedule 2 True-Up Filing of Louisville Gas and Electric Company/Kentucky Utilities Company.
Filed Date: 9/12/2013.
Accession Number: 20130912–5073.
Comments Due: 5 p.m. ET 8/15/14.

Docket Numbers: ER07–771–008.
Applicants: Louisville Gas & Electric Company, Kentucky Utilities Company.
Description: Annual Schedule 2 True-Up Filing of Louisville Gas and Electric Company/Kentucky Utilities Company.
Filed Date: 7/18/14.
Accession Number: 20140718–5139.
Comments Due: 5 p.m. ET 8/15/14.

Docket Numbers: ER10–2924–005.
Applicants: Kleen Energy Systems, LLC.
Description: Compliance Filing for Electric Tariff to be effective 7/25/2014.
Filed Date: 7/24/14.
Accession Number: 20140724–5092.
Comments Due: 5 p.m. ET 8/14/14.

Docket Numbers: ER14–1913–001.
Applicants: Oneta Power, LLC.
Description: Amendment to Tariff Filing to be effective 5/9/2014.
Filed Date: 7/24/14.
Accession Number: 20140724–5104.
Comments Due: 5 p.m. ET 8/14/14.

Docket Numbers: ER14–2232–001.
Applicants: Capital Energy LLC.
Description: Updated Asset Appendix to be effective N/A.
Filed Date: 7/24/14.
Accession Number: 20140724–5118.
Comments Due: 5 p.m. ET 8/14/14.

Docket Numbers: ER14–2498–000.
Applicants: EIF Newark, LLC.
Description: Market-Based Rate Application to be effective 9/22/2014.
Filed Date: 7/24/14.
Accession Number: 20140724–5107.
Comments Due: 5 p.m. ET 8/14/14.

Docket Numbers: ER14–2499–000.
Applicants: Oneta Power, LLC.
Description: Notice of Succession of Market_Based Rate Tariff to be effective 7/3/2014.
Filed Date: 7/24/14.
Accession Number: 20140724–5109.
Comments Due: 5 p.m. ET 8/14/14.

Docket Numbers: ER14–2500–000.
Applicants: Newark Energy Center, LLC.
Description: Market-Based Rate Application to be effective 9/22/2014.
Filed Date: 7/24/14.
Accession Number: 20140724–5112.
Comments Due: 5 p.m. ET 8/14/14.

Docket Numbers: ER14–2501–000.
Applicants: EAM Nelson Holding, LLC.
Description: EAM Nelson Holding, LLC, Reactive Power Rate Schedule to be effective 9/1/2014.
Filed Date: 7/24/14.
Accession Number: 20140724–5116.
Comments Due: 5 p.m. ET 8/14/14.

Docket Numbers: ER14–2502–000.
Applicants: Entergy Power, LLC.
Description: Entergy Power, LLC, Reactive Power Rate Schedule to be effective 9/1/2014.
Filed Date: 7/24/14.
Accession Number: 20140724–5117.
Comments Due: 5 p.m. ET 8/14/14.

Docket Numbers: ER14–2503–000.
Applicants: Fitchburg Gas and Electric Light Company.
Description: Normal FGE and KCS Service to be effective 7/1/2014.
Filed Date: 7/25/14.
Accession Number: 20140725–5000.
Comments Due: 5 p.m. ET 8/15/14.

Docket Numbers: ER14–2504–000.
Applicants: Southern California Edison Company.
Description: CLGIA with Windhub Solar, LLC. to be effective 7/26/2014.
Filed Date: 7/25/14.
Accession Number: 20140725–5001.
Comments Due: 5 p.m. ET 8/15/14.

Docket Numbers: ER14–2505–000.
Applicants: Kentucky Utilities Company.
Description: CWIP Modifications to be effective 6/20/2014.
Filed Date: 7/25/14.

- Community Reuse Organization
- Recruitment and Retention

Break
Public Comments
Recommendations Voting
Adjourn

Public Participation: The EM SSAB, Savannah River Site, welcomes the attendance of the public at its advisory committee meetings and will make every effort to accommodate persons with physical disabilities or special needs. If you require special accommodations due to a disability, please contact Susan Clizbe at least seven days in advance of the meeting at the phone number listed above. Written statements may be filed with the Board either before or after the meeting. Individuals who wish to make oral statements pertaining to agenda items should contact Susan Clizbe's office at the address or telephone listed above. Requests must be received five days prior to the meeting and reasonable provision will be made to include the presentation in the agenda. The Deputy Designated Federal Officer is empowered to conduct the meeting in a fashion that will facilitate the orderly conduct of business. Individuals wishing to make public comments will be provided a maximum of five minutes to present their comments.

Minutes: Minutes will be available by writing or calling Susan Clizbe at the address or phone number listed above. Minutes will also be available at the following Web site: *http://cab.srs.gov/srs-cab.html.*

Issued at Washington, DC, on June 26, 2017.

LaTanya R. Butler,

Deputy Committee Management Officer.

[FR Doc. 2017–13807 Filed 6–29–17; 8:45 am]

BILLING CODE 6450–01–P

ENVIRONMENTAL PROTECTION AGENCY

[FRL–9959–95–OA]

Notice of Meeting of the EPA Children's Health Protection Advisory Committee (CHPAC)

AGENCY: Environmental Protection Agency.

ACTION: Notice of meeting.

SUMMARY: Pursuant to the provisions of the Federal Advisory Committee Act, Public Law 92–463, notice is hereby given that the next meeting of the Children's Health Protection Advisory Committee (CHPAC) will be held July 18 and 19 at the Holiday Inn Capitol, 550 C Street SW., Washington, DC 20024. The CHPAC advises the Environmental Protection Agency on science, regulations, and other issues relating to children's environmental health.

DATES: July 18 and 19 at Holiday Inn Capitol in Washington, DC.

ADDRESSES: 550 C Street SW., Washington, DC, 20024.

FOR FURTHER INFORMATION CONTACT: Martha Berger, Office of Children's Health Protection, USEPA, MC 1107T, 1200 Pennsylvania Avenue NW., Washington, DC 20460, (202) 564–2191 or berger. *martha@epa.gov*.

SUPPLEMENTARY INFORMATION: The meetings of the CHPAC are open to the public. An agenda will be posted to *epa.gov/children*.

Access and Accommodations: For information on access or services for individuals with disabilities, please contact Martha Berger at 202–564–2191.

Dated: March 1, 2017.

Martha Berger,

Designated Federal Official.

[FR Doc. 2017–13656 Filed 6–29–17; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[ER–FRL–9033–9]

Environmental Impact Statements; Notice of Availability

Responsible Agency: Office of Federal Activities, General Information (202) 564–7146 or *http://www.epa.gov/nepa.*

Weekly receipt of Environmental Impact Statements (EISs)
Filed 06/19/2017 Through 06/23/2017
Pursuant to 40 CFR 1506.9.

Notice

Section 309(a) of the Clean Air Act requires that EPA make public its comments on EISs issued by other Federal agencies. EPA's comment letters on EISs are available at: *http://www.epa.gov/compliance/nepa/eisdata.html.*

EIS No. 20170111, Final, DOC, PROG, Non-Contiguous Region of the Nationwide Public Safety Broadband Network, Review Period Ends: 07/31/2017, Contact: Amanda Goebel Pereira 202–280–9364.

EIS No. 20170112, Draft Supplement, USACE, AK, Alaska Stand Alone Pipeline Project, Comment Period Ends: 08/14/2017, Contact: Sandy P. Gibson 907–753–2877.

EIS No. 20170113, Final, FERC, WV, Mountain Valley Project and Equitrans Expansion Project, Review Period Ends: 07/31/2017, Contact: Paul Friedman 202–502–8059.

EIS No. 20170114, Draft, USN, VA, Atlantic Fleet Training and Testing, Comment Period Ends: 08/14/2017, Contact: Todd Kraft 757–836–2943.

EIS No. 20170115, Final, USFS, WV, ADOPTION—Mountain Valley Project and Equitrans Expansion Project, Contact: Karen Overcash 540–265–5175.

The U.S. Department of Agriculture's Forest Service (USFS) has adopted the Federal Energy Regulatory Commission's FEIS #20170113, filed with EPA 06/22/2017. The USFS was a cooperating agency for this project.

Therefore, re-circulation of the document is not necessary under Section 1506.3(c) of the CEQ Regulations.

EIS No. 20170116, Final, USFS, OR, ADOPTION—Proposed Land Use Plan Amendment for the Boardman to Hemingway Transmission Line Project, Contact: Arlene Blumton 541–962–8522

The U.S. Department of Agriculture's Forest Service (USFS) has adopted the U.S. Department of the Interior's Bureau of Land Management's FEIS #20160278, filed with EPA 11/18/2016. The USFS was a cooperating agency for this project. Therefore, re-circulation of this document is not necessary under Section 1506.3(c) of the CEQ Regulations.

Amended Notices

EIS No. 20110386, Draft Supplement, USFS, ID, WITHDRAWN—Upper Lochsa Land Exchange Project, Comment Period Ends: 02/16/2012, Contact: Teresa Trulock 208–935–4256.

Revision to FR Notice Published 01/13/2012; Officially Withdrawn per request of the U.S. Forest Service.

EIS No. 20170109, Final, BLM, AZ, WITHDRAWN—Sonoran Desert National Monument Target Shooting Proposed Resource Management Plan Amendment, Review Period Ends: 07/24/2017, Contact: Wayne Monger 623–580–5683.

Revision to FR Notice Published 06/23/2017; Officially Withdrawn per request of the Bureau Land Management.

Dated: June 27, 2017.

Dawn Roberts,

Management Analyst, NEPA Compliance Division, Office of Federal Activities.

[FR Doc. 2017–13831 Filed 6–29–17; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[ER–FRL–9039–9]

Environmental Impact Statements; Notice of Availability

Responsible Agency: Office of Federal Activities, General Information (202) 564–7156 or *https://www2.epa.gov/nepa/.*

Weekly receipt of Environmental Impact Statements
Filed 06/11/2018 Through 06/15/2018
Pursuant to 40 CFR 1506.9.

Notice

Section 309(a) of the Clean Air Act requires that EPA make public its comments on EISs issued by other Federal agencies. EPA's comment letters on EISs are available at: *https://cdxnodengn.epa.gov/cdx-enepa-public/action/eis/search.*

EIS No. 20180133, Draft, NMFS, MA, Draft Environmental Impact Statement for Draft Amendment 22 to the Northeast Multispecies Fishery Management Plan, Comment Period Ends: 08/06/2018, Contact: Peter Burns (978) 281–9144.

EIS No. 20180134, Final, USFS, AZ, Final Programmatic Environmental Impact Statement for Revision of the Coronado National Forest Land and Resource Management Plan, Review Period Ends: 09/20/2018, Contact: Rose Robinson (520) 388–8491.

EIS No. 20180135, Final, USAF, CA, KC–46A Main Operating Base #4 (MOB 4) Beddown, Review Period Ends: 07/23/2018, Contact: Jean Reynolds (210) 925–4534.

EIS No. 20180136, Final Supplement, USACE, AK, Alaska Stand Alone Pipeline Project, Review Period Ends: 07/23/2018, Contact: Jason Berkner (907) 753–5778.

EIS No. 20180137, Final, BLM, WY, Normally Pressured Lance Natural Gas Development Project, Review Period Ends: 07/23/2018, Contact: Kellie Roadifer (307) 367–5309.

EIS No. 20180138, Draft, USFS, CA, Eldorado National Forest Over Snow Vehicle Use Designation, Comment Period Ends: 08/06/2018, Contact: Jennifer Marsolais (530) 642–5187.

EIS No. 20180139, Final, USFS, CA, Bordertown to California 120kV Transmission Line, Review Period Ends: 07/23/2018, Contact: Marnie Bonesteel (775) 352–1240.

Amended Notice

Revision to the **Federal Register** Notice published 05/21/2018, extend comment period from 07/05/2018 to 07/20/2018.

EIS No. 20180102, Draft, NMFS, FL, Coral Habitat Areas. Considered for Habitat Areas of Particular Concern Designation in the Gulf of Mexico, Contact: Lauren Waters (727) 209–5991.

Dated: June 18, 2018.

Robert Tomiak,

Director, Office of Federal Activities.

[FR Doc. 2018–13372 Filed 6–21–18; 8:45 am]

BILLING CODE 6560–50–P

FEDERAL DEPOSIT INSURANCE CORPORATION

Notice to All Interested Parties of Intent To Terminate Receivership

Notice is hereby given that the Federal Deposit Insurance Corporation (FDIC or Receiver) as Receiver for the institution listed below intends to terminate its receivership for said institution.

Fund	Receivership name	City	State	Date of appointment of receiver
10401	Blue Ridge Savings Bank, Inc	Asheville	NC	10/14/2011

The liquidation of the assets for the receivership has been completed. To the extent permitted by available funds and in accordance with law, the Receiver will be making a final dividend payment to proven creditors.

Based upon the foregoing, the Receiver has determined that the continued existence of the receivership will serve no useful purpose. Consequently, notice is given that the receivership shall be terminated, to be effective no sooner than thirty days after the date of this notice. If any person wishes to comment concerning the termination of the receivership, such comment must be made in writing, identify the receivership to which the comment pertains, and sent within thirty days of the date of this notice to: Federal Deposit Insurance Corporation, Division of Resolutions and Receiverships, Attention: Receivership Oversight Department 34.6, 1601 Bryan Street, Dallas, TX 75201.

No comments concerning the termination of this receivership will be considered which are not sent within this time frame.

Dated at Washington, DC, on June 18, 2018.

Federal Deposit Insurance Corporation.

Robert E. Feldman,

Executive Secretary.

[FR Doc. 2018–13361 Filed 6–21–18; 8:45 am]

BILLING CODE 6714–01–P

FEDERAL RESERVE SYSTEM

Formations of, Acquisitions by, and Mergers of Bank Holding Companies

The companies listed in this notice have applied to the Board for approval, pursuant to the Bank Holding Company Act of 1956 (12 U.S.C. 1841 *et seq.*) (BHC Act), Regulation Y (12 CFR part 225), and all other applicable statutes and regulations to become a bank holding company and/or to acquire the assets or the ownership of, control of, or the power to vote shares of a bank or bank holding company and all of the banks and nonbanking companies owned by the bank holding company, including the companies listed below.

The applications listed below, as well as other related filings required by the Board, are available for immediate inspection at the Federal Reserve Bank indicated. The applications will also be available for inspection at the offices of the Board of Governors. Interested persons may express their views in writing on the standards enumerated in the BHC Act (12 U.S.C. 1842(c)). If the proposal also involves the acquisition of a nonbanking company, the review also includes whether the acquisition of the nonbanking company complies with the standards in section 4 of the BHC Act (12 U.S.C. 1843). Unless otherwise noted, nonbanking activities will be conducted throughout the United States.

Unless otherwise noted, comments regarding each of these applications must be received at the Reserve Bank indicated or the offices of the Board of Governors not later than July 13, 2018.

A. Federal Reserve Bank of Minneapolis (Mark A. Rauzi, Vice President), 90 Hennepin Avenue, Minneapolis, Minnesota 55480–0291:

1. *First Interstate BancSystem, Inc., Billings, Montana*; to merge with Northwest Bancorporation, Inc. and thereby indirectly acquire Inland

US Army Corps
of Engineers
Alaska District

Public Notice of Application for Permit

Regulatory Division (1145)
CEPOA-RD
Post Office Box 6898
JBER, Alaska 99506-0898

PUBLIC NOTICE DATE:	**August 1, 2014**
EXPIRATION DATE:	**September 2, 2014**
REFERENCE NUMBER:	**POA-2009-651**
WATERWAY:	**Multiple Waterways**

NOTICE OF INTENT TO PREPARE A DRAFT SUPPLEMENTAL ENIVRONMENTAL IMPACT STATEMENT FOR THE PROPOSED ALASKA STAND ALONE PIPELINE PROJECT

PROJECT INFORMATION: The U.S. Army Corps of Engineers (Corps), Alaska District, Regulatory Branch has received a Department of the Army (DA) permit application from the Alaska Gasline Development Corporation (AGDC) to construct the Alaska Stand Alone Pipeline (ASAP) Project.

The applicant has stated, "The purpose of the Alaska In-State Gas Pipeline (ASAP) is codified in state law as one of the projects the AGDC is directed to develop. As stated in state law, AGDC "shall, for the benefit of the state, to the fullest extent possible, ... develop, finance, construct, and operate an in-state natural gas pipeline in a safe, prudent, economical, and efficient manner, for the purpose of making natural gas, including propane and other hydrocarbons associated with natural gas other than oil, available to Fairbanks, the Southcentral region of the state, and other communities in the state at the lowest rates possible." (Alaska Statute 31.25.005(4)).

The ASAP Project would be comprised of a natural gas conditioning facility (GCF) near Prudhoe Bay capable of producing 500 MMscfd of utility-grade natural gas; a 36-inch, 727-mile long, 1,480 psig subsurface natural gas pipeline connecting the GCF to the existing ENSTAR pipeline system in the Matanuska-Susitna Borough; and a 12-inch, 29-mile long, 1,480 psig, subsurface lateral line connecting the mainline to Fairbanks. The GCF would be constructed from modules delivered to the existing West Dock causeway in Prudhoe Bay. Facilitating transport and offload of these modular components will require modifications to dock head 3, winter dredging of a navigational channel to a 10-ft depth, nearshore dispersion of dredge material over bottomfast ice, channel screeding, and use of a temporary ballasted barge bridge during offload. The proposed pipeline would be buried except at possible fault crossings, elevated bridge stream crossings, pigging facilities, and block valve locations. Because the pipeline system would be designed to transport utility-grade natural gas, access to smaller communities would be possible. The ASAP route would generally parallel the Trans-Alaska Pipeline System (TAPS) and Dalton Highway corridor to near Livengood, northwest of Fairbanks. At Livengood, the route would continue south, to the west of Fairbanks and Nenana. The pipeline would bypass Denali National Park and Preserve to the east and would then generally parallel the Parks Highway corridor to Willow, continuing south to its connection with ENSTAR's distribution system at MP 39 of the Beluga Pipeline southwest of Big Lake. The Fairbanks Lateral tie-in would be located approximately two miles south of the Chatanika River, crossing at MP 439 of the mainline. From the mainline tie-in, the Fairbanks Lateral pipeline would traverse east over Murphy Dome, following the Murphy Dome and Old Murphy Dome Roads, and then extend southeast into Fairbanks."

As lead federal agency, the Corps completed a Final Environmental Impact Statement (FEIS) pursuant to the requirements on the National Environmental Policy Act (NEPA), in October 2012, for the ASAP

project. However, the proposed project design was not complete enough for the Corps' to make a permitting decision. Since the publishing of the FEIS, the ASAP project has undergone some changes and the AGDC has applied for a DA permit, as stated above. The current application requires review through the Supplemental Environmental Impact Statement (SEIS) process.

The Corps has invited several federal and state agencies, along with Tribes to be cooperating agencies in the SEIS process. All other agencies, individuals, and other private interest organizations and parties are invited to participate via submission of comments. The Corps published a Notice of Intent (NOI) to prepare a federal NEPA SEIS in the Federal Register on August 1, 2014. All comments received in response to the Corps' NOI and this Public Notice will be considered when determining the scope of the SEIS.

COMMENTS: Scoping comments and suggestions must be received no later than October 14, 2014. To be most helpful, comments should clearly describe specific environmental topics or issues which the commenter believes the SEIS should address. All comments will become a part of the administrative record and are subject to release, as appropriate, in their entirety, including any personally identifiable information such as names, phone numbers, and addresses, if included in the comment.

Written comments should be sent to the following mailing address: U.S. Army Corps of Engineers, Alaska District, Regulatory Division, Attention: ASAP Project, Ms. Mary Romero, Post Office Box 6898, JBER, Alaska 99506-0898. Written comments can also be emailed to the following address: asapeiscomments@usace.army.mil. Comments may also be submitted on the SEIS website at www.asapeis.com.

SCOPING MEETINGS: Public scoping meetings will be held in the communities listed below. Please check the project website for further details on where and when the meetings will be held.

> Anaktuvuk Pass, Anchorage, Barrow, Denali/Cantwell, Fairbanks, Healy, Kenai, Minto, Nenana, Nuiqsut, Seward, Talkeetna, Willow, and Wiseman

SUPPLEMENTARY INFORMATION: *Project Impacts*: The proposed ASAP project would impact up to 23,534 acres of wetlands, 1,350 acres of open waters, and 59.6 acres of subtidal waters of the U.S.

Permit Authority: The proposed project would involve both work and structures in traditionally navigable waters of the U.S., and the discharge of fill material into waters of the U.S., including wetlands. Therefore, the proposed project is subject to both Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act, and Section 103 of the Marine Protection Research and Sanctuaries Act of 1972.

Alternatives: The SEIS will address any new alternatives, not addressed in the FEIS, which are found to be practicable in light of the proposed project changes since the issuance of the FEIS and the proposed project's purpose and need.

Cooperating Agencies: The following agencies have agreed to serve as cooperating agencies in preparation of the SEIS:

- U.S. Bureau of Land Management; Alaska State Pipeline Coordinator's Office; U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration; U. S. Environmental Protection Agency; U.S. Fish and Wildlife Service, and National Park Service

Additional Consultations: The Corps anticipates consultations will be required pursuant to the provisions of Section 7 of the Endangered Species Act, Essential Fish Habitat provisions of the Magnuson-Stevens Act, and Section 106 of the National Historic Preservation Act. The Corps will be available to conduct government to government consultations with all affected federally recognized tribes.

Permitting Process: The decision to issue a DA permit or not will be based on an evaluation of the potential impacts, including direct, indirect, and/or cumulative impacts of the proposed project on the public interest. That decision will reflect the national concern for both the protection and utilization of important resources. The benefit which reasonably can be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. For the discharge of fill into special aquatic sites, evaluation of the impact of the activity on the public interest will include application of the 404(b)(1) guidelines promulgated by the Administrator of the Environmental Protection Agency (40 CFR Part 230).

Development of the SEIS will assist the Corps in determining whether to issue a DA permit, issue a DA permit with special conditions, or deny a DA permit.

Drawings as well as maps for the project showing the original FEIS alignment and the current alignment are available on line at http://www.poa.usace.army.mil/Missions/Regulatory/PublicNotices.aspx under POA-2009-651. Additional information is available at www.asapeis.com .

District Engineer
U.S. Army, Corps of Engineers

NOTICE TO EDITORS:

This public notice is provided as background information and is not a request or contract for publication.

NOTICE TO POSTMASTERS:

It is requested that this notice be conspicuously and continually placed until the expiration date.

Project drawings are available online at:

http://www.poa.usace.army.mil/Missions/Regulatory/PublicNotices.aspx

US Army Corps
of Engineers
Alaska District

Regulatory Division (1145)
CEPOA-RD
Post Office Box 6898
JBER, Alaska 99506-0898

Public Notice of Application for Permit and Notice of Availability for Draft Supplemental Environmental Impact Statement

PUBLIC NOTICE DATE: June 30, 2017

EXPIRATION DATE: August 14, 2017

REFERENCE NUMBER: POA-2009-651

WATERWAY: Multiple Waterways

Project Information: The U.S. Army Corps of Engineers (Corps), Alaska District, Regulatory Division received an application from the Alaska Gasline Development Corporation on January 13, 2016 (amended July, 2016) requesting authorization under a Department of the Army permit to construct an in-state natural gas pipeline. The Alaska Stand Alone Pipeline (ASAP) Project comprises of a natural gas conditioning facility (GCF) capable of producing an annual average 500 million standard cubic feet per day (MMscfd) of utility-grade natural gas at peak capacity and a 1,480 pound per square inch (psig) natural gas pipeline. The pipeline is a 733-mile long, 36-inch-diameter natural gas transmission mainline extending from the Gas Conditioning Facility near Prudhoe Bay south to a connection with the existing ENSTAR pipeline system in the Matanuska-Susitna Borough. An approximately 30-mile-long, 12-inch-diameter lateral pipeline will connect the mainline to Fairbanks. The proposed pipeline will typically be buried with a minimum cover of 30 inches and a bottom-of-ditch depth of 6 to 8 feet except at possible fault crossings, elevated bridge stream crossings, pigging facilities, and block valve locations. The ASAP route will generally parallel the Trans-Alaska Pipeline System (TAPS) and Dalton Highway corridor to near Livengood, northwest of Fairbanks. At Livengood, the mainline route will continue south, to the west of Fairbanks and Nenana. The pipeline will bypass Denali National Park and Preserve to the east and will then generally parallel the Parks Highway corridor to Willow, continuing south to its connection into ENSTAR's distribution system at MP 39 of the Beluga Pipeline southwest of Big Lake. The Fairbanks Lateral tie-in will be located approximately 2.5 miles south of the Chatanika River crossing at MP 440 of the mainline. From the mainline tie-in point, the Fairbanks Lateral pipeline will traverse east over Murphy Dome, following the Murphy Dome and Old Murphy Dome Roads, and then extend southeast into Fairbanks. **A total of 21,237.34 acres (8,907.01 in jurisdictional waters of the U.S., including wetlands; and, 12,330.33 in uplands)**

would be impacted either permanently or temporarily by the proposed pipeline, aboveground facilities, access roads, and marine dredge or fill. The 8,907.01 acres of wetland impacts include 8,734.58 acres of impacts to freshwater habitat (categorized as palustrine emergent, palustrine shrub/scrub, and palustrine forest; and, pond, lake and intermittent waterbodies). The remaining 172.44 acres of jurisdictional marine impacts include discharges to 0.90 acres of intertidal and 171.54 acres of subtidal waters of the U.S..

Applicant: Alaska Gasline Development Corporation, c/o Mr. Michael Thompson, 3201 C Street, Suite 200, Anchorage, Alaska 99503; mthompson@adgc.us

Project Purpose: The applicant has stated, "The Alaska Stand Alone Pipeline (ASAP) is Alaska's in-state natural gas pipeline designed to develop an affordable, long-term energy solution for Fairbanks, the Southcentral region of the state, and other communities in the state consistent with Alaska Statute AS 31.25.005.

Permit Authority: The proposed project would involve work and structures in navigable waters of the U.S., and the discharge of fill material in waters of the U.S., including wetlands. Therefore, the project is subject to Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act.

Other Environmental Review and Consultation Requirements: Other environmental review and consultation requirements include Executive Order 13175 Consultation and Coordination with Indian Tribal Governments, Executive Order 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 106 of the National Historic Preservation Act of 1966, Endangered Species Act Section 7 consultation and Magnuson-Stevens Act Essential Fish Habitat.

- Endangered Species: The Corps has made a determination that the proposed project **may affect** listed species and their federally-designated critical habitat, identified within the Endangered Species Act. The Corps has initiated section 7 consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service.
- Essential Fish Habitat: The Corps has determined that the proposed project **may affect** essential fish habitat and is initiating consultation with the National Marine Fisheries Service, under the Magnuson-Stevens Act.
- Historic Properties: The Corps has made a determination that historic properties exist within the permit area and may result in an **adverse effect** to properties as a result of the proposed project. The Corps has reinitiated consultation with the State Historic Preservation Office under 106 of the National Historic Preservation Act. A programmatic agreement will be developed in consultation with SHPO and other consulting or interested parties for incorporating measures to resolve any unavoidable or adverse effects to historic properties and cultural resources. Additionally, the Alaska District fully supports tribal self-governance and government-to-government relations between Federally recognized Tribes and the Federal government. Tribes with protected rights or resources that could be significantly affected by a proposed Federal action (e.g., a permit decision) have the right to consult with the Alaska District on a government-to-government basis. Views of each Tribe regarding

protected rights and resources will be accorded due consideration in this process. Notification of invitation to participate in government-to-government consultation, additional opportunities to obtain project related information, request for participation in decision-making processes regarding the protected Tribal right or resources and opportunities to provide comments were provided by phone, email correspondence and hardcopy to the Tribes within the area potentially affected by the proposed work. Additionally, consultation may be initiated by the affected Tribe upon written request to the District Commander during the public comment period. The Corps will be available to conduct government to government consultations with all affected federally recognized tribes.

Application Location for Download: The permit application, including descriptions of proposed work and structures, plan and elevation drawings, type, composition and quantity of fill discharge by location, and other supporting information is available for public review at the project website: www.asapeis.com .

Draft SEIS Location for Download: A Draft Supplemental Environmental Impact Statement (DSEIS) has been prepared for this project and is also available for review. Notification of scheduled public meeting locations and dates have been provided by separate notification and are posted on the project website: www.asapeis.com .

To request a hardcopy of the application or the SEIS, please contact the Applicant, at: Alaska Gasline Development Corporation, c/o Mr. Michael Thompson, 3201 C Street, Suite 200, Anchorage, Alaska 99503; mthompson@adgc.us

The Corps has been designated the lead federal agency and the U.S. Bureau of Land Management (BLM), National Park Service (NPS), U.S. Environmental Protection Agency (EPA), U.S. Fish and Wildlife Service (USFWS), U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA), and the Alaska Department of Natural Resources State Pipeline Coordinator's Office (SPCO) are participating as cooperating agencies in the Supplemental Environmental Impact Statement (SEIS) development process.

Comments: Comments can be submitted via the U.S. Postal Service to: U.S. Army Corps of Engineers, CEPOA-RD, Ms. Sandy Gibson, P.O. Box 6898, JBER, Alaska 99506-0898 or also via email at: asapeiscomments@erm.com. We request that you include with your comments: (1) Your name, address, and affiliation (if any); (2) Be as specific as possible when stating your concern or comment and whether it is specific to the Draft SEIS, the permit application or both; and (3) Provide any background documents to support your comments, as necessary.

The Corps is soliciting comments from the public; Federal, State, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, water quality, conservation, economics, aesthetics, wetlands, cultural values, navigation, fish and wildlife values, water supply, and any other factors judged important to the needs and welfare of the people. The decision to issue a DA

permit or not will be based on an evaluation of the potential impacts, including direct, indirect, and/or cumulative impacts of the proposed project on the public interest. That decision will reflect the national concern for both the protection and utilization of important resources. The benefit which reasonably can be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. For the discharge of fill into special aquatic sites, evaluation of the impact of the activity on the public interest will include application of the 404(b)(1) guidelines promulgated by the Administrator of the Environmental Protection Agency (40 CFR Part 230). Subject to the preceding sentence and any other applicable guidelines or criteria (see 40 CFR Part 320.2 and 320.3), a permit will be granted unless the District Commander determines that it would be contrary to the public interest.

Development of the SEIS will assist the Corps in determining whether to issue a DA permit, issue a DA permit with special conditions, or deny a DA permit.

Public Hearing: Any person may request, in writing, within the designated comment period specified in this notice, that a public hearing be held to consider the application. Requests for public hearings shall state, with particularity, the reasons for public hearing and shall be submitted to the Corps, using the contact information referenced above.

- THE DEADLINE FOR PROVIDING COMMENTS IS AUGUST 14, 2017 -

District Engineer
U.S. Army, Corps of Engineers

US Army Corps of Engineers
Alaska District

Regulatory Division (1145)
CEPOA-RD
Post Office Box 6898
JBER, Alaska 99506-0898

Public Notice of Application for Permit

PUBLIC NOTICE DATE: June 30, 2017

EXPIRATION DATE: August 29, 2017 (revised)

REFERENCE NUMBER: POA-2009-651

WATERWAY: Multiple Waterways

*****PUBLIC NOTICE REVISION*****

On June 30, 2017, the Alaska District Corps of Engineers published a Public Notice for Department of the Army (DA) permit number POA-2009-651, Multiple Waterways, for a DA permit application and Notice of Availability for the Draft Supplemental Environmental Impact Statement for the Alaska Stand Alone Pipeline Project.

The public comment period has been extended to August 29, 2017.

All other information contained in the previous notice remains the same. Please bring this announcement to the attention of anyone you know who is or may be interested.

Comments: Comments can be submitted via the U.S. Postal Service to: U.S. Army Corps of Engineers, CEPOA-RD, Ms. Sandy Gibson, P.O. Box 6898, JBER, Alaska 99506-0898 or also via email at: asapeiscomments@erm.com. We request that you include with your comments: (1) Your name, address, and affiliation (if any); (2) Be as specific as possible when stating your concern or comment and whether it is specific to the Draft SEIS, the permit application or both; and (3) Provide any background documents to support your comments, as necessary.

- THE DEADLINE FOR PROVIDING COMMENTS IS AUGUST 29, 2017 -

District Engineer
U.S. Army, Corps of Engineers

Robert Beckman

From: Baginski, Kim R CIV USARMY CEIT (US) <Kim.R.Baginski@usace.army.mil>
Sent: Friday, June 22, 2018 3:46 PM
To: Pagemaster, Reg POA
Cc: Berkner, Jason R CIV USARMY CEPOA (US)
Subject: Special Public Notice: NOA of Alaska Stand Alone Pipeline SEIS (UNCLASSIFIED)
Attachments: NOA FSEIS POA-2009-00651.pdf

CLASSIFICATION: UNCLASSIFIED

Interested parties are hereby provided NOTICE OF AVAILABILITY of the Alaska Stand Alone Pipeline (ASAP) Project Final Supplemental Environmental Impact Statement (SEIS). The document is available for public viewing on the ASAP SEIS website: www.asapeis.com.

SPECIAL PUBLIC NOTICE DATE: June 22, 2018

EXPIRATION DATE: July 22, 2018

CORPS FILE NUMBER: POA-2009-00651

APPLICANT: Alaska Gasline Development Corporation

CONTACT: Please contact Jason Berkner at (907) 753-5778, toll free from within Alaska at (800) 478-2712, by fax at (907) 753-5567, or by email at Jason.R.Berkner@usace.army.mil if further information is desired concerning this notice.

The full text of this special public notice (attached) is also available on our website at:
https://clicktime.symantec.com/a/1/8FxoU7CUKvXFWdJPfoGQg9w5eR9S-fExG2PUWQLwpZQ=?d=co8QPeY9J3nWNlEsryVTFnSVJ-B5GFd4UUx_E7PmHTbDhw15iZCkNIud8W2UYsUqtWb88Hv4UzKSst6c9oEgN1qsCVZYfPJCj_-MXZH9TWryM6XteQ1bP7wTDUkzR7tZM8xpRA5O44Uqz07v0oOJ8arJyKr1TXdfOtSi14Wo_-r01vvC5tarUdqG3oS14yzOAQXkYeDHr5pCEpSGUTcOs17bES5MUpi283eyNWA8z_QZlE7Ls_GWSzI_cHCBgtba35zwYRplEClYzvuloO7_YPonv0sb3h0i2IMN9tD8yeA-VLZ-mEwBeI-0YWyjoArs-FvCrFCJ2xY3yLIJESr6Xdga8jNP3vFbz0iCEpviQg5ms-m86z81cAQjR02sJfL2k14ynNTq6t2scPAgMI9AcatSGa1QiTApJH3D5tIeyjgOIItx2Lp8I5p4MSKdDqjGC3YgbYJc831ya3oIGqgJIhrSrthaWanZgjQ%3D&u=http%3A%2F%2Fwww.poa.usace.army.mil%2FMissions%2FRegulatory%2FSpecial-Public-Notices%2F
(Note: if the above link isn't clickable or part of the link is cut off, please copy and paste the entire URL into your browser's address bar and press Enter)

***NOTICE TO EDITORS: This public notice is provided as background information and is not a request or contract for publication.

U.S. Army Corps of Engineers
Alaska District

Regulatory Division, CEPOA-RD
2204 3rd Street, Post Office Box 6898
JBER, Alaska 99506-0898

The understanding and support of Alaskans is vital to the success of the Regulatory Program. We must work together to protect Alaska's water resources, ensuring their use and enjoyment for future generations, while enabling responsible development.

Regulatory Division website:
https://clicktime.symantec.com/a/1/qJFir4lmKDX2zSwL4PjiBiMPu7HIG_IdSt4FiAIIllM=?d=co8QPeY9J3nWNlEsryVTFnSVJ-B5GFd4UUx_E7PmHTbDhw15iZCkNIud8W2UYsUqtWb88Hv4UzKSst6c9oEgN1qsCVZYfPJCj_-MXZH9TWryM6XteQ1bP7wTDUkzR7tZM8xpRA5O44Uqz07v0oOJ8arJyKr1TXdfOtSi14Wo_-r01vvC5tarUdqG3oS14yzOAQXkYeDHr5pCEpSGUTcOs17bES5MUpi283eyNWA8z_QZlE7Ls_GWSzI_cHCBgtba35zwYRplEClYzvuloO7_YPonv0sb3h0i2IMN9tD8yeA-VLZ-mEwBeI-0YWyjoArs-FvCrFCJ2xY3yLIJESr6Xdga8jNP3vFbz0iCEpviQg5ms-m86z81cAQjR02sJfL2k14ynNTq6t2scPAgMI9AcatSGa1QiTApJH3D5tIeyjgOIItx2Lp8I5p4MSKdDqjGC3YgbYJc831ya3oIGqgJIhrSrthaWanZgjQ%3D&u=http%3A%2F%2Fwww.poa.usace.army.mil%2FMissions%2FRegulatory.aspx

If you would like to be removed from this mailing list, please reply with "Opt Out" in subject line.

CLASSIFICATION: UNCLASSIFIED

Special Public Notice

US Army Corps of Engineers
Alaska District

ANCHORAGE
CEPOA-RD (1145)
Post Office Box 6898
JBER, Alaska
99506-0898

ISSUANCE DATE: **JUNE 22, 2018**

EXPIRATION DATE: **JULY 22, 2018**

REFERENCE NUMBER: **POA-2009-00651**

NOTICE OF AVAILABILITY FOR THE ALASKA STAND ALONE PIPELINE PROJECT FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

Pursuant to the National Environmental Policy Act (NEPA), the U.S. Army Corps of Engineers, Alaska District, Regulatory Division (Corps), in cooperation with the U.S. Bureau of Land Management, National Park Service, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration, and Alaska Department of Natural Resources State Pipeline Coordinator's Office, has prepared the final Supplemental Environmental Impact Statement (SEIS) for the proposed Alaska Stand Alone Pipeline (ASAP) Project.

The ASAP Project is a 733-mile-long natural gas pipeline system spanning from Alaska's North Slope to an existing natural gas distribution system (ENSTAR Natural Gas Company) that serves the Southcentral region of the state. A 30-mile-long, 12-inch-diameter lateral pipeline would connect the mainline to Fairbanks. The Department of the Army permit application and its revisions, including descriptions of proposed work and structures, and other supporting information can be viewed on the ASAP SEIS website: www.asapeis.com.

The Notice of Availability (NOA) for the final SEIS was published in the *Federal Regist*er on June 22, 2018. In accordance with NEPA**,** the Corps will not issue a Record of Decision (ROD) on the proposed action until at least 30 days after the NOA publication date. The ROD will state the Corps' decision whether to authorize the proposed ASAP Project, and if so, the conditions under which it would be allowed to occur, and the factors considered in the decision.

The SEIS is available for public review on the ASAP SEIS website: www.asapeis.com. Copies of the SEIS are also available for review at the following libraries:

- Anchorage ARLIS, 3211 Providence Drive, Library Suite 111, Anchorage 99508
- Noel Wien Public Library, 1215 Cowles Street, Fairbanks, AK 99701
- Seward Library, 239 6th Ave, Seward, AK 99664
- Talkeetna Public Library. 24645 Talkeetna Spur Rd, Talkeetna, AK 99676
- Tri-Valley Library, Suntrana Road, Healy, AK 99743
- Trapper Creek Public Library, 8901 Devonshire Dr, Trapper Creek, AK 99683
- Willow Public Library, 23557 W Willow Cmnty Ctr Cir, Willow, AK 99688

To request a compact disc or hardcopy of the SEIS, please contact the Applicant at**:** Alaska Gasline Development Corporation, c/o Mr. Kalb Stevenson, 3201 C Street, Suite 200, Anchorage, Alaska 99503; via email at: KStevenson@agdc.us, or; telephone at 907-330-6367.

Any questions pertaining to this notice may be directed to: Jason Berkner, U.S. Army Corps of Engineers, Alaska District, CEPOA-RD, P.O. Box 6898, JBER, AK, 99506-0898; via email at: Jason.R.Berkner@usace.army.mil, or; telephone at (907) 753-5778.

District Engineer
U.S. Army, Corps of Engineers

Enclosure: Notice of Application for State Water Quality Certification

BILL WALKER, GOVERNOR

STATE OF ALASKA

DEPT. OF ENVIRONMENTAL CONSERVATION
DIVISION OF WATER
Wastewater Discharge Authorization Program (WDAP) / 401 Certification

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WDAP/401 CERTIFICATION
555 CORDOVA STREET
ANCHORAGE, ALASKA 99501-2617
PHONE: (907) 269-6285 | EMAIL: dec-401cert@alaska.gov

NOTICE OF APPLICATION FOR STATE WATER QUALITY CERTIFICATION

Any applicant for a federal license or permit to conduct an activity that might result in a discharge into navigable waters, in accordance with Section 401 of the Clean Water Act of 1977 (PL95-217), also must apply for and obtain certification from the Alaska Department of Environmental Conservation that the discharge will comply with the Clean Water Act, the Alaska Water Quality Standards, and other applicable State laws. By agreement between the U.S. Army Corps of Engineers and the Department of Environmental Conservation, application for a Department of the Army permit to discharge dredged or fill material into navigable waters under Section 404 of the Clean Water Act also may serve as application for State Water Quality Certification.

Notice is hereby given that the application for a Department of the Army Permit described in the Corps of Engineers' Public Notice (PN) Reference Number **POA-2009-00651** serves as application for State Water Quality Certification from the Department of Environmental Conservation.

After reviewing the application, the Department may certify there is reasonable assurance the activity, and any discharge that might result, will comply with the Clean Water Act, the Alaska Water Quality Standards, and other applicable State laws. The Department also may deny or waive certification.

Any person desiring to comment on the project with respect to Water Quality Certification, may submit written comments to the address above or via email to dec-401cert@alaska.gov by the expiration date of the Corps of Engineer's Public Notice. All comments should include the PN reference number listed above. Mailed comments must be postmarked on or before the expiration date of the public notice.

Disability Reasonable Accommodation Notice

The State of Alaska, Department of Environmental Conservation complies with Title II of the Americans with Disabilities Act of 1990. If you are a person with a disability who may need special accommodation in order to participate in this public process, please contact Theresa Zimmerman at 907-465-6171 or TDD Relay Service 1-800-770-8973/TTY or dial 711 within 30 days of publication of this notice to ensure that any necessary accommodations can be provided.

- Page Intentionally Left Blank -

ATTACHMENT B

Public Announcements

- Page Intentionally Left Blank –

353390
0001406102
$597.60

AFFIDAVIT OF PUBLICATION

STATE OF ALASKA

THIRD JUDICIAL DISTRICT

Joleesa Stepetin
being first duly sworn on oath deposes and says that he/she is a representative of the Alaska Dispatch News, a daily newspaper. That said newspaper has been approved by the Third Judicial Court, Anchorage, Alaska, and it now and has been published in the English language continually as a daily newspaper in Anchorage, Alaska, and it is now and during all said time was printed in an office maintained at the aforesaid place of publication of said newspaper. That the annexed is a copy of an advertisement as it was published in regular issues (and not in supplemental form) of said newspaper on

June 30, 2017

and that such newspaper was regularly distributed to its subscribers during all of said period. That the full amount of the fee charged for the foregoing publication is not in excess of the rate charged private individuals.

Signed Joleesa Stepetin

Subscribed and sworn to before me
this 30th day of June, 2017

Notary Public in and for
The State of Alaska.
Third Division
Anchorage, Alaska
MY COMMISSION EXPIRES
4/14/21

ANGELA M SIMMONS
NOTARY PUBLIC
State of Alaska
My Commission Expires Apr. 14, 2021

U.S. Army Corps of Engineers
Notice of Public Meetings
Draft Supplemental Environmental Impact Statement
Alaska Stand Alone Pipeline (as proposed)

The U.S. Army Corps of Engineers (UASCE), Alaska District, announces the availability of the Draft Supplemental Environmental Impact Statement (SEIS) for the Alaska Stand Alone Pipeline (ASAP). The Draft SEIS identifies and analyzes the potential impacts associated with the construction and operations of the proposed ASAP utility-grade natural gas transportation pipeline, including mitigation measures intended to reduce impacts resulting from the construction and operation of the proposed project. The Draft SEIS focuses on project changes proposed after the completion of the October 2012 Final Environmental Impact Statement. The Draft SEIS may also be viewed online at: http://asapgas.agdc.us/documents.html. The BLM will also be conducting an ANILCA 810 subsistence hearing to provide information on potential impacts to subsistence uses and hear the concerns and comments of affected users in the following villages: Barrow, Nuiqsut, Bettles, Wiseman, Minto, Healy, Cantwell, and Trapper Creek.

Public meetings provide an opportunity to express your views and identify issues to be addressed in the Draft SEIS. In accordance with the National Environmental Policy Act, the USACE is soliciting public comments regarding the potential impacts to the proposed project and project alternatives for the construction and operations of the proposed ASAP pipeline. Ten public meetings will be held on the following dates and locations, from 5:30pm to 8:30pm, with exceptions indicated in parentheses:

Barrow, Monday, July 17, 2017 Iñupiat Heritage Center P.O. Box 69, Barrow, Alaska 99723	**Minto/Tanana, Friday, July 28, 2017** Minto Tribal Hall Minto, Alaska 99758
Nuiqsut, Tuesday, July 18, 2017 Kisik Community Center P.O. Box 89148, Nuiqsut, Alaska 99789	**Anchorage/Willow, Tuesday, August 1, 2017 (6:30-9:30pm)** Alaska Pacific University, Lecture Hall 4101 University Drive Anchorage, Alaska 99508
Fairbanks, Thursday, July 20, 2017 Westmark Hotel 813 Noble Street, Fairbanks, Alaska 99701	**Healy, Wednesday, August 2, 2017** Tri-Valley Community Center 1 Healy Spur Road, Healy, Alaska 99743
Bettles/Evansville, Tuesday, July 25, 2017 Evansville Tribal Hall P.O. Box 26087, Bettles Field, Alaska 99726	**Cantwell/Denali, Thursday, August 3, 2017** Cantwell Community Hall Cantwell, Alaska 99729
Wiseman/Coldfoot, Wednesday, July 26, 2017 Community Center of Wiseman Wiseman, Alaska 99701	**Trapper Creek, Friday, August 4, 2017** Trapper Creek Park Building, Milepost 115.2 George Parks Hwy, Turn Left on E. TC Park Circle
Please check the project website for potential updates to meeting dates and locations: http://www.asapeis.com	

The Notice of Availability (NOA) was published in the Federal Register on June 30, 2017. A link to the NOA and other project related information can be found on the project website at: http://www.asapeis.com. Comments can also be submitted to the USACE via U.S. Postal Service to: U.S. Army Corps of Engineers, CEPOA-RD, Ms. Sandy Gibson, P.O. Box 6898, JBER, Alaska 99506-0898 or via email at: asapeiscomments@erm.com. We request the following with your comments: include your name, address, and affiliation (if any); be as specific as possible when stating your concern or comment; and, provide any background documents to support your comments as you think necessary.

- THE DEADLINE FOR PROVIDING COMMENTS IS AUGUST 14, 2017 -

The Arctic Sounder

CASE/PO/AIO: Environmental Resources Management
AD# or identifier: Draft Supplemental Environmental Impact Statement Alaska Stand Alone Pipeline (as proposed) Public Meetings

REMIT TO: Alaska Media, LLC
P.O. Box 241582
Anchorage, AK 99524
Ph: (907) 770-0820
Fax (907) 770-0822

INVOICE(S): 23456, 23810

AFFIDAVIT OF PUBLICATION

UNITED STATES OF AMERICA
STATE OF ALASKA, THIRD DISTRICT BEFORE ME, THE UNDERSIGNED, A NOTARY PUBLIC, THIS DAY PERSONALLY APPEARED **Tanny Walker** WHO, BEING FIRST DULY SWORN, ACCORDING TO LAW, SAYS THAT S/HE IS **General Manager** OF **The Arctic Sounder** PUBLISHED AT 500 W INTERNATIONAL AIRPORT RD, STE F ANCHORAGE, AK, IN SAID THIRD DISTRICT AND STATE OF ALASKA AND THAT THE ADVERTISEMENT, OF WHICH THE ANNEXED OR ATTACHED IS A TRUE COPY, WHICH WAS PUBLISHED IN SAID PUBLICATION ON

THE 15th DAY OF June ,2017 AND
THE 6th DAY OF July , 2017 AND
THE ____ DAY OF _____, 20_____AND
THE ____ DAY OF _____, 20_____AND
THE ____ DAY OF _____, 20_____AND
THE ____ DAY OF _____, 20_____AND
THE ____ DAY OF _____, 20_____AND
THE ____ DAY OF _____, 20_____AND
THE ____ DAY OF _____, 20_____AND
THE ____ DAY OF _____, 20_____.

ATTACH PROOF OF PUBLICATION HERE

TANNY WALKER
GENERAL MANAGER

SUBSCRIBED AND SWORN BEFORE ME THIS 6th day of July, 2017

KATHLEEN L SEWARD
NOTARY PUBLIC STATE OF ALASKA
MY COMMISSION EXPIRES ON FEBRUARY 1, 2021

STATE OF ALASKA
NOTARY PUBLIC
Kathleen L. Seward
My Commission Expires Feb. 1, 2021

AFFIDAVIT OF PUBLICATION

UNITED STATES OF AMERICA
STATE OF ALASKA
FOURTH DISTRICT
} SS.

Before me, the undersigned, a notary public, this day personally appeared Jenny Nance **, who, being first duly sworn, according to law, says that he/she is an Advertising Clerk of the Fairbanks Daily News-Miner, a newspaper (i) published in newspaper format, (ii) distributed daily more than 50 weeks per year, (iii) with a total circulation of more than 500 and more than 10% of the population of the Fourth Judicial District, (iv) holding a second class mailing permit from the United States Postal Service, (v) not published primarily to distribute advertising, and (vi) not intended for a particular professional or occupational group. The advertisement which is attached is a true copy of the advertisement published in said paper on the following day(s):**

June 20, 2017

July 13, 2017

ERM ALASKA INC

AD # 41367

ACCT # 2749

US ARMY CORP OF ENGINEERS NOTICE OF PUBLIC

and that the rate charged thereon is not excess of the rate charged private individuals, with the usual discounts.



U.S. Army Corps of Engineers
Notice of Public Meetings
Draft Supplemental Environmental Impact Statement
Alaska Stand Alone Pipeline (as proposed)

The U.S. Army Corps of Engineers (USACE), Alaska District, announces the availability of the Draft Supplemental Environmental Impact Statement (SEIS) for the Alaska Stand Alone Pipeline (ASAP). The Draft SEIS identifies and analyzes the potential impacts associated with the construction and operations of the proposed ASAP utility-grade natural gas transportation pipeline, including mitigation measures intended to reduce impacts resulting from the construction and operation of the proposed project. The Draft SEIS focuses on project changes proposed after the completion of the October 2012 Final Environmental Impact Statement. The Draft SEIS may also be viewed online at: **http://asapgas.agdc.us/documents.html**. The BLM will also be conducting an ANILCA 810 subsistence hearing to provide information on potential impacts to subsistence uses and hear the concerns and comments of affected users in the following villages: Barrow, Nuiqsut, Bettles, Wiseman, Minto, Healy, Cantwell, and Trapper Creek.

Public meetings provide an opportunity to express your views and identify issues to be addressed in the Draft SEIS. In accordance with the National Environmental Policy Act, the USACE is soliciting public comments regarding the potential impacts to the proposed project and project alternatives for the construction and operations of the proposed ASAP pipeline. Ten public meetings will be held on the following dates and locations, from 5:30pm to 8:30pm, with exceptions indicated in parentheses:

Barrow, Monday, July 17, 2017
Iñupiat Heritage Center
P.O. Box 69, Barrow, Alaska 99723

Minto/Tanana, Friday, July 28, 2017
Minto Tribal Hall
Minto, Alaska 99758

Nuiqsut, Tuesday, July 18, 2017

Anchorage/Willow, Tuesday, August 1, 2017

Subscribed and sworn to before me on this 31 **day of** JULY **,** 20 17

NOTARY PUBLIC
M. BURNELL
STATE OF ALASKA
My commission [illegible] December 7, 20

Notary Public in and for the State Alaska.

My commission expires DEC 7, 2017

Special Public Notice

US Army Corps
of Engineers
Alaska District

PUBLIC NOTICE DATE: February 3, 2016

REFERENCE NUMBER: POA-2009-651

WATERWAY: Multiple Waterways

The U.S. Army Corps of Engineers would like to notify property owners that have been recently been identified as 'adjacent property owners' of the newly proposed re-alignment of the Alaska Stand Alone Pipeline project (ASAP). The applicant for the project is the Alaska Gasline Development Corporation (AGDC). Based on scoping comments from 2014, AGDC made changes to the project alignment. You can view the project re-alignment on the ASAP website: http://agdc.maps.arcgis.com/apps/webappviewer/index.html?id=be66ef54f7434486bf4c845123f90fb7

There will be two more opportunities to comment on the proposed project and you will receive public notices notifying you of each one. The next comment period will occur when the Draft Supplemental Environmental Impact Statement is available for review. There will also be public meetings in the following communities: Anaktuvuk Pass, Anchorage, Barrow, Bettles/Evansville, Cantwell, Fairbanks, Healy, Minto, Nenana, Nuiqsut, Trapper Creek, Washington D.C., Willow, and Wiseman. The last opportunity to comment will occur when the Final Supplemental Environmental Impact Statement is made available for review. You may get information concerning the dates of meetings from the website once they have been planned. Questions concerning the project can be directed to Sandy P. Gibson at sandy.p.gibson@usace.army.mil or by calling (907) 753.2877

Special Public Notice

US Army Corps
of Engineers
Alaska District

PUBLIC NOTICE DATE: February 3, 2016

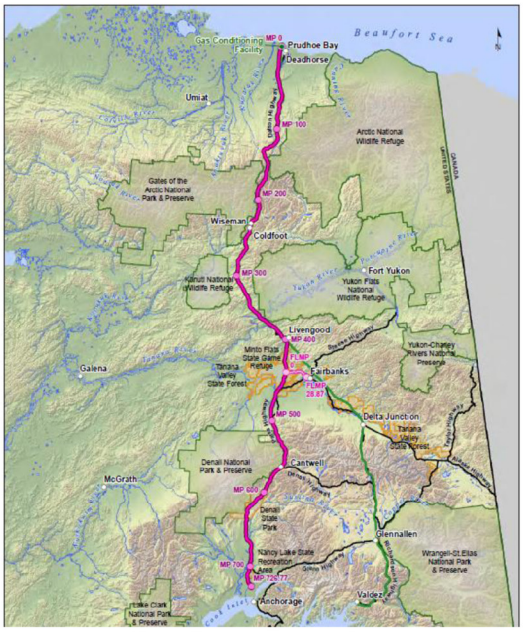
REFERENCE NUMBER: POA-2009-651

WATERWAY: Multiple Waterways

The U.S. Army Corps of Engineers would like to notify property owners that have been recently been identified as 'adjacent property owners' of the newly proposed re-alignment of the Alaska Stand Alone Pipeline project (ASAP). The applicant for the project is the Alaska Gasline Development Corporation (AGDC). Based on scoping comments from 2014, AGDC made changes to the project alignment. You can view the project re-alignment on the ASAP website: http://agdc.maps.arcgis.com/apps/webappviewer/index.html?id=be66ef54f7434486bf4c845123f90fb7

There will be two more opportunities to comment on the proposed project and you will receive public notices notifying you of each one. The next comment period will occur when the Draft Supplemental Environmental Impact Statement is available for review. There will also be public meetings in the following communities: Anaktuvuk Pass, Anchorage, Barrow, Bettles/Evansville, Cantwell, Fairbanks, Healy, Minto, Nenana, Nuiqsut, Trapper Creek, Washington D.C., Willow, and Wiseman. The last opportunity to comment will occur when the Final Supplemental Environmental Impact Statement is made available for review. You may get information concerning the dates of meetings from the website once they have been planned. Questions concerning the project can be directed to Sandy P. Gibson at sandy.p.gibson@usace.army.mil or by calling (907) 753.2877

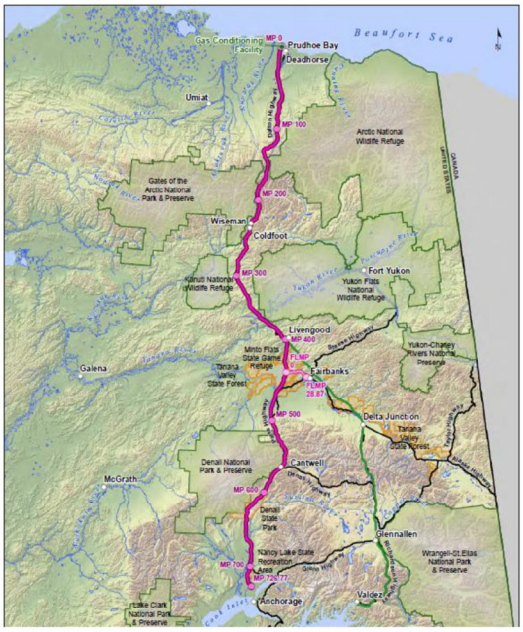
Regulatory Division (1145)
CEPOA-RD
Post Office Box 6898
JBER, Alaska 99506-0898



Alaska Stand Alone Pipeline Project (ASAP)

Recipient Address

Regulatory Division (1145)
CEPOA-RD
Post Office Box 6898
JBER, Alaska 99506-0898



Alaska Stand Alone Pipeline Project (ASAP)

Recipient Address

YOU'RE INVITED!

Residents of Cantwell are invited to the US Army Corps of Engineers' Alaska Stand Alone Pipeline Project Scoping Meeting at the Cantwell Community Hall on August 20, 2014 from 5:30-8:30 pm

If you cannot attend the meeting, you can call in at 1-877-336-1839, use code 7097158, security 1111.

Objectives of this Meeting

- Provide information on the ASAP Project
- Review the purpose and need for the SEIS
- Identify issues and potential alternatives that should be considered in the SEIS
- Provide an opportunity for public comments on the project

www.asapeis.com

US Army Corps of Engineers
Alaska District

ASAP
Alaska's In-State Gas Pipeline

ERM

Alaska Stand Alone Pipeline Project Supplemental Environmental Impact Statement

U.S. Army Corps of Engineers,
Alaska District Regulatory Division
Attn: Sandy Gibson
P.O. Box 6898
JBER, Alaska 99506-0898

Sandy Gibson, Project Manager
Phone: 907-753-2712
Fax: 907-753-5567
Toll Free: 800-478-2712
Email: asapeiscomments@erm.com

Visit the Project Website at
www.asapeis.com

US Army Corps of Engineers
Alaska District

Current Resident
Minto AK
Tanana AK

Alaska Stand Alone Pipeline Project – 2017 Public Meeting Schedule

Barrow, Monday, July 17, 2017 Iñupiat Heritage Center P.O. Box 69, Barrow, Alaska 99723	**Anchorage/Willow, Tuesday, August 1, 2017 (6:30-9:30pm)** Alaska Pacific University, Lecture Hall, 4101 University Drive Anchorage, Alaska 99508
Nuiqsut, Tuesday, July 18, 2017 (5:30-8:30pm) Kisik Community Center P.O. Box 89148, Nuiqsut, Alaska 99789	**Healy, Wednesday, August 2, 2017 (5:30-8:30pm)** Tri-Valley Community Center 1 Healy Spur Road, Healy, Alaska 99743
Fairbanks, Thursday, July 20, 2017 (5:30-8:30pm) Westmark Hotel 813 Noble Street, Fairbanks, Alaska 99701	**Cantwell/Denali, Thursday, August 3, 2017 (5:30-8:30pm)** Cantwell Community Hall Cantwell, Alaska 99729
Minto/Tanana, Friday, July 21, 2017 (5:30-8:30pm) Minto Tribal Hall Minto, Alaska 99758	**Trapper Creek, Friday, August 4, 2017 (5:30-8:30pm)** Trapper Creek Park Building, Milepost 115.2 George Parks Highway, Turn Left on E. TC Park Circle
Bettles/Evansville, Tuesday, July 25, 2017 (5:30-8:30pm) Evansville Tribal Hall P.O. Box 26087, Bettles Field, Alaska 99726	Please check the project website for potential updates to meeting dates and locations: http://www.asapeis.com **The deadline for providing comments is Monday, August 14, 2017**
Wiseman/Coldfoot, Wednesday, July 26, 2017 (5:30-8:30pm) Community Center of Wiseman Wiseman, Alaska 99701	

US Army Corps of Engineers
Alaska District

Alaska Stand Alone Pipeline Project Supplemental Environmental Impact Statement

July 2017

Alaska Stand Alone Pipeline Project

The Alaska Stand Alone Pipeline (ASAP) Project would make natural gas available to Fairbanks, Southcentral Alaska, and other communities along the pipeline route. The purpose of the ASAP Project is to provide Alaskans with a stable, affordable, long-term supply of natural gas for heating and powering their homes and businesses. The proposed pipeline is expected to begin operating in 2026.

The ASAP Project is comprised of a natural gas conditioning facility (GCF) capable of producing up to 500 million standard cubic feet per day of natural gas at peak capacity, and a 1,480-pound per square inch natural gas pipeline. The proposed Mainline is a 733-mile-long, 36-inch-diameter natural gas pipeline originating from the GCF near Prudhoe Bay, and terminating at the existing ENSTAR distribution system in the Matanuska-Susitna Borough. An approximately 30-mile-long, 12-inch-diameter lateral pipeline will connect the Mainline to Fairbanks.

The intent of the Supplemental Environmental Impact Statement (SEIS) is to evaluate, in compliance with the National Environmental Policy Act (NEPA) and the U.S. Army Corps of Engineers' (USACE) NEPA Guidance, the potential direct, indirect, and cumulative impacts on the human environment of constructing and operating the proposed ASAP Project and alternatives.

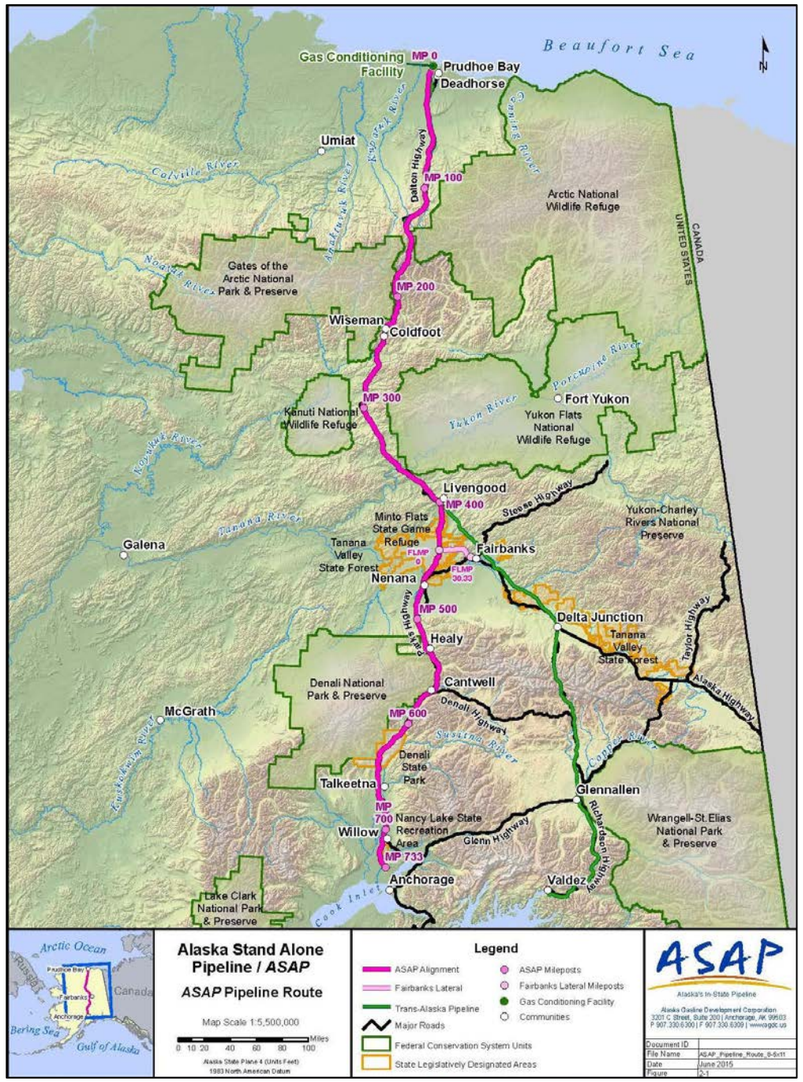
The SEIS focuses on evaluating changes to the proposed Project that have occurred since the 2012 Final Environmental Impact Statement (FEIS), which was published by USACE in October 2012. The SEIS intends to disclose information to the public, allow for comments, and provide agency decision-makers with data necessary for making informed permitting decisions.



What's Changed Since 2012?

As a supplement to the 2012 FEIS, the SEIS describes the revised project, including changes to the proposed Project that have occurred since the publication of the 2012 FEIS, including the following conceptual design changes and refinements:

- Use of lean natural gas (rather than enriched natural gas), which does not require additional facilities to make gas accessible;
- The need for a 23-barge sealift (previously a 9-barge sealift) will require dredging of a navigation channel at West Dock and nearshore disposal of the dredged material;
- Reduced Mainline pipeline length (733 miles, a difference of 4 miles);
- Reduced Fairbanks Lateral length (30 miles, a difference of 4 miles);
- Increased Mainline pipeline diameter (36-inch, an increase of 12 inches);
- Refinements in the number and locations of material sites, access roads, work camps, pipeline storage yards, and other infrastructure and support facilities; and
- Route refinements, including alignment shifts for the North Slope, Minto Flats / Summer Ridge, Anderson / Clear, and Nancy Lake State Recreation Area and along Murphy Dome and Old Murphy Dome Roads for the Fairbanks Lateral



Alternatives

Alternative 1 (Proposed Action) The proposed ASAP Project as described above, including use of Dock Head 3 at West Dock, nearshore disposal of dredge material, buried pipeline (except at fault crossings, elevated bridge stream crossings, pigging facilities, and block valve locations), strain-based pipeline design in discontinuous permafrost as required, and horizontal directional drilling at the Yukon River.

Alternative 2 (Denali NPP Route Variation) Alternative 2 includes the Denali NPP route, use of Dock Head 2 at West Dock, ocean disposal of dredge material, pipeline elevated on vertical support members from MP 0 to MP 62, buried pipeline from MP 62 to end (including the Fairbanks Lateral), and aerial crossing at the Yukon River.

Alternative 3 (No Action) The No Action alternative provides a benchmark, enabling decision-makers to compare the magnitude of environmental effects of the action alternatives. Under Alternative 3, the ASAP Project would not be constructed and operations and maintenance requirements would not exist; no utility-grade natural gas would be transported via pipeline from the North Slope to southcentral Alaska communities.

Resources Evaluated

The SEIS describes the affected environment and analyzes the environmental consequences resulting from construction and operation of the Proposed Action and its alternatives. Direct and indirect effects of the Proposed Action and the alternatives are described for the following resources: biological resources (*e.g.*, wildlife, fish, marine mammals, benthic communities, threatened and endangered species, vegetation, and wetlands); physical resources (*e.g.*, soils and geology, water, and air quality, and noise); social resources (*e.g.*, socioeconomics, recreation, land use, visual, subsistence, cultural resources, public health, navigation, and reliability and safety). Additionally, the assessment of cumulative effects analyzes the effects of the Proposed Action and the alternatives, in combination with other past, present, and reasonably foreseeable future actions potentially affecting resources within the proposed Project Area.


Photo credit: U.S. Department of the Interior

The NEPA Process

- Notice of Intent to Prepare an SEIS
- *Scoping
- Analysis of Alternatives
- **Draft SEIS Issued Available for 45-day Public Review
- **Public Meetings on Draft SEIS
- Public Comment Review and Synthesis Comment Analysis Report Available
- Responses to Comments/Prepare Final SEIS
- Selection of Preferred Alternative
- *Final SEIS Issued Available for 30-day Public Review
- Record of Decision Public Statements of Agency Decisions

***Indicates steps where there is an opportunity to provide public input.**
****Indicates current step in the NEPA process.**

Mitigation Measures

In accordance with Council on Environmental Quality requirements, and as described in the Draft SEIS, the route for Alternative 1 (Proposed Action) has undergone several revisions since the 2012 FEIS in order to refine the alignment and reduce potential impacts to resources and potentially affected communities.

The Alaska Gasline Development Corporation has incorporated several design features, mitigation measures, best management practices, and project management plans in an attempt to minimize, avoid, rectify, reduce, eliminate, and/or compensate for impacts of the Proposed Action, which are provided in detail in the Draft SEIS. These measures were taken into consideration when evaluating potential impacts on each resource.

2017 Public Meetings

Public meetings provide an opportunity to express your views and identify issues to be addressed in the Draft SEIS. In accordance with NEPA, USACE requests any comments you may have about the potential impacts to the proposed alternatives associated with the construction and operations of the proposed ASAP Project.

Public meetings will be held in 10 communities from 5:30-8:30pm (Anchorage 6:30-9:30pm) from July 17 to August 4, 2017 to seek comments regarding the Draft SEIS, including mitigation measures intended to reduce the impacts. Public meeting notices are available at the ASAP Project website: http://www.asapeis.com. The BLM will also be conducting an ANILCA 810 subsistence hearing to provide information on potential impacts to subsistence uses and hear the concerns and comments of affected users in the following villages: Barrow, Nuiqsut, Bettles, Wiseman, Minto, Healy, Cantwell, and Trapper Creek.

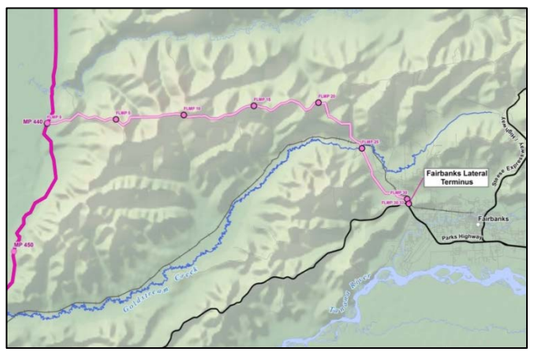
Comments can also be submitted to the USACE via postal mail to: U.S. Army Corps of Engineers, CEPOA-RD, P.O. Box 6898, JBER, Alaska, 99506-0898 or at: asapeiscomments@erm.com. We request that you include with your comments: (1) Your name, address, and affiliation (if any); and (2) Any background documents to support your comments as you think necessary.

- DEADLINE FOR PROVIDING COMMENTS IS AUGUST 14, 2017 -

Next Steps in the NEPA Process

USACE, with input from Cooperating Agencies, will analyze and respond to substantive comments received in response to the Draft SEIS. These comments and responses will be assimilated and published in a Comment Analysis Report. USACE may make changes in the SEIS reflecting comments received.

USACE and Cooperating Agencies will select a preferred alternative and present this to the public in the Final SEIS. The document will be published and public notices of the document's availability will be made. This step in the process also includes a 30-day period, during which the public may submit comments on the Final SEIS to be considered by USACE prior to publishing the Record of Decision.



Visit the ASAP Project website at www.asapeis.com

ASAP
Alaska's In-State Gas Pipeline

MEMORANDUM September 13, 2017

To: KBRW
Phone: 907-852-6811
Fax: 907-852-2274
cshults@kbrw.org

RE: **Alaska Stand Alone Pipeline (ASAP) Project Public Meeting**

This memo serves as public service announcement to be aired through KBRW:

WHAT: A COMMUNITY MEETING
WHERE: Iñupiat Heritage Center, **BARROW**, Alaska
WHEN: Monday, **JULY 17, 2017** from 5:30 PM to 8:30 PM

The U.S. Army Corps of Engineers invites you to a public meeting to discuss the Draft Supplemental Environmental Impact Statement (SEIS) for the Alaska Stand Alone Pipeline (ASAP) Project.

There will be a presentation about the ASAP Project, then an informational open house where the public can view maps, followed by a formal public comment opportunity. Public comments on the Draft SEIS will be accepted through **AUGUST 14, 2017.**

Refreshments will be provided. Please join us!

For more information on the ASAP Project, please visit the project website at www.asapeis.com. The BLM will also be conducting an ANILCA 810 subsistence hearing to provide information on potential impacts to subsistence uses and hear the concerns and comments of affected users.

Please air this message beginning July 10 through July 17, 2017. Thank you.

Annie Surratt, Staff Scientist
ERM Alaska, Inc.
+1 (907) 264-4458
annie.surratt@erm.com

You're Invited!
Alaska Stand Alone Pipeline Project
2017 Public Meeting

The U.S. Army Corps of Engineers Alaska District invites you to a public meeting to discuss the Draft Supplemental Environmental Impact Statement (SEIS) for the Alaska Stand Alone Pipeline (ASAP) Project.

There will be a presentation about the ASAP Project, then an informational open house where the public can view project maps, followed by a formal public comment opportunity. Refreshments will be provided. Please join us!

The BLM will also be conducting an ANILCA 810 subsistence hearing to provide information on potential impacts to subsistence uses and hear the concerns and comments of affected users in the following villages: Barrow, Nuiqsut, Bettles, Wiseman, Minto, Healy, Cantwell, and Trapper Creek.

Willow, Friday, August 18, 2017 (7:00-8:30pm)
Willow Community Center
23625 W. Willow Community Center Circle, Willow, Alaska 99688

NEW!

Barrow, Monday, July 17, 2017 (5:30-8:30pm) Iñupiat Heritage Center P.O. Box 69, Barrow, Alaska 99723	**Wiseman/Coldfoot, Wednesday, July 26, 2017 (5:30-8:30pm)** Community Center of Wiseman Wiseman, Alaska 99701
Nuiqsut, Tuesday, July 18, 2017 (5:30-8:30pm) Kisik Community Center P.O. Box 89148, Nuiqsut, Alaska 99789	**Anchorage, Tuesday, August 1, 2017 (6:30-9:30pm)** Alaska Pacific University, Lecture Hall, 4101 University Drive, Anchorage, Alaska 99508
Fairbanks, Thursday, July 20, 2017 (5:30-8:30pm) Westmark Hotel 813 Noble Street, Fairbanks, Alaska 99701	**Healy, Wednesday, August 2, 2017 (5:30-8:30pm)** Tri-Valley Community Center 1 Healy Spur Road, Healy, Alaska 99743
Minto/Tanana, Friday, July 21, 2017 (5:30-8:30pm) Minto Tribal Hall Minto, Alaska 99758	**Cantwell/Denali, Thursday, August 3, 2017 (5:30-8:30pm)** Cantwell Community Hall Cantwell, Alaska 99729
Bettles/Evansville, Tuesday, July 25, 2017 (5:30-8:30pm) Evansville Tribal Hall P.O. Box 26087, Bettles Field, Alaska 99726	**Trapper Creek, Friday, August 4, 2017 (5:30-8:30pm)** Trapper Creek Park Building, Milepost 115.2 George Parks Highway, Turn Left on E. TC Park Circle

Please check the project website for additional information and for potential updates to meeting dates and locations: http://www.asapeis.com

US Army Corps of Engineers
Alaska District

ASAP
Alaska's In-State Gas Pipeline

ERM

ATTACHMENT C

Meeting Sign-in Sheets

- Page Intentionally Left Blank -

ASAP

Alaska's In-State Gas Pipeline

USACE – AGDC – ERM

ALASKA STAND ALONE PIPELINE PROJECT SEIS

PUBLIC MEETING

July/August 2017

SIGN-IN SHEET

PLEASE PRINT NAME AND ADDRESS	AGENCY AND DISCIPLINE	PHONE NUMBER	EMAIL ADDRESS	MAKE ORAL COMMENT?
GREG YOUNGMUN	BP	907-240-8842	greg.youngmun@bp.com	
AKIS GIALOPSOS	Ak Legislature	907-227-4842	Akis.Gialopsos@akleg.gov	no
Laura Carmack	University of AK	907-786-7760	LMCARMACK@ALASKA.EDU	NO
Wilda Libby		727-5151		NO
Jake Staser	FNSB	250-5535	jstaser@Brenalaw.com	No
JOAN KLUWE	National Park Service	644-3535	joan_kluwe@nps.gov	No
Patrick Conway		903 1762	pkconway@yahoo.com	No

ASAP

Alaska's In-State Gas Pipeline

USACE – AGDC – ERM

ALASKA STAND ALONE PIPELINE PROJECT SEIS

PUBLIC MEETING

July/August 2017

SIGN-IN SHEET

PLEASE PRINT NAME AND ADDRESS	AGENCY AND DISCIPLINE	PHONE NUMBER	EMAIL ADDRESS	MAKE ORAL COMMENT?
Drema Fitzhugh Hawk Consultants 620 W. Fireweed Ln, Ste 201 Anchorage, AK 99503		907. 274. 1877	dfitzhugh@hawkpros.com	NO
JEFF BAKER 12900 MOUNTAIN PL ANCHORAGE AK 99516		907 317 2054	JBAKER@MBAKERINTL.COM	NO
DAVE NORTON HAWK CONSULTANTS		907 278 1877	DAVENORTON@HAWKPROS.COM	NO
Shea Siegert Staff to Rep. Johnson		907-465- 4958	shea.siegert@akleg.gov	No

ASAP
Alaska's In-State Gas Pipeline

USACE – AGDC – ERM
ALASKA STAND ALONE PIPELINE PROJECT SEIS
PUBLIC MEETING
July/August 2017
SIGN-IN SHEET

PLEASE PRINT NAME AND ADDRESS	AGENCY AND DISCIPLINE	PHONE NUMBER	EMAIL ADDRESS	MAKE ORAL COMMENT?
Joshua Gumbs 5115 Hoffman Street		907-852-3029		
Chris Hugo 5210/A/8/Karluk		907-852-5445		
Qaiyaan Harcharek PO Box 69 Utqiagvik, AK	NSB Wildlife + AGDC Community	852-0350	Qaiyaan.Harcharek@north-slope.org	Maybe
Martha Stackhouse PO Box 1238 Utqiagvik	retired	852-2174	mmalaska7@gmail.com	yes
Etta Fournier		852-1345		

ASAP

Alaska's In-State Gas Pipeline

USACE – AGDC – ERM

ALASKA STAND ALONE PIPELINE PROJECT SEIS

PUBLIC MEETING

July/August 2017

SIGN-IN SHEET

PLEASE PRINT NAME AND ADDRESS	AGENCY AND DISCIPLINE	PHONE NUMBER	EMAIL ADDRESS	MAKE ORAL COMMENT?
Rich Thorne Box 26036 Bettles Field, AK 99726		907-692-5791	rbthorne@hughes.net	Maybe
Frank Thompson PO 26042 Bettles, AK 99726	Evansville Tribal Council 1st Chief	692-5005	evansville alaska @ gmail.com	
Noel ~~Bond~~ Bond c/o General Delivery Bettles, AK 99726			noel_bond@partner.nps.gov	
Anya Bronowski			amanra83@hotmail.com	
Noel Swanson	Evansville Tribal Council Environmental Coordinator	907-371-6587	RigPig141@yahoo.com	
Naomi Costello	Evansville Tribal Council	907-692-5005	evansvillealaska@gmail.com	yes

ASAP

Alaska's In-State Gas Pipeline

USACE – AGDC – ERM

ALASKA STAND ALONE PIPELINE PROJECT SEIS

PUBLIC MEETING

July/August 2017

SIGN-IN SHEET

PLEASE PRINT NAME AND ADDRESS	AGENCY AND DISCIPLINE	PHONE NUMBER	EMAIL ADDRESS	MAKE ORAL COMMENT?
Roy Tansy Jr.	Ahtna, Inc.	317-0864	rtansy@ahtna.net	
JOE BOVEE	Ahtna	822-3476	jbovee@ahtna-inc.com	
Jennifer Murrell	DNR	269-6479		
Tammany George	Ahtna & Cantwell Village Member	300 0660	tstraughn1@ahtna.net	
Erica Watson		887-8248	ytalvezporquellneve@gmail.com	
CHRISTINE MINGER	DNR	269 6874		

FAIRBANKS

July 20, 2017

ASAP

Alaska's In-State Gas Pipeline

USACE – AGDC – ERM

ALASKA STAND ALONE PIPELINE PROJECT SEIS

PUBLIC MEETING

July/August 2017

SIGN-IN SHEET

PLEASE PRINT NAME AND ADDRESS	AGENCY AND DISCIPLINE	PHONE NUMBER	EMAIL ADDRESS	MAKE ORAL COMMENT?
Sue Signor 714 4th Ave Fairbanks AK 99709	HDR	865.2285 (907)	susan.signor@hdrinc.com	No
Erin Julianus 222 University Ave Fairbanks, AK 99709	BLM	907-474-2358	ejulianus@blm.gov	No
John Ringstad 757 Illinois Fbks AK 99701		907 590 2026		NO
Bear Ketzler 1154 Park Dr Esk AK 99709		907 978 5348	bearfanana@gci.net	
Seth Whitler 567 Ookpik Way Fairbanks, AK 99709	Alaska Legislature Rep. Guttenberg	456 8172	seth.whitler@AKleg.gov	No
BECCA BRADO 330 WENDELL AVE STE FAIRBANKS, AK 99701	FAIRBANKS ECONOMIC DEVELOPMENT	907. 452 2185	BBRADO@INVESTFAIRBANKS.COM	No
Robert Sattler	TCC	452 8251 x 3343	Bob.sattler@tananachiefs.org	No

ASAP

Alaska's In-State Gas Pipeline

FAIRBANKS

July 20, 2017

USACE – AGDC – ERM

ALASKA STAND ALONE PIPELINE PROJECT SEIS

PUBLIC MEETING

July/August 2017

SIGN-IN SHEET

PLEASE PRINT NAME AND ADDRESS	AGENCY AND DISCIPLINE	PHONE NUMBER	EMAIL ADDRESS	MAKE ORAL COMMENT?
K. Boyd	XK	378 657		NO
Dave Watts Box 81837, FBX 99708	—	455-4185	hdtwwatt@hotmail.com	NO
Marc Luiken	DOT/PF	465-3902	marc.luiken@alaska.gov	NO
Steve Kelly P.O.Box 63 Ester, AK 99725	—	479-4578	sacbalam@yahoo.com	NO
Warren Christian 2385 San Augustin Dr. North Pole 99705		460-2771	christianw@doyon.com	NO

ASAP

Alaska's In-State Gas Pipeline

Healy, AK

USACE – AGDC – ERM

ALASKA STAND ALONE PIPELINE PROJECT SEIS

PUBLIC MEETING

July/August 2017

SIGN-IN SHEET

PLEASE PRINT NAME AND ADDRESS	AGENCY AND DISCIPLINE	PHONE NUMBER	EMAIL ADDRESS	MAKE ORAL COMMENT?
Terry Hinman			hinman@mtaonline.net	
Jennifer Murrell	DNR	269-6479		
CHRISTOPHER MINCHEZ	DNR	269 6874	CHRISTOPHER.MINCHEZ@ALASKA.GOV	
KEN ENGELS DENALI RV PARK		683-1500		
Christopher Infante PO Box 218 Denali Park AK 99755		683-4430	cinfant@hotmail.com	
ANDREA BLAKESLEY	NPS	683-9545		

ASAP

Alaska's In-State Gas Pipeline

USACE – AGDC – ERM

ALASKA STAND ALONE PIPELINE PROJECT SEIS

PUBLIC MEETING

July/August 2017

SIGN-IN SHEET

Healy, AK

PLEASE PRINT NAME AND ADDRESS	AGENCY AND DISCIPLINE	PHONE NUMBER	EMAIL ADDRESS	MAKE ORAL COMMENT?
Ree Nancarrow		750-5634	reenan@mtaonline.net	

ASAP

Alaska's In-State Gas Pipeline

MINTO

July 21, 2017

USACE – AGDC – ERM

ALASKA STAND ALONE PIPELINE PROJECT SEIS

PUBLIC MEETING

July/August 2017

SIGN-IN SHEET

PLEASE PRINT NAME AND ADDRESS	AGENCY AND DISCIPLINE	PHONE NUMBER	EMAIL ADDRESS	MAKE ORAL COMMENT?
Carla Dick			carla_dick85@outlook.com	
Vera Weiser			VWeiser@hotmail.com	
Josh Weiser			weiser1984@gmail.com	
Richard R Frank				
Charlie Titus				
Cynthia Wilder				

NUIQSUT

July 18, 2017

ASAP

Alaska's In-State Gas Pipeline

USACE – AGDC – ERM

ALASKA STAND ALONE PIPELINE PROJECT SEIS

PUBLIC MEETING

July/August 2017

SIGN-IN SHEET

PLEASE PRINT NAME AND ADDRESS	AGENCY AND DISCIPLINE	PHONE NUMBER	EMAIL ADDRESS	MAKE ORAL COMMENT?
99320 NUIQ, AK Robert Nukapigak 9978[illegible]	Self	N/A	N/A	
CLARENCE AHNUPKANA				
James Taalak	city of Nuiqsut	480 6727	Jamestaalak@hotmail.com	
Ed Nukapigak	Self			
Patrick E	Self	—	—	
Jeremiah Ahmaklak	self	N/A		
SARAH HELME	SELF		jade_aatai@yahoo.com	

Nuiqsut

July 18, 2017

ASAP

Alaska's In-State Gas Pipeline

USACE – AGDC – ERM

ALASKA STAND ALONE PIPELINE PROJECT SEIS

PUBLIC MEETING

July/August 2017

SIGN-IN SHEET

PLEASE PRINT NAME AND ADDRESS	AGENCY AND DISCIPLINE	PHONE NUMBER	EMAIL ADDRESS	MAKE ORAL COMMENT?
Kate Taleak	Self		native-pride90@ymail.com	
Eunice Mary Brower	Self	907 480 4800	Kunnan.eunicemary@gmail.com	
Jimmy Kasak	Self	N/A	N/A	
ABRAHAM STINE JR	Self	907 480-5354		
Pauline Bowers	City of Nuiqsut	907 479-1438	tavialuk1978@gmail.com	
Dorcas Tukle	Self	907480 1332		
Martha Ipalook	Self			

ASAP

Alaska's In-State Gas Pipeline

USACE – AGDC – ERM

ALASKA STAND ALONE PIPELINE PROJECT SEIS

PUBLIC MEETING

July/August 2017

SIGN-IN SHEET

PLEASE PRINT NAME AND ADDRESS	AGENCY AND DISCIPLINE	PHONE NUMBER	EMAIL ADDRESS	MAKE ORAL COMMENT?
Talon Boeve		495-0744	twboeve@outlook.com	
Cicely Boeve		495-0744	cwboeveak@gmail.com	
(will have ASAP send to) Tam Boeve		495-0744	gntboeve@hotmail.com	
Paula Glenka Chairperson	TRAPPER CREEK Community COUNCIL	733-6506	trappercreek2010@gmail.com	PO Box 130721 Trapper Creek AK 99683
Daniel Gagnon	MVFCU Analyst	315-3886	dangagnon7@gmail.com	
Jennifer Mussell	DNR	269-6479		
CHRISTOPHER MINNICK	DNR	269 6874		

ASAP

Alaska's In-State Gas Pipeline

USACE – AGDC – ERM

ALASKA STAND ALONE PIPELINE PROJECT SEIS

PUBLIC MEETING

July/August 2017

SIGN-IN SHEET

PLEASE PRINT NAME AND ADDRESS	AGENCY AND DISCIPLINE	PHONE NUMBER	EMAIL ADDRESS	MAKE ORAL COMMENT?
Todd & Carrie Smoldon	Willow residents	907. 947.9891		
Denise Richardson	Trapper Creek.			

ASAP

Alaska's In-State Gas Pipeline

USACE – AGDC – ERM

ALASKA STAND ALONE PIPELINE PROJECT SEIS

PUBLIC MEETING

July/August 2017

SIGN-IN SHEET

Willow, AK
8/18/17

PLEASE PRINT NAME AND ADDRESS	AGENCY AND DISCIPLINE	PHONE NUMBER	EMAIL ADDRESS	MAKE ORAL COMMENT?
Lisa Schooler N/KSS				
Tam Boeve HC 89 Box 124 Willow 99688		495-0744	gntboeve@hotmail.com	
Talon Boeve HC 89 Box 124 Willow AK 99688	WACO Vice Chair	354-0744	twboeve@outlook.com	
Ciddy Boeve HC 89 Box 124 willow AK 99688		495-0744	cwboeman@gmail.com	
Brian Glenn PO Box 561 99688		408 418 8862	brigreenears@gmail.com	Y
Chip Taylor Box 693, Willow				
Mary & George Howard PO Box 243 Willow		907-841-0318 George	geomary@mtaonline.net	

Lynn & Tom Phillips willow 495-8010

ASAP

Alaska's In-State Gas Pipeline

USACE – AGDC – ERM

ALASKA STAND ALONE PIPELINE PROJECT SEIS

PUBLIC MEETING

July/August 2017

SIGN-IN SHEET

Willow, AK
8/18/17

PLEASE PRINT NAME AND ADDRESS	AGENCY AND DISCIPLINE	PHONE NUMBER	EMAIL ADDRESS	MAKE ORAL COMMENT?
Henry & Kim Casto 900 N. Gambit Circle		907-354-6361	rustybucket0097@yAhoo.Com	
Ruth & Ron Chester 900 N. Gambit Circle		907-795-6063	dreamcatcherAK@yahoo.com	
Debbie Cook 1852 N. MAE LOOP		602 373 2643	MISSDEBBIEPHX@AOL.Com	
Vic Stanculescu Box 891		495-0812		
Tina Owen Box 891		495-0812		
Mark Merrill Box 103		232-1168		
Steve Charles PO Box 76 99688		455-4368	scharles@mtaonline.net	
Mike Gallagher		351-0152	MGallagherAK@GMail.com	

ASAP

Alaska's In-State Gas Pipeline

USACE – AGDC – ERM

ALASKA STAND ALONE PIPELINE PROJECT SEIS

PUBLIC MEETING

July/August 2017

SIGN-IN SHEET

Willow, AK
8/18/17

PLEASE PRINT NAME AND ADDRESS	AGENCY AND DISCIPLINE	PHONE NUMBER	EMAIL ADDRESS	MAKE ORAL COMMENT?
David Hudspeth 12780 Hillcrest Way		907-360-7022	hudsdkh@gmail.com	
Randall & Karen Kovalcik	MSB	907 315-0865		
Bruno Bryner P.O. Box 247 Willow, AK 99688		907 495-6253		
Todd & Carrie Smolden	Private	907-947-9891	tsmolden@gci.net	
Richard Boothby	Willow Fire Dept	907-354-3246	richard.boothby@matsugov.us	
Bob Chlupach	SELF	907-841-1045		
Randy Offe Cain	Resident	495-1318		

ASAP

Alaska's In-State Gas Pipeline

USACE – AGDC – ERM

ALASKA STAND ALONE PIPELINE PROJECT SEIS

PUBLIC MEETING

July/August 2017

SIGN-IN SHEET

PLEASE PRINT NAME AND ADDRESS	AGENCY AND DISCIPLINE	PHONE NUMBER	EMAIL ADDRESS	MAKE ORAL COMMENT?
JACKIE VEATS WISEMAN, AK 99790			WOOLYTUNDRA@GMAIL.COM	
TOM "8-BALL" HOBELE		(907) 678-8888	PO BOX 9024 COLD FOOT, AK 99709	
Jack Reakoff Wiseman AK 99790		907 678-2007 b	wisemanwolf@gmail.com	Yes.
Jack McClure Wiseman, AK		907-678 -2052		
Bob Maurer Wiseman AK		907-678- 2024		
Ashley Johnson wiseman, AK		907-678 8021		
Jordan Johnson wiseman, AK		~1		

ATTACHMENT D

Comment Summary Statements and Responses Report

- Page Intentionally Left Blank –

Issue Code	Description	Final Response	Section #s of Change
ACC_1	Comments from property owners refusing to grant right-of-way to the ASAP Project.	AGDC provided the USACE with a response letter to the commenter (Mr. and Mrs. Lundstrom), dated August 1, 2017. The letter documents AGDC's commitment to work with the property owners to address access restriction to their property from ATV traffic and attendant noise and compensation for right-of-way access across the property should the Project proceed.	No change
ACC_10	The ASAP right-of-way should be maintained for open access to subsistence uses crossing or paralleling it.	Comment acknowledged. Land access agreements and lease stipulations for rights-of-way will be negotiated between AGDC and each land owner. Potential impacts to Subsistence are discussed in Section 4.20, along with proposed measures to mitigate impacts. Mitigation measures are also included in Appendix V of the Draft SEIS and Appendix M of the Final SEIS.	No change
ACC_11	We are concerned about winter access restrictions that may occur at the Denali fault line (e.g., at Windy Creek and Panorama Mountain).	USACE appreciates the comment. The length of above ground pipe in current proposed Denali Fault alignment is approximately 1,500 ft, and is not expected to result in substantial winter access impediment. Access restrictions to the ROW post-construction will be based on requirements agreed upon with the individual parcel owners.	No change
ACC_12	The Project right-of-way will open new access areas that will increase trespassing issues and associated trespassing conflicts.	The Project Proponent has proposed mitigation for impacts to unauthorized land access in Appendix V in the Draft SEIS and in Appendix M of the Final SEIS. Additionally, AGDC plans to negotiate land access agreements and lease stipulations for rights-of-way with each land owner. Land owners may consider the ability for the public to access land for subsistence, recreation, or other uses in the land access agreements.	No change
ACC_13	The Trans-Alaska Pipeline System (TAPS) owners have not approved the proposed route across the TAPS Pump Station 1 property.	AGDC intends to engage the Trans-Alaska Pipeline System owners in negotiations to utilize the referenced property.	No change
ACC_14	Letter explaining the access issues on lands south of the Denali State Park and west of the Parks Highway, both with respect to the MP 131 facility and the fact that the pipeline would be on the west side of the Parks Highway. Letter states the Project would create several access problems for people owning property south of Denali State Park near the proposed MP 131 facility. The facility is sited on a parking area used by hundreds of recreational snowmachiners and private property owners.	AGDC is proposing a change that aligns both the ASAP and Alaska LNG Rights-of-Way on the east side of the Parks Highway in this location. The parking area in question appears to be the existing and already disturbed material site located on publicly-owned MatSu Borough land on the west side of the Parks Highway at Parks MP 131. AGDC will retain this proposed location of the Swan Lake Camp, Pipe Storage Yard and Material Site just south of ASAP MP 645 and just west of Parks MP 131. This is an existing material site with already disturbed land. The use and expansion of this site is preferable to disturbing a new greenfields area.	No change
ACC_15	The clear-cut Project right-of-way will potentially enable inappropriate access to wetlands, anadromous streams, and other sensitive areas.	Proposed measures to restrict public access to the ROW are described in Appendix V Mitigation Measures of the Draft SEIS (Appendix M of the Final SEIS) and Sections 4.15 Land Use, 4.16 Recreation, and Section 4.20 Subsistence. Additional text has been added to Chapter 4 discussing the potential impacts to water resources, vegetation, and land use as a result of increased public access. It is agreed that clear-cutting could increase the publics' access to sensitive resources however this accessible would be limited in duration and magnitude. Once the temporary ROW was allowed to revegetate public access would again be limited and access to the permanent ROW would be restricted by the Project proponent for security purposes and as obligation to the landowner.	Chapter 4
ACC_16	The access road to McKinley Village (MP 539 - 541) doubles the affected area. Commercial development is prohibited in this residential district. The location and scope of this access road was misleading and incomplete in the original Final EIS.	AGDC will be using the existing state road, and will develop a new access road outside of Village View Subdivision to access the pipeline right-of-way and a material site located adjacent to the gas pipeline. The access road and material site are located on Denali Borough and State of Alaska lands. There will be no commercial development within the McKinley Village View Subdivision.	No change
ACC_17	The State of Alaska and Bureau of Land Management (landowners of approximately 85 percent of the right-of-way) support the Alaska Gasline Development Corporation's proposed action.	Comment acknowledged.	No change
ACC_18	The proposed Rustic Wilderness camp at Parks Highway MP 80.5 is located atop our two households. A third house is to be constructed here in 2018. We do not give permission for the Project to construct on this lot and have stated as such several times in the past.	USACE appreciates the identification of this discrepancy. The location of the Rustic Wilderness Camp will be moved from the Castro parcel to a State of Alaska parcel several miles south of the parcel in questions.	No change
ACC_19	The statement "Title XI of the Alaska National Interest Lands Conservation Act (ANILCA) establishes procedures for federal agencies to grant ROWs on lands selected by, or granted, or conveyed to the State of Alaska under Section 6 of the Alaska Statehood Act (16 U.S.C. 410hh-3233, 43 U.S.C. 1602-1784)." is incorrect. ANILCA Title XI establishes procedures for siting transportation and utility systems within federal conservation system units established or expanded by ANILCA. It does not establish procedures for granting rights-of-way across State or State-selected land.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.11.2.1
ACC_2	Opening new access areas and new trails will allow outsiders access to these areas to hunt, and this will negatively impact Native people.	Section 4.20 of the SEIS discusses the environmental consequences to subsistence from the proposed Project. Access to the proposed Project would be restricted to operators and contractors working on the proposed Project, and access points secured to protect the proposed Project infrastructure. Temporary access roads and trails would be allowed to revegetate after construction was complete.	No change
ACC_20	The sentences "The federal government owns parcels within the proposed ROW that are managed by the BLM and NPS. The Denali NPP Route Variation crosses additional federal lands managed by NPS." suggests that ASAP traverses National Park Service (NPS)-managed lands in addition to those traversed with the Denali National Park and Preserve (NPP) Route Variation. No NPS-managed lands are traversed by ASAP in addition to the Denali NPP Alternate.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.11.3.1
ACC_21	The statement "As RS 2477 trail ROWs are easements and are not owned by the state, land ownership at these crossings are addressed under the respective land ownership sections." is incorrect. Revised Statute (RS) 2477 rights-of-way (ROWs) were established irrespective of the underlying fee ownership. Many RS 2477 ROWs traverse State-owned land and therefore are owned by the State.	USACE appreciates the observation and agrees with the suggestion. This statement was revised, and now states, "Some RS 2477 trail ROWs traverse State-owned land and are therefore owned by the state. The RS 2477 trail ROW easements that are not State-owned are addressed under the respective land ownership sections (section 3.11.5).	3.11.3.2
ACC_22	Please verify that the cities of Anderson and Nenana own parcels within the right-of-way (ROW) after the realignment to v6.1, then correct this statement "The cities of Anderson and Nenana own parcels within the proposed ROW. Other local governmental entities having ownership of parcels within the proposed ROW include the FNSB, Mat-Su Borough, Nenana Airfield, and the Railbelt School District."	Land status data provided by AGDC suggests that the cities of Anderson and Nenana own parcels within the ROW, however, these are outside of the incorporated city boundaries. Two of these parcels are in the Nenana vicinity and eight of these are in the Anderson vicinity.	3.11.3.3
ACC_23	This statement is incorrect "The cities of Anderson and Nenana own parcels within the proposed ROW. Other local governmental entities having ownership of parcels within the proposed ROW include the FNSB, Mat-Su Borough, Nenana Airfield, and the Railbelt School District." ASAP does not intersect parcels owned by the City of Anderson or the Railbelt School District. The Nenana Airfield is not a local governmental entity. The Nenana Airfield, which is not intersected by ASAP, is owned by the City of Nenana.	Land status data provided by AGDC suggests that the cities of Anderson and Nenana own parcels within the ROW, however, these are outside of the incorporated city boundaries. Two of these parcels are in the Nenana vicinity and eight of these are in the Anderson vicinity. The statement referenced has been updated in the Final SEIS. AGDC's GIS land ownership database was developed using publicly available sources including the State of Alaska Department of Natural resources (DNR), U.S. Bureau of Land Management (BLM), Fairbanks North Star Borough, Matanuska Susitna Borough and the North Slope Borough resources. Locations without available GIS data were developed from Land Title records and built into the subject database. Land Title records were obtained and title proofed pending further ajudication from public and private sources.	3.11.3.3
ACC_24	This statement is incorrect: "Native corporation land is often held in large tracts and used for subsistence purposes or developed/sold to generate revenue for the corporation." Alaska Native Claims Settlement Act corporations rarely, not "often", sell their land. Recommend replacing "sold" with "leased."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.11.3.3.1
ACC_25	This statement is partially incorrect: "The ANCSA established 12 for-profit Alaska Native Village Corporations (a 13th corporation was later added for Alaska Natives living outside the state and was involuntarily dissolved on December 31, 2013), which administers claims from the settlement." Recommend deleting "administers (sic) claims from the settlement." from the sentence. The Alaska Native Claims Settlement Act (ANCSA) extinguished Native claims to aboriginal lands and provided land and money as part of the Settlement. ANCSA Corps do not "administer" Native claims.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.11.3.3.1

Issue Code	Description	Final Response	Section #s of Change
ACC_26	This paragraph is misleading "Under the Alaska Native Allotment Act of 1906 (34 Stat. 197, as amended), qualifying Alaska Natives were allotted up to 160 acres of non-mineral land. The proposed Project ROW would intersect Alaska Native Allotments awarded under the Act. The Tanana Chiefs' Conference (TCC) manages a trust service with the Bureau of Indian Affairs and acts as trustee for native allotment property owners on behalf of the 42 villages of Interior Alaska. There are several native allotments in and around the Cantwell area, as represented in purple in Figure 3.11-1, as well as throughout the North Slope Borough." This paragraph misleads the reader into thinking that ASAP impacts many Native Allotments, including "throughout the North Slope Borough." However, ASAP, including both Mainline, Fairbanks Lateral, and Related Facilities infrastructure, intersects a total of three Native Allotments, only one of which is located within the North Slope Borough.	According to AGDC's GIS data, there are four Native Allotments intersected by the Project impacts layer: AKFF 011322B, AKA 015905, AKFF 014229, AKFF 014228. Of these four Allotments, only one is within the NSB (AKFF 011322B). The text in the SEIS has been modified to clarify that only four Native Allotments are intersected. AGDC's GIS land ownership database was developed using publicly available sources including the State of Alaska Department of Natural resources (DNR), U.S. Bureau of Land Management (BLM), Fairbanks North Star Borough, Matanuska Susitna Borough and the North Slope Borough resources. Locations without available GIS data were developed from Land Title records and built into the subject database. Land Title records were obtained and title proofed pending further ajudication from public and private sources.	3.11.3.3.2
ACC_27	Table 3.11-2 overstates the acreage of forested Native Allotments impacted by the Project. Table 3.11-1 Land Ownership by Project Segment has a total Native Allotment acreage of 12.57. This is Mainline-affected acreage. When the related facilities-affected Native Allotment acreage is added, the total affected Native Allotment acreage is approximately 23.44, not 38 as indicated in Table 3.11-2. And this includes the Ahmaogak Allotment at West Dock, which is not forested.	USACE appreciates the observation. Table 3.11-2 has been updated.	Table 3.11-2
ACC_28	Remove YKCA from the lists of boroughs, as it is not a borough but an unorganized borough. Such as here: "The proposed Project route crosses through five Alaska Boroughs: NSB, YKCA, FNSB, Denali Borough, and the Mat-Su Borough." Section 3.11.8.2 correctly describes this. Recommend changing 3.11.8 consistent with the correct 3.11.8.2.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.11.8, 3.11.8.2, and 3.11.8.5
ACC_29	This statement is incorrect: "Land managed by the Trapper Creek, Susitna, Willow Area, Big Lake and Point MacKenzie Community Councils would intersect the proposed Project route." Community councils do not manage lands. A recommended edit for each of these Community Council Comprehensive Plan sections would be similar to the following recommended edit for 3.11.9.5.7: "The proposed Project route would intersect land described by the Trapper Creek Community Council Comprehensive Plan. The Matanuska-Susitna Borough is currently developing the Plan with public input from the local Trapper Creek Community Council."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.11.9.5.7, 3.11.9.5.8, 3.11.9.5.9, 3.11.9.5.10, and 3.11.9.5.11
ACC_3	Will the Project purchase new land/property?	AGDC may purchase property to accommodate infrastructure development. A map of the current proposed infrastructure locations is provided on the ASAP SEIS website:asapeis.com	No change
ACC_30	This statement is partially incorrect "...the BLM also is the administrator for the INHT". The Bureau of Land Management (BLM) is the statutorily-designated federal administrator for the Iditarod National Historic Trail, managed according to the Iditarod National Historic Trail Comprehensive Management Plan (CMP) and a 1988 Memorandum of Agreement (MOA) between the BLM and State of Alaska. Administration of the National Trail by the BLM does not include management of non-Federal trail segments or sites. Under the CMP, no single agency or organization manages the entire trail; instead, the plan calls for cooperative management by federal, State and local agencies. Nothing in the MOA shall affect or interfere with fulfillment of the obligations and rights of the parties to manage the lands and programs administered by them in accordance with their other land management responsibilities. Recommend adding this information so that the general public is aware that the BLM's role as the federal administrator for the Iditarod National Historic Trail (INHT) does not mean that they manage the entire INHT.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.12.4.2.1
ACC_31	We recommend an addition to this phrase: "The trail system is managed under the Iditarod National Historic Trail Comprehensive Management Plan (BLM, 1986a) with the accompanying Resource Inventory (1982)." We recommend adding that the Iditarod National Historic Trail is managed not only under the Comprehensive Management Plan but also under a 1988 Memorandum of Agreement between the Bureau of Land Management (BLM) and various State of Alaska land management agencies. The US Forest Service and the BLM also entered into a similar agreement regarding the management and coordination of their respective historic sites and trail segments.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.12.4.3.1.3.13
ACC_32	This statement "Along the Dalton Highway, the pipeline crosses lands managed under the Central Yukon RMP and East Alaska RMP." suggests that the Central Yukon RMP is complete ("lands managed under the Central Yukon RMP"). Whereas the BLM released a Record of Decision and Approved Plan for the East Alaska RMP on September 7, 2007, a Record of Decision is not scheduled until 2019 for the Central Yukon RMP per the BLM Alaska's Central Yukon RMP/EIS planning webpage. A more correct statement would be that "lands will be managed under the Central Yukon RMP, which is in progress, and the East Alaska RMP, which is in effect."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.12.4.3.1.3.14
ACC_33	Point Mackenzie is not within 5 miles of any Project feature. Big Lake is within 5 miles of a proposed access road but not any other Project feature. These towns should be removed from Table 3.19-1 and Point Mackenzie from Table 3.19-2, and the descriptive text.	Point MacKenzie has been removed from both tables and the text discussion. The Big Lake distance has been updated in Table 3.19-2 and has been removed from Table 3.19-1 for the same reason as Point MacKenzie above.	3.19, Table 3.19-1, and Table 3.19-2
ACC_34	Alternative access should be provided around temporarily blocked areas of public access, R2S477 easements, and section-line easements.	USACE appreciates the comment. There will be unavoidable temporary restrictions to public access during the construction of the pipeline necessary for public safety and operational reasons. During construction, AGDC would work with landowners and land managers to provide alternative access where feasible, or will ensure that temporary restrictions are in place for as short a duration as possible. No long-term closures to public access are expected as a result of this Project, with the exception of site specific restrictions for access to Project facilities for safety or operational purposes.	No change
ACC_35	The proposed work camp in Willow, AK, is located on the same property as Denali View Estates and Denali Vista. The owners have owned this property since 2014.	This comment was shared with AGDC and the proposed Rustic Wilderness Camp has been relocated.	No change
ACC_4	The Project should not use the Jim River staging area of the Bettles Winter Road for storage or man-camp.	Comment acknowledged. The area noted is not located within the Project footprint.	No change
ACC_5	The Project would negatively impact ongoing experiments at the Toolik Field Station. Access to the NSF-funded Toolik Field Station research location at Alaska DOT MS-117 would become more difficult. To avoid an NSF-funded experiment near Toolik Field Station, the pipeline should be rerouted just north of Dalton highway milepost (MP) 279 farther to the north. Gravel pits between MP 277 and MP 287 should not be reactivated for the same reason.	According to the Project proponent, The gravel mining activity for the ASAP Project will be confined to the footprint submitted with the 404 Permit Application (included as an sppendix to the SEIS). Granular material mining activities at ASAP MS 1D-C will be confined to the footprint proposed, which extends due east from the existing pit. The material sites referenced in the comment as Dalton Highway MP 277 and MP 287 are not part of the ASAP Project footprint. Research access through ASAP MS 1D-C will not be blocked, but third party personnel wishing access through the site will have to comply with Project safety policies and procedures and will also be required to complete Project safety training.	No change
ACC_6	The Project has not been in communication with Ahtna to cross/impact 33-miles of Ahtna land.	The Project proponent is aware of the Ahtna's importance to a successful Project and plans to discuss access to land and material sites with Ahtna in the coming months.	No change

Issue Code	Description	Final Response	Section #s of Change
ACC_7	The Project should not use/access National Park Land.	The Project proponent supports Alternative 1 as their proposed alternative, which bypasses Denali National Park. If Alternative 2 is selected, however, the Denali National Park Improvement Act would allow the Project to construct within park lands. On September 18, 2013, the Denali National Park Improvement Act (Public Law 113-33) passed, which includes the following language: Sec. 3. B) Permit (1) a high-pressure natural gas transmission pipeline (including appurtenances) in non-wilderness areas within the boundary of Denali National Park within, along, or near the approximately 7-mile segment of the George Parks Highway that runs through the Park; and (2) any distribution and transmission pipelines and appurtenances that the Secretary determines to be necessary to provide natural gas supply to the Park.	No change
ACC_8	Changing access as a result of the Project means that subsistence access will be eliminated.	The Project proponent has proposed mitigation measures to avoid impacts to subsistence in Section 4.20.3 of the SEIS. These include identifying locations and timing of importance subsistence activities as to avoid impacts, scheduling work to avoid conflicts, and communicating and meeting with regulatory staff and local Alaska Native communities to address potential conflicts.	No change
ACC_9	The Project will restrict access to communities along the route (e.g. Wiseman and Coldfoot). Access restrictions could impact the tourism industry if the roads are blocked for too long.	The ASAP alignment and access roads will not cross or impede access to Wiseman, and the footprint will not utilize the northern or southern access into Coldfoot Camp as part of the access to material site MS 2B-A. There will be granular material haul trucks on the northern access road. Potential impacts to the tourism industry as well as proposed mitigation measures are described in Section 4.16 of the SEIS.	No change
ACK_1	Comments that are unrelated to the proposed ASAP project.	Comment acknowledged.	No change
AIR_1	The positive air quality impacts to Fairbanks resulting from the project are vastly understated in the Draft SEIS. These benefits need to be discussed.	While some residents and businesses would switch to natural gas from oil and wood once available, the number and extent is dependent on several factors. These factors include foremost the cost, followed by ease of conversion, then satisfaction of the status quo and actual & perceived provincial air quality. The percent of conversions to natural gas would be gradual over decades. As a result, the extent of conversions by these private and commercial sources, and thus the decrease of pollutant impacts, could not be precisely estimated and thus are estimated as minor.	No change
AIR_10	The conclusion is drawn that "The cumulative effect of wildfire management by the proposed project and those associated with other RFFAs would be a reduction in small-scale wildfires." Bureau of Land Management (BLM) suggests that additional information be included on how this conclusion was reached. Elsewhere, the effects of climate change are described as possibly increasing fire likelihood and acres burned. The available literature indicates that only by increasing fire suppression efforts would there be a resulting decrease in small-scale fires. The BLM recommends that this conclusion be adjusted accordingly or deleted.	USACE appreciates the recommendation. The text has been updated to read, "Natural events such as flooding and wildfires are a common occurrence in Alaska. Wildfires have an important, beneficial effect to both the boreal forest and tundra ecosystems in Alaska. Wildfires positively impact vegetation resources by releasing trapped nutrients back into the ecosystem as well promoting natural succession of species (USFWS, 2007). Wildfire suppression for the protection of structural components of the proposed Project, its associated workers, and other nearby RFFAs would cumulatively reduce the number of important small-scale wildfires, and lead to unnatural accumulations of fuel. Cyclical wildfires clear excess debris and ultimately reduce the risk of more extensive and dangerous wildfires (EPA, 2016)."	4.26.9.3
AIR_11	The paragraph preceding Table 4.22-1 needs to explain what the significance is of concentrations presented as a percentage of National Ambient Air Quality Standards. While this information may be clear to those with an understanding of air quality, it is not understandable to the public that will be reading this EIS.	The following text has been added to the Final SEIS to address this suggestion: "The National Ambient Air Quality Standards (NAAQS) for different pollutants have different averaging periods and statically determined threshold limits (i.e. NOx (1 hour standard) = 98th percentile of 1-hour daily maximum concentration, average over 3 years). Percentage value is used to describe how close the current air quality has become to a (complex or simple) NAAQS standard. A higher percentage indicates a lesser achievement of the NAAQS standards."	4.22.2
AIR_12	In Section 4.22.3, the first paragraph and the second bullet after the paragraph refer to Best Available Control Technology (BACT) without explaining what the BACT process is or under what regulatory authority it is being required. Please add an explanatory paragraph. Also, it is not clear why the word "mitigate" is used in bullet two of this section because BACT is required by existing permitting regulations. The Clean Air Act is one of the federal laws that require integration with the National Environmental Policy Act, so this description should be reworded to focus on meeting the regulatory standards and avoid using the word "mitigate" as this will lead some readers to assume it is mitigation rather than a regulatory requirements.	USACE appreciates the comment. A definition of BACT and applicable regulatory requirements has been included in Section 4.21.2.2, where BACT are first mentioned in the Public Health section. While implementation of BACT is a regulatory requirement, BACT also provide methods for mitigating potential impacts from the proposed Action.	4.21.2.2
AIR_13	It is not clear how bullets 2-6 of mitigation measures for air quality are related to climate change or greenhouse gas (GHG) emissions. Please explain how mitigation involving vegetation and wetlands would connect to climate change and GHG emission issues. The current description does not offer a clear connection.	Vegetation (as well as permafrost) acts as a carbon stock. Reducing impacts to vegetation could decrease the amount of CO2 released into the atmosphere. This is explained in more detail in Section 4.22.4.1.5. The introductory sentence for Section 4.22.3 has been modified as follows: "Proposed mitigation measures applicable to climate change and GHG emissions impacts, not previously mentioned for air quality, include the following to maintain carbon stocks such as permafrost and vegetation:"	4.22.3
AIR_14	This statement is unclear: "The effect would be site-specific to the air around GCF". Given the concerns about air quality discussed elsewhere in the document, it is not clear why the phrase "the air around GCF" was used. Please add more specificity or a citation to exactly what the geographic extent of the site-specific impacts could be.	Each air pollution source contributes to the air quality within the airshed. An airshed is defined as "a part of the atmosphere that behaves in a coherent way with respect to the dispersion of emissions." The main air pollutant emissions associated with the construction of the GCF are fugitive dust from land disturbance and diesel emissions from engines. The particulate (air pollutants) from these operations are large and heavy and settle out quickly. Thus, they are not usually transported out of the immediate airshed. The site-specific area includes the total acres disturbed (110.8 acres) plus the surrounding airshed.	4.22.4.1.1
AIR_15	This sentence does not provide useful information: "Emissions from construction equipment combustion and fugitive dust would be controlled to the extent required by EPA." Please describe U.S. Environmental Protection Agency's (EPA) regulatory authority on vehicle emissions and the realistic limits of compliance and enforcement on construction equipment operating in Alaska. It is not clear why page 4-617 attributes regulatory authority over construction equipment combustion and fugitive dust with the EPA and this page attributes it to the Alaska Department of Environmental Conservation (ADEC). Please change this sentence to reflect that the authority rests with the EPA.	Text has been added to address the concern, "ADEC has a 20% opacity limit during advisories and episodes; the Fairbanks Plan also has opacity ordinances. Commonly, if air with a 20% opacity due to air pollutants is leaving the property, this is considered a violation of the air pollution laws. In regard to internal combustion engines for construction equipment, including generators, the EPA has promulgated emission standards for manufacturers of internal combustion engines and mobile diesel equipment. They have also required fuel providers to lower sulfur content of fossil fuels, thus reducing the formation of sulfur dioxide."	3.18.3.6.1 and 3.18.3.6.4
AIR_16	The tons per year (tpy) figures for Fugitive Dust in Table 4.22-6 appear to conflict with the statement made on page 4-617 that "Total PM fugitive dust is assumed equal to PM10 fugitive dust". The figures noted in this table are orders of magnitude different from this assumption. Please explain this disparity.	This statement is in reference to the calculation method used to determine vehicle travel fugitive emissions. Sections 4.22.4.1.2 and 4.22.4.1.4 have been revised accordingly.	4.22.4.1.2 and 4.22.4.1.4
AIR_17	This statement is unclear "Current and RFFAs near Denali NPP could impact the air quality monitoring that is conducted in the park as part of its Class I designation." It is not clear how current actions could impact the air quality monitoring in Denali National Park and Preserve (NPP). Would these actions require changes to the existing monitoring or the frequency of monitoring? Or was the sentence trying to saw that current and Reasonably Foreseeable Future Actions (RFFAs) could impact the air quality in Denali NPP?	USACE appreciates the observation. The sentence is stating that current and RFFAs could impact the air quality in Denali NNP.	No change
AIR_18	It is not clear why this discussion of greenhouse gas (GHG) emissions is included on page 4-625. It discusses the possibility of changes in GHG emissions due to the project, but does not discuss in usable detail any of the environmental consequences.	The consequences of GHG emissions and climate change are discussed in Section 4.22.4.1.5 and in Section 4.26.9.17.	No change
AIR_19	This statement is unclear: "The overall impact of the operation of the GCF is expected to be minor, for the following reasons..." It is not clear how meeting permitting standards automatically makes the impact of the Gas Conditioning Facility (GCF) operations minor. Please describe in these bullets why the GCF operations would fall under the Prevention of Significant Deterioration permit, summarizing the emissions and regulatory caps on emissions.	USACE appreciates the suggested changes regarding the presentation of information in the SEIS. The following text has been added to address this suggestion: "The EPA and ADEC's health-based standards have been determined to be safe impacts in regard to the emissions of air pollutants. If proper permitting and air impact analyses are performed, as described in the above bulleted list, including requirements for clean fuels and air pollution control equipment, a facility should have minor impact on human health and environment."	4.22.4.2.1
AIR_2	Add a citation and evidence for this statement or delete it from the document: "It has been hypothesized that the rate of movement could be accelerated by a warming climate."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.2.4.1

Issue Code	Description	Final Response	Section #s of Change
AIR_20	Background design values for Prudhoe Bay provide air quality data that could be used to conduct more thorough modeling for the proposed Gas Conditioning Facility. Table 3.18-6 contains blank entries for $PM_{2.5}$ and CO and is missing background values for NO_2 and SO_2. More recent datasets may also be available. The SEIS should re-evaluate and sizeable datasets are available, preferably a 3-year dataset. Background design value should be reported for each of the criteria air pollutants. It would be helpful if Table 3.18-6 noted where National Ambient Air Quality Standards calculations were not used.	The USACE appreciates the comment. Table 3.18-6 has been updated and more recent ambient air quality data has been used to report values for each of the criteria pollutants included in the table.	No change
AIR_21	Table 4.22-10 provides information on the greenhouse gas (GHG) emissions from the Gas Conditioning Facility (GCF), so the end of the sentence should read "the overall impact to climate change would be moderate. From the prior descriptions it does not appear that climate change would have a moderate impact on the GCF facility or its operation.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.22.4.2.4
AIR_22	Appendix U should include a list of inputs such as RunSpec files from each MOVES run to show what settings were used for the modeling.	USACE appreciates the suggestion. Additional background information related to emissions factors has been included in the Final SEIS. Information included in Appendix U of the Draft SEIS is located in Appendix O of the Final SEIS.	Appendix O
AIR_23	This statement is a misnomer: "The first 62 miles of the proposed pipeline in Alternative 2 would be aboveground. This could reduce vegetation disruption resulting in less fugitive dust." The reason the first 62 miles of pipeline is aboveground in Alternative 2 is due to permafrost and the vulnerability to thermokarst and subsidence if the active layer of insulation is disturbed during pipeline construction, so it is a misnomer to suggest that a reduction in vegetation disruption would result in less fugitive dust.	This statement acknowledges that less fugitive dust may be generated as a result of an above ground portion of the pipeline. It does not imply that the above ground construction option was proposed to mitigate fugitive dust. Reasoning supporting the inclusion of each Alternative is addressed in Chapter 2.	No change
AIR_24	This statement is unclear/untrue: "The project may also result in minor positive air quality impacts during operation and maintenance." It is not clear how this general statement can be made. This statement appears from prior discussions to be premised on the introduction of natural gas into the Fairbanks North Star Borough and customers converting from oil-fired, wood-fired, or coal-fired heating devices. The rate of conversion to natural gas is dependent on the cost of conversion and the cost of natural gas as that time. The variables involved in this future scenario would appear to make this statement speculative and not reasonably foreseeable, so the sentence should be rewritten to make that clearer.	EPA reclassified the Fairbanks North Star Borough's air quality from "moderate" to "serious" this year and news sources compared the air quality to Beijing. As a result, there is an increase urgency in the region to use cleaner fuels for heating. If natural gas is available and at a reasonable cost, a percentage of area sources and private residents would switch to natural gas. Stability in the price and ease of conversion to natural gas would also capture another percentage of the population. Thus, we can conservatively say that at least a minor improvement in regional air quality will occur.	4.26.9.17
AIR_3	This statement should be updated to reflect the U.S. Environmental Protection Agency's (EPA) new and most recent position on greenhouse gas (GHG) regulations: "On October 30, 2009, EPA promulgated 40 CFR 98, the first comprehensive national system for reporting emissions of CO2 and other GHGs produced by major sources in the U.S. Through this new reporting, EPA would collect comprehensive and accurate data about the production of GHGs in order to confront climate change. Approximately 13,000 facilities, accounting for about 85 percent to 90 percent of GHGs emitted in the U.S., are covered under the rule." Please also apply the edit to Section 4.	This statement is inluded in Section 3.18.3.14.	No change
AIR_4	The Council on Environmental Quality guidance as mentioned in Section 3.18.4.1 was withdrawn April 5, 2017. See the following links and update the section accordingly. Please also apply elsewhere in Section 3 and throughout Section 4.22 where appropriate. https://www.gpo.gov/fdsys/pkg/FR-2017-04-05/pdf/2017-06770.pdf http://climatechange.procon.org/view.answers.php?questionID=001445 https://www.epw.senate.gov/public/index.cfm/2016/8/inhofe-statement-on-ceqs-final-guidance-on-considering-climate-change-in-environmental-reviews	Reference to the withdrawal of the CEQ Guidance has been included, where applicable throughout the Final SEIS.	3.18, 4.22
AIR_5	This statement needs to be updated "Likewise, the air quality would be further improved to the extent GVEA electrical generation and Flint Hills Refinery could be economically converted from naptha, diesel and coal to natural gas." As of December 2016, the Flint Hills Refinery in North Pole was being dismantled, so there is no hope of oil refining operations restarting.	USACE appreciates the comment. This sentence as been removed from the Final SEIS.	4.26.9.17
AIR_6	This connection is unclear: "Effects noted in this table for climate change includes 'increase in levels of air contaminant concentrations'." It is not clear what the connection is between climate change and an increase in levels of air contaminant concentrations. If the increase is due to an increase in wildfires due to climate change, that effect is already covered on page 4-835.	USACE appreciates the comment. The increase in levels of air contaminants from climate change was included in this table for a few reasons which include increases in methane gas as a result of increased temperatures, changes in wind patterns which may result in air stagnation zones, and as the commenter noted, increased wildfires from climate change result in an increase in air contamination.	No change
AIR_7	This statement needs to be updated: "Projected annual temperatures vary based on assumptions of economic and population growth, changes in energy and land use, and resource availability; however, projected annual mean temperature increases for Barrow, Alaska, ranges from 1.5 to 3.3°C by the year 2030 (Larsen et al., 2008)." This should be updated to a more recent assessment (e.g., Regional Climate Trends and Scenarios for the U.S. National Climate Assessment: Part 7. Climate of Alaska. National Oceanic and Atmospheric Administration Technical Report NESDIS 142-7) and should refer to the impacts along the Project area, not just Barrow, Alaska.	The referenced statement has been updated to reflect more recently available information.	4.22.4
AIR_8	We disagree with the statement "Air Quality: Increasing the availability of utility grade natural gas to FNG or GVEA (RFFAs N. 37 and 53) could have minor...." This needs to be changed from a minor impact to a major positive impact.	While some residents and businesses would switch to natural gas from oil and wood once available, the number and extent is dependent on several factors. These factors include foremost the cost, followed by ease of conversion, then satisfaction of the status quo and actual & perceived provincial air quality. The percent of conversions to natural gas would be gradual over decades. As a result, the extent of conversions by these private and commercial sources, and thus the decrease of pollutant impacts, could not be precisely estimated and thus are estimated as minor.	No change
AIR_9	Near-field air quality modeling should be undertaken for the Gas Conditioning Facility to assess project impacts on local air quality and Prevention of Significant Deterioration increment consumption so appropriate mitigation measures can be developed as needed.	The USACE has been provided NAAQS modeling results for the GCF for initial air permitting, along with the ASAP Dispersion Modeling Protocol. The information from the NAAQS GCF Modeling has been included in the SEIS.	4.22.4.2.1
AKN_1	Which cultural resources would be impacted by the Project?	Section 4.19 of the SEIS discusses the Project's potential effects to cultural resources.	No change
AKN_2	The ASAP Project team has conducted outreach to communities in the vicinity of the Project and should continue outreach and consultation with the Tribal governments and community members. Most important are the closely located villages of Minto and Nenana, but also there may be concerns from other communities further away including Manley Hot Springs, Rampart, Stevens Village, and others. The communities with whom you consult need to be provided the opportunity to understand the scope and scale of the Project and be afforded information on modifications and foreseeable consequences. Of particular interest are the socioeconomic factors in the affected human environment.	USACE agrees that engaging potentially affected communities is extremely important as part of the NEPA process. Following CEQ guidance, Project meetings were held in communities nearest to the proposed pipeline alignment, however, additional outreach has occurred with other communities farther away through government-to-government meetings in accordance with E.O. 13175 (see SEIS Section 1.10). Additionally, public notices (Notice of Intent and Notice of Availability) have been published in the Federal Register (FR) (79 FR 44758 , 82 FR 29859 and 82 FR 39424, respectively). USACE held a 60-day comment period on the Draft SEIS, seeking public comments from all interested stakeholders. The Project website (www.asapeis.com) also provides easy access to Project documents.	No change

Issue Code	Description	Final Response	Section #s of Change
AKN_3	The Project needs to address and respect the wishes of the communities. The Project needs to start listening to the people and doing it on their terms. Project leads should be coming to these meetings instead of their associates. Project leads need to hear the issues from the people directly.	USACE appreciates the need to listen to communities and interested stakeholders. For this reason, USACE held a 60-day comment period June 30 - August 29, 2017 and held 11 public meetings to accept public comments and address Project questions. Comments received have been reviewed and summarized in the Comment Analysis Report appended to the Final SEIS. As described in the Comment Analysis Report, substantive comments have been used to refine the Project alignment and address questions and concerns in the Final SEIS.	No change
ALT_1	Comments in support of Alternative 1, the Applicant's Proposed Action: A buried pipeline would be safer, more secure, and less expensive. The environmental impacts of a buried pipeline would be less than an aboveground pipeline.	Comment acknowledged.	No change
ALT_10	The pipeline should be routed to the west of the Parks Highway and immediately adjacent to it. This would benefit vehicle travelers in that the clearing will allow more and better opportunities to view the Alaska Range. This would also mean one viewshed scar rather than two.	As described in Section 2.2.9.7, the Alternative 1 route alignment has been shifted since the 2012 alignment in order to minimize potential impacts to wetlands and would be located in more suitable soils. Potential visual impacts of the proposed action are discussed in Section 4.17 including specific measures to avoid, minimize and mitigate potential visual impacts (see Section 4.17.3).	No change
ALT_11	The following potential Material Sites need to be moved or abandoned. The Material Site at MP 615 is near the Ermine Hill trailhead, which is very popular and gets a lot of activity, would be in clear view of hikers. This is a poor place for a material site. The Material Site at MP 622 and 623 are just north of Byers Lake. The trail to Tarn Point and Kesugi Ridge goes around the north end of Byers Lake. The Material Sites will surely mar the view for hikers and detract from their wilderness backcountry experience, but the sites might also overlay or be in close proximity to the trail and thus impact it directly. The two Material Sites at MP 633 are very near the entry road to the South Denali Visitor Center development. Base annual visitation is expected to be over 200,000 people, most of whom expect to see Denali and the Alaska Range in a wilderness setting. Gravel pits are an incompatible use.	Comment acknowledged. Material Sites at MP 615 and 633 are no longer a part of the Project footprint. Material Site MS 4B-c is located at MP 622.7 and is a new site; however, it is also the site of an existing disturbance. Please refer to table 2.2-4 of the Final SEIS for material site locations. Federal, State, and Borough permits, and other land manager agreements, would be required fprior to developing new or existing material extraction sites. Additional authorizations may be necessary for associated activities, such as the construction of temporary access roads. Prior to permitting the Project, individual sites would be reviewed on a case-by-case basis to identify the site-specific authorizations required for each location.	No change
ALT_12	The State needs to look at public lands east of the highway near Parks Highway mile 129 to route their pipeline corridors. The ground is less swampy and has much better gravels on the east side of the highway from mile 131 to mile 114 of the Parks Highway. The east side of the highway is all public lands from mile 131 to mile 116 and has only a winter trail easement to contend with, rather than driveways trailheads, trails, and private property on the west side of the highway.	Thank you for your comment. The ASAP alignment has been revised to match the AKLNG alignment in this area from approximately Parks Highway MP 122 to MP 131.	No change
ALT_13	Questions regarding the temperature of the gas in the pipeline.	Section 2.2.5.3 of the SEIS provides detailed information regarding the temperature of the gas.	No change
ALT_14	Questions regarding dredging and dredge material disposal in the Beaufort Sea.	Section 2.2.3 of the SEIS provides detailed information on the proposed dredging and disposal activities at West Dock. In addition, Draft SEIS Appendix F: Part I provides the ASAP West Dock Dredge and Disposal Plan. For an evaluation of the potential impacts of dredging and disposal for the Alternatives, please see Chapter 4 of the SEIS.	No change
ALT_15	How high or what distance off the ground would that elevated section be on the North Slope?	Alternative 2 includes elevating the pipeline on Vertical Support Members (VSMs) from MP 0 - 62. To allow passage of wildlife, the pipeline would be elevated a minimum of seven feet above the ground. This detail has been added to Section 2.4.	2.4
ALT_16	It is better now that there is only one compressor planned instead of several.	Comment acknowledged.	No change
ALT_17	The Project should reduce the number of Trans-Alaska Pipeline System (TAPS) crossings, including the TAPS fuel gas line. The current route design incorporates twelve TAPS mainline and five fuel gas line crossings. This proximity exposes TAPS to substantial risk at each such crossing and we prefer reducing the number of TAPS crossings even further if practical. It is prudent to determine the setback from TAPS for adjacent parallel pipe segments. The encroachments may expose TAPS to unacceptable risk at pump station driveways, stream crossings, unstable slopes, etc.	The proposed Project would comply with PHMSA requirements. PHMSA regulates pipeline proximity to other infrastructure, pipeline crossings and highway crossings. The ASAP, TAPS and Dalton Highway alignments are all within a utility corridor with several pinch points that minimize alignment options. Landowners have commented that use of previously disturbed areas is preferred which by design consolidates infrastructure into a smaller footprint. The ASAP alignment considers all of these factors, including the requirement to minimize wetland impacts.	No change
ALT_18	The Fairbanks North Star Borough (FNSB) requests that the U.S. Army Corps of Engineers (USACE) analyze pipeline route alternatives that utilize existing rights-of-way (ROWs) including the Elliott Highway and Trans Alaska Pipeline System utility corridor, from Livengood south to Fairbanks (Livengood-Fairbanks Route). Utilizing the Livengood-Fairbanks Route avoids 53 miles of pipeline construction in the Minto Flats State Game Refuge where no infrastructure exists and eliminates the need for the 30-mile Fairbanks Lateral. Routing the mainline through the Fairbanks area ensures that future demand in the Fairbanks region is met and allows access to gas for Richardson highway communities. In addition to the substantial environmental damage and permitting concerns implicated by the Minto Flats Route, the cost of construction associated with building 53 miles of pipeline in an area largely covered in wetland with no existing infrastructure is exorbitant. Rather than cut 53 miles of 120-foot-wide ROW across a pristine and environmentally sensitive area, FNSB proposes that the ASAP Project utilize existing infrastructure including access roads, camp pads, storage yards, and other infrastructure associated with the Trans-Alaska Pipeline System (TAPS). Use of existing infrastructure will reduce project costs and avoid unnecessary environmental damage. In addition to the Fairbanks Route Variation and the Richardson Highway Route Alternative, USACE should also consider an alternative route travelling from Fairbanks southwest along the Parks Highway to Nenana, where it would continue south along the presently proposed route.	As referenced in Section 2.6.4 of the Draft SEIS, the 2012 FEIS evaluated several route alternatives in the Fairbanks area including the Richardson Highway. Based upon this screening analysis, the Richardson Highway Route Alternative does not appear to include features that would result in less environmental impacts when compared to the Parks Highway Route. In October 2011, AGDC conducted a desktop delineation and classification of wetlands along the Fairbanks Route Variation. The desktop study utilized the same resources and methodologies that were used to complete wetland delineations and classification for the proposed Project (AGDC 2011c, 2011d). The alternatives study phase that resulted in the Stand Alone Gas Pipeline Route Alternatives Analysis (State of Alaska 2009) identified numerous conditions along this route that are not conducive to pipeline construction. Unfavorable site elements identified along this route variation included constructability constraints resulting from unfavorable geotechnical conditions (e.g., permafrost), as well as the presence of excessively rugged terrain throughout the northwest segment of the route variation. For these reasons, these route variations were eliminated from detailed analysis. In addition, the 2016 Draft SEIS Alternative 1 route alignment was refined to minimize potential impacts in the Minto Flats area. Specific route refinements such as these are provided in Final SEIS Appendix M: Part II.	No change
ALT_19	The Alaska Gasline Development Corporation needs to ensure an appropriate consideration of the risks at crossing near Pump Station 1, Atigun Pass and the Yukon River. The current ASAP design is to cross the Yukon River separate from the E.L.Patton bridge. The consequences of failure with co-use of the E.L. Patton bridge are extremely high. There is great need for a non-E.L. Patton bridge crossing. The spare rack located on the bridge is owned by the Trans-Alaska Pipeline System (TAPS) owners and they are not authorized to make commitments regarding its use.	Comment acknowledged. The proposed Project wouldy comply with PHMSA requirements for locating the pipeline. The proposed alternative for crossing the Yukon River is horizontally directional drilling beneath the river, downstream of the E.L. Patton Bridge.	No change
ALT_2	Comments opposing Alternative 2. An aboveground pipeline from MP 0-62 as part of Alternative 2 could impede or alter migrations of important subsistence species and other wildlife and would have greater negative impacts to the viewshed. The Alaska Gasline Development Corporation strongly objects to the concept of elevating the first 62 miles of pipe.	Comment acknowledged. The National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) guidance (40 CFR 1500-1508) requires evaluation of a "reasonable range of alternatives" in the SEIS. CEQ guidance (1981) further states "A lead agency has the responsibility to respond to all substantive comments raising significant issues regarding a draft EIS" (Section 1503.4). During development of SEIS alternatives, cooperating agencies raised concerns about burying the pipeline in the Arctic Coastal Plain. Therefore, Alternative 2 includes elevation of the first 62 miles of the pipeline as a reasonable alternative to the proposed action.	No change
ALT_20	The Project is following the Trans-Alaska Pipeline System (TAPS) pipeline, using the same corridor?	As described in Section 2.2.9.1, the proposed alignment would continue to generally parallel the TAPS and Dalton Highway corridor for most of the way to near Livengood, northwest of Fairbanks. The proposed alignment continues to be located within the established federal utility corridor managed by U.S. BLM under Public Land Order 5150. At Livengood, the revised Mainline route would continue south, to the west of Fairbanks and Nenana. The pipeline would bypass Denali NPP to the east and then essentially parallel the Parks Highway corridor to Willow, continuing south to its connection into ENSTAR's distribution system at MP 39 of the Beluga Pipeline southwest of Big Lake.	No change
ALT_21	Minto should receive a spur line.	Please refer to the response to comment ALT_3.	No change

Issue Code	Description	Final Response	Section #s of Change
ALT_22	In Section 2.7, the statement that the Bureau of Land Management's (BLM) preferred alternative is the proposed action is in error. The BLM has not yet identified a preferred alternative for the proposed ASAP Project; a decision will come after a review of all comments submitted on the Draft SEIS and finalization of the Alaska National Interest Lands Conservation Act Section 810 subsistence analysis.	Thank you for your comment. The text in Section 2.7 has been revised accordingly.	2.7
ALT_23	The proposed gravel pit at MP 245 of the Parks Highway in Healy is unnecessary because there is already a state pit at this milepost and four other gravel pits within a few miles range.	Comment acknowldged. Two material sites in the area have been selected for use by the Project in the vicinity of MP 245 of the Parks Highway: MS 3D-G (existing), and MS 3D-H (new). They are 1 mile apart along the highway. AGDC has selected the most logically feasible locations for pipeline construction while minimizing the environmental impact.	No change
ALT_24	I strongly encourage the Corps to authorize the use of the alternative variation through the Park. The route would avoid impacting virgin wildlife habitat toward Moody Creek, avoid crossing Revine Creek to the east of the park's boundary, and avoid crossing a seismic hazard at Lynx Creek in the park. It will remain within the visitor impact areas of the park and outside of wilderness land classifications. It will avoid placing a line near steep terrain in order to circumvent a natural hazard and limit visual impacts to park visitors. The proposed route will improve safety of the line, facilitate maintenance, address engineering concerns, reduce the need for buried river crossings, require less specialized construction equipment, require fewer access roads for construction, and enable winter-time construction. The Denali Park alternative will better protect the environment and transport natural gas to Southcentral. The Denali National Park Improvement Act of 2013 (P.L. 113-33) legislation was intended to prevent impacts to wildlife and scenic views that would have occurred if the line ran further from the existing highway. The Denali route also benefits the park by allowing the park's facilities to switch to gas energy, and permitted the use of compressed natural gas to run park buses and vehicles and improve air quality. This revised route does not require the consolidated permitting process under the Alaska National Interest Lands Conservation Act. It also would avoid a fault line near Lynx Creek.	USACE appreciates the detailed comments on Alternative 2. These issues are evaluated in detail in Chapter 4 of the SEIS and have been considered in the selection of the preferred alternative. Comment acknowledged.	No change
ALT_25	WACO is opposed to the preferred route alternative from pipeline mile 707, south through the Willow Creek SRA and the West Gateway Trail System. We support either of two route variations, the Parks Highway/Port MacKenzie Rail Corridor or an Alaska Energy Authority Alaska Intertie corridor. The Willow Creek State Recreation Area, the West Gateway Trail System and a developing community park are three areas most effected by the proposed pipeline. A 100' wide right-of-way that will never grow back to its natural state will create more unattended trails and unnatural environment. This will negate extensive public trail planning and compromise detailed trail designs and trail user experiences. The conclusions of the EIS should not be based solely on economics.	The State Legislature authorized a specific alignment to traverse the Willow Creek State Recreational Area. The Project proponent would construct and operate the pipeline within the corridor approved by the Legislature. The State right-of-way lease contains the following stipulations with respect to public access: 1.14.2 Public Access 1.14.2.1 The Lessee shall regulate or temporarily prohibit public access and vehicular traffic on Roads on State Land, which are not managed or owned by the Alaska Department of Transportation and Public Facilities (DOT&PF), as required for activities in the immediate vicinity of the Pipeline and Related Facilities. The Lessee shall provide appropriate warnings, flagging, barricades, and other safety measures when the Lessee is regulating public access. 1.14.2.2 Pipeline Activities shall not interfere with the public's free and unrestricted access to and upon the Leasehold, except that, with the Pipeline Coordinator's approval, the Lessee shall regulate or prohibit access, including vehicular traffic, to and upon the Leasehold to the extent necessary to facilitate Pipeline Activities, maintain Pipeline integrity, or to protect the public and wildlife from hazards associated with Pipeline Activities. 1.14.2.3 The creation of any permanent obstruction to the passage of small craft in streams is prohibited, unless otherwise approved by the Pipeline Coordinator. 1.14.2.4 The Lessee shall make provisions for suitable permanent crossings for the public where the Leasehold or Access Roads cross existing Roads, foot trails, winter trails, easements or other rights-of-way, unless otherwise authorized by the Pipeline Coordinator. 1.14.2.5 After completion of Construction of the Pipeline, and with the concurrence of the Lessee, the Pipeline Coordinator may designate areas of the Leasehold to which the public shall have free and unrestricted access. The right-of-way lease gives the State Pipeline Coordinator, as the delegated land manager for the leasehold, the authority to address specific needs related to access. AGDC will work with the State Pipeline Coordinator to address Willow Creek State Recreation Area access issues.	No change
ALT_26	We urge the agency to develop and assess fully both the currently proposed Denali National Park and Preserve (NPP) alternative as well as a modified Denali NPP alternative that would follow the Parks Highway all the way through the Yanert Valley (the 2012 FEIS route). A route that follows the Parks Highway on through the Yanert Valley would be environmentally preferred, affecting fewer acres of wetland, would use the existing Nenana River crossing, and would avoid the new path through Denali.	Per CEQ guidance (40 CFR 1502.22), the analysis in the SEIS is based on the best available data for the Project Area. Since the 2012 FEIS, the Project proponent has provided additional information on the Denali NPP route variation. The analysis of Alternative 2 presented in Chapter 4 of the SEIS is based on the best available scientific literature, field data, reports and other readily available information as required under NEPA. The SEIS complies with NEPA's "hard look" standard.	No change
ALT_27	There are additional appropriate and practicable avoidance and minimization measures that could further reduce potential aquatic resource impacts. For example, the Draft SEIS indicates that potentially thousands of acres of impacts could be avoided by elevating the pipeline on using vertical support members in wetland areas underlain by permafrost, similar to the existing Trans-Alaska Pipeline. The EPA believes that opportunities to elevate the pipeline should be more thoroughly evaluated to determine if they could reduce the impacts to wetlands underlain by permafrost. We also recommend evaluating the use of Dock Head 4 at West Dock and removal of gravel in the construction right-of-way as potential opportunities to minimize impacts to resources. Such additional evaluations are critical to adequately identify the least environmentally damaging practicable alternative under the Guidelines.	The USACE has considered inclusion of an alternative that evaluates the use of Dock Head 4 and an alternative that evaluates elevating the pipeline on VSMs from MP-0 to MP-168. Since publication of the Draft SEIS in June 2017, additional information regarding the potential use of Dock Head 4 has been provided by the Project proponent and incorporated into Section 2.6. The Final SEIS has been revised to include rationale for screening out the Dock Head 4 Alternative. The Final SEIS also includes an evaluation of the feasibility of an alternative elevating the pipeline on VSMS from MP0-MP168. Additional avoidance and minimization has ocurred from MP0-MP62 by utilizing ice pads and ice roads for work surfaces in lieu of discharging gravel for pad/road construction.	2.6
ALT_28	I request that the pipeline route be shifted east at least 200 meters between MP 93 and 94 because of an ongoing long-term ecological experiment close to the proposed route.	AGDC acknowledges that the feature in question is ice rich material. The alignment of the pipeline reflects the underlying material because it is routed along or nearly on the ridgeline of the feature. Moving the alignment to the east would create additional environmental impacts over time due to increasing the side hill cutting of ice rich material and placing the alignment closer and just upslope of an apparent water feature.	No change
ALT_29	Alternative 2 includes several changes elsewhere in the project, which make it difficult to compare the two Denali route options. A section just comparing the pros and cons of these two routes would have been helpful to us. Absent a compelling reason to place the pipeline through undisturbed portions of Denali, the route around the park appears to be the best option.	The USACE appreciates the comment. Table 2.2-1 includes a summary comparison of design changes and refinements between the 2012 FEIS and the 2016 Application for Permit.	No change
ALT_3	A spur line or station should be built at the Yukon River so that it could be used to supply villages along the Yukon River. Fairbanks and Nenana do not need spur lines because they already have access to cheaper gas and other products already.	Comment acknowledged. The SEIS evaluates the proposed action to construct a natural gas pipeline from Alaska's North Slope to southcentral Alaska. As described in Section 2.3, the proposed action currently includes a spur line to Fairbanks. The scope of the Project does not include any community infrastructure (e.g., offtake valves, decompression stations, or local distribution infrastructure for communities along the line); however, it is a reasonably foreseeable action that some communities would want access to gas and request to tap into the line to feed local distribution infrastructure, which would be developed in the future.	No change
ALT_30	The Willow Trail Committee recommends alternative sites for the proposed storage yard. Site A (61° 45'54", 150° 07'25") is parallel to the Willow Creek Parkway and closer to the pipeline easement. It also is in an area devastated by the 2015 Sockeye wildfire. This site would not directly conflict with trails, parks or residential areas. Another possible site, B (61°, 45'35", 150° 05'10") is east of the Parkway and along N Thomas St. The advantage of this area is that it will minimally effect the Willow Creek State Recreation Area, Newman's Park and trails while providing suitable terrain for the storage yard.	Comment noted. AGDC assumes that this comment refers to the Pipe Storage Yard in Willow; the Pipe Storage Yard in question does not actually bisect the trail, but the trail is on the eastern side of the Pipe Storage Yard. The Pipe Storage Yard will be moved 150' to the west of the north-south feeder to Lucky Shot Trail from Willow Creek Parkway. This will provide a 150' vegetative buffer from the eastern edge of the Pipe Storage Yard and the feeder trail. The access road for the Pipe Storage Yard will not move.	No change

Issue Code	Description	Final Response	Section #s of Change
ALT_31	If Alternative 2 is selected, it will have a significant impact on the Project and the Alaska Gasline Development Corporation's ability to deliver natural gas to Alaskans. The Draft SEIS did not adequately represent the information provided to support the belowground mode of construction for the first 62 miles of the project (MP 0-62).	Per CEQ guidance (40 CFR 1502.22), the analysis of Alternatives 1 and 2 in the SEIS are based on the best available data, field data, scientific literature, available research reports and other information for the Project Area. The evaluation of Alternative 1 (belowground mode) complies with NEPA's required "hard look" standard (40 CFR 1502.22) by objectively evaluating potential impacts based on available information. As with Alternative 1, the analysis of Alternative 2 includes an evaluation of potential acres of wetlands to be impacted, potential impacts to soils and geology, water resources, wildlife and other resources as described in Chapter 4.	No change
ALT_32	The Borough would like to connect Anaktuvuk Pass to the Alaska Stand Alone Pipeline. Natural gas would provide Anaktuvuk Pass with a more environmentally friendly and affordable energy source for heating and electricity generation.	Thank you for your comment. Please see the response to ALT_3.	No change
ALT_33	There is some justification for a gasline from the North Slope to Fairbanks.	Comment acknowledged.	No change
ALT_34	The Denali Citizen's Council is concerned that routing near Denali National Park, including access roads and infrastructure placement. The map still shows only one route near the park, but we are aware that an alternative through the national park is still on the table and its fine points not thoroughly vetted.	Thank you for your comment. Alternative 2 as presented in the Draft SEIS represents the current option for route alignment through Denali NPP. Chapter 4 of the SEIS provides a detailed assessment of potential impacts associated with routing the alignment through a portion of Denali NPP.	No change
ALT_35	Alternative 2 uses vertical support members (VSMs) in only the first 62 miles of the pipeline. The proposed action should include elevating the pipeline on VSMs in the ACP ecoregion as well as other areas where thaw-unstable permafrost exists in order to minimize impacts to wetlands. This will prevent thermokarsting due to trenching, and the resulting alternations to natural drainage systems which could significantly impact large areas of higher-value wetlands. Use of VSMs in areas of permafrost offers significant reductions in impacts. Consideration of additional alternatives that use VSMs over more of the route that crosses permafrost would offer greater impact reduction and also reduce the need for costly maintenance and repairs due to permafrost thaw, frost bulbs, and altered drainage.	As discussed with Cooperating Agencies during development of the Draft SEIS, Alternative 2 proposes to elevate the first 62 miles of the pipeline to provide a comparison of potential impacts to the Arctic Coastal Plain. This aspect of Alternative 2 was based on multiple discussions with USFWS in February 2015 as well as a March 3, 2016 letter which specifically states: "The Service continues to have concerns regarding the plan to bury all or large portions of the gas pipeline on the Arctic Coastal Plain (ACP). A comprehensive set of alternatives should include a pipeline raised on vertical support members (VSMs) for the first twenty to thirty miles of the route (the area containing a high density of oriented thaw lakes)." USACE incorporated this concept into Alternative 2 and extended the length of elevated line through the southern edge of the Arctic Coastal Plan to address these concerns.	No change
ALT_36	Burying the pipeline in the meander belt at the same elevation as the depth under the river or stream (e.g., at least 4 feet or 120 percent of the expected maximum-scour depth elevation) and including scour protection measures would allow floodplain channels to migrate freely across the meaner belt without exposing inadequately buried pipe.	Thank you for your comment. USACE has considered these potential issues in development of Sections 4.6 - 4.9 of the Final SEIS.	4.6, 4.7, 4.8, and 4.9.
ALT_4	The route should be kept simple and should be built along the Parks Highway.	Comment acknowledged.	No change
ALT_5	The larger capacity Alaska Liquefied Natural Gas Project, with a design that utilizes the historically preferred alternative route from Livengood south along the Trans Alaska Pipeline System utility corridor to Valdez (Valdez AKLNG Alternative) is the most reasonable alternative that remedies the proposed Project's defects. The Valdez AKLNG Alternative maximizes project benefits and minimizes environmental impacts by: 1) utilizing existing utility corridors and avoiding environmentally sensitive areas; 2) providing volumes of gas that satisfy future demand in the Fairbanks area, which will improve Fairbanks air quality and promote economic growth in Interior Alaska; 3) providing access to gas for Richardson Highway communities that otherwise have no access to natural gas; and 4) transporting higher volumes of gas with only marginally greater capital costs and comparable, if not less, environmental impacts.	USACE appreciates the suggestion for an alternative that would follow existing utility corridors and terminate in Valdez. As described in Section 2.6, in compliance with CEQ guidance, alternatives were "rigorously explored and objectively evaluated" using the criteria shown in Table 2.6-1, which also includes a brief description of the rationale for eliminating alternatives. As different from the AKLNG Project, the proposed ASAP Project does not include export of natural gas and therefore, termination of the pipeline in Valdez is not necessary and would extend the pipeline length unnecessarily. The Richardson Highway alternative would lengthen the pipeline to a total of 845 miles. This route variation was previously eliminated from detailed evaluation in the 2012 Final EIS and based on screening analysis, does not appear to include features that would result in less environmental impacts when compared to the Parks Highway Route.	No change
ALT_6	The Toolik Field Station's experiments as a whole should be taken into account when routing the pipeline. Consider routing around the area to the maximum extent possible to avoid disruption of the ongoing experiments.	According to the Project proponent, the gravel mining activity for the ASAP Project will be confined to the footprint submitted with the 404 Permit Application (provided as an appendix to the Final SEIS). Granular material mining activities at ASAP MS 1D-C will be confined to the footprint proposed, which extends due east from the existing pit. The material sites referenced in the comment as Dalton Highway MP 277 and MP 287 are not part of the ASAP Project footprint. Research access through ASAP MS 1D-C will not be blocked, but third party personnel wishing access through the site will have to comply with Project safety policies and procedures and will also be required to complete Project safety training.	No change
ALT_7	Comments in support of Alternative 2. Alternative 1 would bisect numerous drainages outside of Denali National Park and it would require significant new access routes. Alternative 2 utilizes more of the existing George Parks Highway corridor and would provide the opportunity for the construction of a bike path along the highway corridor.	Comment acknowledged.	No change
ALT_8	The Corps should consider an alternative that includes building a new Dock Head 4 at the seaward end of West Dock. This variation would minimize dredging and disposal of dredged material. This is a reasonable and practicable alternative that is being considered by the Alaska LNG Project and the Federal Energy Regulatory Commission (FERC).	Since publication of the Draft SEIS in June 2017, additional information regarding the potential use of Dock Head 4 has been provided by the Project proponent. The rationale for screening out Dock Head 4 as a reasonable and practicable alternative is described in detail in Section 2.6 of the SEIS.	No change
ALT_9	Locating a man camp at MP 640.9 or at any of the access points north of Trapper Creek is problematic. Worker housing at this location would significantly compound access problems to private land in the area. It would be more practicable to house the workers at Trapper Creek or the "Y" intersection of the Parks Highway and the Talkeetna Spur Road because workers will need to be bussed to their work sites anyway.	There is no camp located at ASAP MP 640.9. The Swan Lake Camp and Pipe Storage Yard are located at approximately ASAP MP 645, and are situated in and adjacent to an old material site. Workers will be bussed to the camp locations; personally owned vehicles will not be allowed at the ASAP Construction Camps. Camp locations are selected to minimize worker travel time from camp to work location, and are generally in the middle of the areas the camps are intended to serve.	No change
CUL_1	The direct impact area and indirect impact areas identified in the following statement are not equivalent to the direct and indirect APE as proposed in the draft PA circulated in 2016, "The direct impact area consists of…The indirect impact area is the 1-mile…These analysis areas are based on those currently proposed in the PA to address the Area of Potential Effect."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The statement, "these analysis areas are based on those currently proposed in the PA to address the Area of Potential Effect" has been removed from the text.	3.15.1; 4.19.2
CUL_10	NRHP eligibility status is important for Section 106, but lack of status does not preclude analysis of impacts for the purposes of an EIS. The wording of this paragraph beginning with "AGDC is working to provide recommendations of eligibility…" indicates a commitment on the Alaska Gasline Development Corporation's (AGDC) part to complete National Register of Historic Places (NRHP) evaluations prior to SEIS finalization. AGDC would prefer that this be worded more generically to indicate the percentage of sites that are unevaluated for the NRHP, and why that matters or is considered incomplete information, and reference to the Programmatic Agreement outlining a process for addressing any remaining eligibility questions.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The text has been revised to indicate that a Programmatic Agreement is being developed by the 106 Work Group to address known eligible site mitigation and identify steps to be taken for the future evaluation and treatment of unknown and/or known, unevaluated sites.	4.19.1.1

Issue Code	Description	Final Response	Section #s of Change
CUL_11	The Alaska Gasline Development Corporation (AGDC) would prefer that the section beginning with "Lastly, AGDC has not yet fully identified..." be more generic to indicate that this incomplete information is addressed more thoroughly and specifically in the Section 106 process. Recommend rewording to something like... "As part of the Section 106 consultation process, AGDC is working to determine which cultural resources will be avoided and incorporate this information into the PA. The PA will also delineate processes for the minimization and mitigation of adverse effects. Because development of the PA is in progress and these processes are not yet fully identified, the magnitude of impacts to cultural resources in this analysis is likely higher than the actual magnitude of effects will be once avoidance, minimization and mitigation has been finalized in the PA."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The text has been revised to include the recommendations described in the comment.	4.19.1
CUL_12	The areas of analysis do not directly correlate with the APEs proposed in the PA circulated in 2016--the PA included 4 APEs including an indirect more narrowly defined than the indirect proposed here, and a visual ape that better correlates with the indirect impact area proposed here. To eliminate confusion, and because the APEs proposed in the PA may change as a result of consultation, we recommend striking this sentence. Modify "These analysis areas are based on the APEs..."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The text has been revised to include the recommendations described in the comment.	4.19.2
CUL_13	This is confusing "Paleontological- fossilized cultural resources..." Paleontological resources are typically considered natural resources, not cultural resources. Cultural resources analysis discussions are generally separate from paleontological discussions. Cultural resources that may be fossilized generally fall within the archaeological site type discussed in 1. Paleontological resources identified in AHRS are more appropriately addressed in a separate, paleontological section of the SEIS.	The paleontology discussion is included in the cultural resource section because fossils are included as prehistoric resources in the Alaska Historic Preservation Act and are documented in the AHRS. The referenced text has been revised to "Paleontological - fossilized environmental resources..."	No change
CUL_14	In the section beginning with "Types of mitigation strategies that AGDC..." substitute "would" for will for each of the 5 strategies that say "the PA will..." The Alaska Gasline Development Corporation (AGDC) does not have control over the Programmatic Agreement (PA) process and consultation has not yet occurred to determine if AGDC's proposed strategies are acceptable. Use of "will" indicates a commitment to these strategies, commitment should be made when consulting parties are in agreement on acceptable mitigation.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The text has been revised to include the recommendations described in the comment.	4.19.3
CUL_15	This statement needs to be modified "Public involvement (as well as tribal consultation) would help to lessen...." This sentence and the remainder of this paragraph suggest avoidance/minimization strategy. While a good idea to discuss this in consultation, it is not appropriate to include here, as no other discussions of site types and impacts include a suggestion for avoidance, minimization or mitigation strategies.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The text has been revised to include the recommendations described in the comment.	4.19.4.1.1.2
CUL_16	The Nuiqsut Cultural Landscape has not been evaluated and is not documented in AHRS-- it is unclear why it is included in Table 4.19-3, given that it has not been evaluated for the NRHP. Recommend consider inclusion of all unevaluated resources within the direct APE in this table.	The USACE appreciates the comment. The SEIS has been revised to include a site-by-site analysis for those known, unevaluated sites, including Nuiqsut, for disclosure of site characterization and potential impact for NEPA public disclosure.	Table 4.19-3
CUL_17	Has the U.S. Army Corps of Engineers (USACE) submitted to the State Historical Preservation Office (SHPO) the National Register of Historic Places (NRHP) evaluations that the Alaska Gasline Development Corporation completed in May for the 25 sites, and have these evaluations received concurrence (or requests for additional information yet)? If not, then they should be included in 'no determination' counts in total counts and in Table 4.19-3. It is very possible that the U.S. Department of Energy (DOE) will in fact receive concurrence, but these should be considered similar to DOE-P-S sites for now if no consultation between USACE and SHPO on the report has actually occurred.	USACE submitted a concurrence request to SHPO for the referenced 25 sites on June 5, 2017. The SHPO provided concurrence with the DOEs on June 28, 2017.	No change
CUL_18	This phrase should be modified "at this time, AGDC has not yet committed..." Recommend striking this phrase and modifying so sentence reads "These mitigations are based on the mitigation strategies that AGDC has proposed for the Project (see Section 4.19.3); specific site mitigation measures will be finalized in the PA".	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The text has been revised to include the recommendations described in the comment.	4.19.4.3.1.1
CUL_19	The second paragraph of Section 5.5.2.5 of the Cultural Resources Management Plan is acceptable at this time but will need to be updated when the Areas of Potential Effect (APEs) have been well defined.	Comment acknowledged. The CRMP is currently under development and review by the 106 work group. This revision to the CRMP has been shared with the Project Proponent.	Appendix K
CUL_2	The draft Cultural Resources Management Plan should have been circulated to consulting parties for review prior to dissemination to the public as part of the SEIS.	Comment acknowledged. The CRMP is currently under development and review by the 106 work group.	No change
CUL_20	Please define the categorizations of impact for the site-by-site analysis. It is unclear what constitutes major, moderate, minor and negligible impact in the site-by-site analysis.	Definitions have been added for categorization of site-by-site impact rankings of major, moderate, minor, and negligible.	4.19.2.1
CUL_21	Paleontological resources are not cultural resources and are therefore not eligible for the National Register of Historic Places (NRHP). Recommend removal of paleontological resources from the cultural resources chapter or otherwise separating the discussions of the two different types of resources.	The paleontology discussion is included in the cultural resource section because fossils are included as prehistoric resources in the Alaska Historic Preservation Act and are documented in the AHRS.	No change
CUL_22	We recommend striking sentences that say "AGDC is conducting analysis of the remaining # sites..." Instead include site by site impact analysis of both eligible and unevaluated sites (to incorporate potentially eligible sites that are part of those remaining few unevaluated sites).	Thank you for your comment. The SEIS has been revised to include a site-by-site analysis for those known, unevaluated sites for disclosure of site characterization and potential impact for NEPA public disclosure. In lieu of a completed survey of the sites and subsequent DOEs, the SEIS discloses the type of project and provides an indication of potential impacts.	4.19.4.3.1.1
CUL_23	This discussion seems orphaned "For example, scoping comments..." Is this related to the place names sentence on page 4-503?	Yes, this is a formatting issue and relates to the place name paragraph. It provides additional information regarding input from local tribes during scoping related to place names. The formatting has been fixed.	4.19.4.3.4
CUL_24	We recommend rewording "A site revisit to confirm..." to "confirmation and documentation of the site's loss of integrity could help address the effects of the Project thereby reducing the overall effect to negligible."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The text has been revised to include the recommendations described in the comment.	4.19.4.3.4.1
CUL_25	We recommend deleting "Public involvement to identify an appropriate re-location...." The Alaska Gasline Development Corporation did not propose this mitigation and it does not affect reduction of effect from major to minor. Would be more appropriate to bring up in Programmatic Agreement consultation.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The text will be revised to include the recommendations described in the comment.	4.19.4.3.4.1
CUL_26	Additional discussion is needed here beginning with "The proximity of long-term operational..." regarding Montana and Fish creek area ancestral villages. The Alaska Gasline Development Corporation rerouted the mainline to avoid the Montana Creek area for which concern was expressed during consultation, not just to avoid native allotments.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The text has been revised to include the recommendations described in the comment. The following text has been added, "and in response to consultation concerns regarding cultural resources."	4.19.4.3.4.2.1
CUL_27	CMTs should be discussed and defined where they are first mentioned in the document. OHA's policy regarding the documentation and eligibility of CMTs should be discussed.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The text has been revised to include the recommendations described in the comment. Additional text has been included to describe the OHA policy regarding CMTs.	4.19.2.1

Issue Code	Description	Final Response	Section #s of Change
CUL_28	In the fourth paragraph of Section 5.5.2.6 of the Cultural Resources Management Plan, if the Dalton Highway is still considered Treated as Eligible at the time of ASAP construction this will need a more in-depth explanation.	Comment acknowledged. The CRMP is currently under development and review by the 106 work group. Additional explanation regarding the NRHP status of the Dalton Highway and the Historic Roads PA has been requested from the Project Proponent.	Appendix K
CUL_29	In Table 4.19-13, the characterization of both Construction and Operation Impact Rating combined is inconsistent with other Impact Rating tables and is not valid since the disrupted footprint of the project is impacted during construction. Operations and maintenance will be conducted in areas of any previous impact and there would not represent a additional impact to Cultural Resources. The section narrative should be revised accordingly.	Construction and Operation effects has been added into the Table 4.19-13 and text has been revised throughout.	4.19
CUL_3	Better descriptions of the Alaska Heritage Resource Survey (AHRS) (the state's inventory of cultural resources), Revised Statute 2477s and the Traditional Land Use Inventory (TLUI) are needed, including what they are and their limitations -- currently the emphasis seems to be on the Nuiqsut cultural landscape and place names, because so much space is dedicated to describing what these resources are.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Additional text has been added to better describe the concerns included in the comment. Additionally, text has been added to describe the limitations for related text in Section 4.19.1.1, *Incomplete or Unavailable Information.*	3.15.1 and 4.19.1.1.
CUL_30	In site-by-site discussions, specific interpretive elements are proposed as mitigation for sites eligible under Criteria A. Recommend general interpretive elements be proposed in the SEIS rather than specific (e.g. artifact display in museum or interpretive signage) to better reflect that specific mitigation will be developed in consultation during PA development.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Mitigation has been updated throughout the chapter based on the January 19, 2018 Draft CRMP	4.19.4.3.1.1 and 4.19.4.3.4.1
CUL_31	Section 3.15.1 states, "NEPA's regulations do not provide a general age rule for scientific, cultural, or historical resources." The meaning of this statement is unclear. Is it referring to the National Historic Preservation Act (NHPA), Section 106, definition of historic properties as being 50+ years old? BLM recommends that the Final SEIS provide further clarification. Also in this section, the 36 CFR 800.16[l] definition of historic properties should include the entirety of the definition paragraph, as it pertains to places of traditional religious or cultural significance. Additionally on page 3-411, Table 3.15-1 includes the column heading "Finds," which has negative connotations. We suggest it be changed to "Material Culture."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Additional text has been added to better describe the concerns included in the comment.	3.15.1, 3.15.5.1.1, 3.15.5.2.1, and 3.15.5.3.1
CUL_32	Section 3.15.5.2.1 is lacking necessary references related to the archaeological and ethnographic literature available for Interior Alaska. This section also does not adequately capture known information about the affected environment for this region. BLM recommends revising to include settlement and subsistence patterns, demographics, social organization, material culture, etc. The time period divisions used in this section are not commonly used in the regional literature for Interior Alaska. BLM suggests revisiting the appropriate literature and defining this chronology with more commonly used terms, as can be found in work by Goebel, Potter, Yesner, Bigelow, Wygal, and others. Additionally, Table 3.15-8 follows this text, but does not match up with the text.	Comment acknowledged.	No change
CUL_33	BLM recommends revising Section 4.19 for clarity and brevity. There is a lot of repetition, particularly when discussing the tables. The discussion of project impacts to cultural resources is now fairly thorough, but the lengthy text and often-reiterated information makes it somewhat difficult to grasp the salient points: what are the impacts to known cultural resources by alternative, and what is the potential for impacting undocumented cultural resources. Table 4-19-13 probably contains the most succinct information out of the entire section, and BLM recommends striving for this degree of clarity in the narrative text. Use of appendices for the lengthier tables and descriptive text would help streamline the section.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. This comment is acknowledged.	No change
CUL_34	In Section 4.19.1, BLM recommends including an appendix that outlines the progress and consultation meetings that have occurred for the development of the programmatic agreement (PA). It is unclear how many meetings have occurred and at what development stage the PA is in.	USACE appreciates the comment. Development of the PA and the consultation process have been summarized in Section 1.9, Tribal Government-to-Government Consultation and Coordination.	1.9
CUL_35	In Section 4.19.2.1, regarding the discussion on site types, it is not clear what the purpose is of creating the 11 site types. These arbitrary categories will ultimately not help with management decisions, and these site types have no bearing on a Determination of Eligibility (DOE), which is the primary focus for Section 106. BLM recommends changing this to a table format and including information that would be relevant to management decisions (project impacts to each site type; how the PA potentially intends to avoid, minimize, or mitigate each site type; etc.)	EPA and DNR/OHA requested the EIS analysis summarize the types of cultural resources identified. BLM also requests this section include Project impacts by site type; however, it would not be appropriate to introduce Project impacts to each site type in this Methods Section 4.19.2.1. Section 4.19.7 already includes a summary of Project impacts to each site type. Potential mitigation measures are included for each site-by-site analysis under each Project segment section.	No change
CUL_36	In Section 4.19.3, for the numbered mitigation strategies and in the interest of brevity, there is no need to continually reference the PA. It was referenced in the heading paragraph, and it is clear to the reader that the specific strategies will be discussed in the PA. The BLM recommends revising this section to improve readability.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Redundant text has been removed where applicable to better describe the concerns included in the comment.	4.19.3
CUL_37	Section 4.19.4.3.1 states, "Included within the 401 cultural resource sites is the Gallagher Flint Station National Historic Landmark, which would require special consideration from the National Park Service and consultation to assess and mitigate effects." BLM recommends adding a citation to Section 110(f) of the NHPA.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Additional text has been added to better describe the concerns included in the comment.	4.19.4.3.1
CUL_38	In Section 4.19.4.3.1, BLM again notes the decision to divide the sites into the selected categories. The same Section 106 processes must be followed, regardless if a site is an "isolate," a "linear transportation feature," or a "cultural modified tree." Additionally, the category of "archaeological" is confusing; does this mean Alaska Heritage Resources Survey (AHRS)-listed sites? Prehistoric sites? Sites without any information? Subsurface sites? The category of historic artifact/activity areas is also confusing. We recommend that the categorization process also include prehistoric activity areas and not limit this to historic sites only. The BLM also recommends the Final SEIS address direct effects in a reorganized fashion consistent with a revised Section 4.19.2.1.	EPA and DNR/OHA requested the EIS analysis summarize the types of cultural resources identified for NEPA purposes. We acknowledge the comment stating that the same Section 106 processes must be followed regardless of site type. These sites types were included for NEPA purposes based on other agency requests.	No change
CUL_39	On page 4-484, the discussion on place names is confusing and out of place. BLM suggests including detailed place name information as either an appendix or shorten the in-text information to be more succinct.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. This section summarizes the numbers of AHRS sites, TLUI sites, RS 2477 trails, and place names that could be potentially impacted by the Project. The nine lines of text related to place names seem to be an appropriate level of detail for this resource.	No change
CUL_4	The Programmatic Agreement (PA) will outline the processes for resolution of all adverse effects, both those already determined and those that may not yet be determined. Modify this phrase "…process for mitigating potential adverse effects…" Also, the PA will outline the processes for remaining identification efforts (not just those due to potential project design changes). Modify "The PA will outline…". The PA will include more than just mitigation. The PA will include measures to avoid, minimize and mitigate adverse effects to NRHP-eligible sites. Modify "The PA will include mitigation measures…"	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The text has been revised to include the recommendations described in the comment.	4.19.1

Issue Code	Description	Final Response	Section #s of Change
CUL_40	The goal of an SEIS is to be succinct, but detailed enough that the public and land managers can make informed decisions about the proposed project. In Section 4.19.4.3.1.1, the ten pages of detailed narrative about eligibility criteria and potential mitigation strategies may be better presented as an appendix with a shorter in-text summary and table/matrix that displays the pertinent information.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. This comment is acknowledged.	No change
CUL_41	Section 4.19.4.3.1.2.6 states, "Given their singular nature, the magnitude of effects to isolates would be lower than that to larger archaeological or historic activity area cultural resources." This would be true if these sites were truly isolates. Many sites are reported to the AHRS based on only one flake or tool, without further delineation of the site boundaries. BLM recommends revising this statement to account for the possibility that an "isolate" site could be large and extensive if and when further survey research is conducted there.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The text has been revised to include the recommendations described in the comment.	4.19.4.3.1.2.6
CUL_42	Regarding Section 4.19.4.3.1.2.10, Section 106 and DOE/National Register of Historic Places status only applies to "historic properties," not paleontological resources. It may be worth addressing paleontological sites in a separate section and referencing the Paleontological Resources Protection Act. Additionally, Chapter 3 had a separate section for paleontological resources; this should be echoed in the Chapter 4 Environmental Consequences discussion.	The paleontology discussion is included in the cultural resource section because fossils are included as prehistoric resources in the Alaska Historic Preservation Act and are documented in the AHRS. For consistency, discussions of paleontological resources have been consolidated to the Soils and Geology sections of both Chapter 3 and 4.	No change
CUL_43	The term "Glitter Gulch" is a colloquial term for the Denali Village area. BLM recommends changing this term to its official place name throughout the document to prevent confusion or misinformation	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The text will be revised to include the recommendations described in the comment. This change has also been incorporated throughout the SEIS where the term "glitter gulch" has been used.	4.19.4.3.3
CUL_44	Table 4.19-12 includes a column labeled, "Delineated and Location Exact?" While this category would be important for the PA, it is unnecessary to include for a SEIS. BLM recommends removing this column. Also within this table is the column labeled "Site Within Project Component?" The meaning of this heading is not clear. Does it stand for direct or indirect or both? BLM recommends that the Final SEIS include further clarification.	This column intends to assist the reader to differentiate levels of impact (e.g., location is known to the extent that the site is reliably located outside or inside Project disturbance footprint). Revised "Site Within Project Component" heading to "Site Within Footprint of Project Component."	Table 4.19-12
CUL_45	In Chapter 5, the Persons Consulted list appears incomplete. For the Section 106 portion alone, the U.S. Army Corps of Engineers (USACE) should, at a minimum, consult with the Alaska State Historic Preservation Office, all landholders, land-managing agencies, tribes, and Native corporations associated with the areas the proposed project would cross.	As required under NEPA, Section 1.9 provides a description of agencies participating/consulted in the SEIS process, while Section 1.10 provides information on tribal government-to-government consultation through the SEIS process. Chapter 5 is intended to provide a List of Preparers and contributing authors who were consulted during the SEIS process.	No change
CUL_46	In Appendix C, the ASAP SEIS Public Scoping Report, it appears that the only scoping that was held was public scoping. Under Section 106, it is mandated that government-to-government consultation takes place for interested federally-recognized tribes (36 CFR 800.2(2)(ii)(C)). The BLM recommends that the Final SEIS include a detailed summary of all government-to-government consultation efforts, including initiation letters and dates of meetings and other relevant information.	Section 1.10 of the SEIS describes the requirement to consult with Native American Tribal Governments (EO 13175) and explains that USACE invited 22 potentially affected, federal recognized tribes to consult on the SEIS. Specific government-to-government outreach has been and will continue to be conducted throughout the SEIS process.	No change
CUL_47	In Table 1.10-1, BLM recommends adding for U.S. Department of the Interior agencies (i.e. BLM, U.S. Fish and Wildlife Service (USFWS), and National Park Service): "The Paleontological Resources Protection Act: Public Law 111-11, Title VI, Subtitle D; 16 U.S.C. §§ 470aaa - 470aaa-11."	The USACE appreciates and agrees with the recommendation. The BLM's suggested revision has been included in Table 1.10-1.	No change
CUL_48	Include the source of information for the first paragraph of Section 5.8 in the Cultural Resources Management Plan.	Comment acknowledged. The CRMP is currently under development and review by the 106 work group. This revision to the CRMP has been shared with the Project Proponent.	Appendix K
CUL_49	In Section 4.19.1, the Native Village of Minto is omitted from the list of "Indian Tribes that have chosen to participate in consultation...," but is included on a list for "tribes and corporations that responded with expressed interest in 106" from a "Summary of Tribal Consultation Outreach" submitted to the BLM in February 2017. BLM recommends confirming which list is correct. The Final SEIS should also note that Ahtna Inc., Arctic Slope Regional Corporation, and Cook Inlet Region, Inc. are Alaska Native Claims Settlement Act regional Native corporations and not "Indian Tribes."	Native Village of Minto has expressed interest in the 106 process but has not chosen to participate in consultation, to present date. The Corps provides Project updates and meeting invites, etc. The Corps feels that the information as summarized accurately depicts information and consultation preferences received from communications with the Native Village of Minto. Language has been added referring to Native corporations.	4.19.1
CUL_5	There has been no determination as to whether archaeological monitoring during construction is an appropriate impact minimization strategy. While it may be employed, it is premature to list it as something for which the PA will outline a process. Recommend striking this part of the phrase "...the processes for archaeological and/or tribal monitoring during construction..." and leaving only "potential discovery of previously unidentified cultural resources..."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The text has been revised to include the recommendations described in the comment.	4.19.1
CUL_50	For Section 4.19.2.1, paleontological resources are distinct from "cultural resources" and are referred to as their own resource type. BLM suggests the Final SEIS include the language, "fossilized environmental resources that can yield..." P.L. 111-011 defines the term as, "The term 'paleontological resource' means any fossilized remains, traces, or imprints of organisms, preserved in or on the earth's crust, that are of paleontological interest and that provide information about the history of life on earth."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The text will be revised to include the recommendations described in the comment.	4.19.2.1
CUL_51	We recommend putting in a placeholder explaining that failure to execute the Programmatic Agreement (PA) would likely delay the Final SEIS, as the PA execution should slightly precede or be concurrent with the Final SEIS (so that it is complete before the Record of Decision is signed). At a minimum, the timeline of PA execution as it relates to meeting the Section 106 requirements should be made explicit within this section.	The PA will be executed before the Record of Decision is signed.	No change
CUL_52	Emphasis should be placed on the fact that this analysis is based on what is currently known. There are still more things to work through that may alter the analysis.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. This topic is addressed in Section 4.19.1.1, Incomplete or Unavailable Information.	No change
CUL_53	In Section 4.19.1, is there new survey data? New Determinations of Eligibility (DOEs)? This is unclear.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. This topic, including discussion of previous surveys and DOE status, is addressed in Section 4.19.1.1, Incomplete or Unavailable Information.	No change
CUL_54	The last sentence of 4.19.1 is confusing. Will the PA identify steps to address consideration of or consultation on? What about known and evaluated sites? What about those in the direct APE? What is the intent?	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. This sentence is referring to the magnitude of effects and not the entire PA process. Refer to beginning of Section 4.19.1 for overview of PA process. Specific details regarding PA process and OHA's involvement should be raised during the PA meetings.	No change
CUL_55	Text should be added to "AGDC is working on providing recommendations of eligibility for 62 of 202 identified cultural resources in the direct impact area that prior to ASAP were unevaluated." Add "...that prior to ASAP project planning efforts were unevaluated."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The text has been revised to include the recommendations described in the comment.	4.19.1.1
CUL_56	Update the Cultural Resources Management Plan to be consistent with the bullet points in 4.19.2.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The CRMP and Section 106 process are not required to directly align with the impact areas identified in NEPA. Consultation during the PA and development of the CRMP has and will likely result in further refinements to the APEs.	No change
CUL_57	Further explanation is needed in Section 4.19.2 where it states "...loss of cultural identity with a resource."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The text has been revised to include the recommendations described in the comment.	4.19.2
CUL_58	In Section 4.19.2.1, we recommend emphasizing how the project will avoid sites by addressing it singularly, then move on to minimize and mitigate.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Avoidance of cultural resources and other minimization and mitigation measures are addressed in Section 4.19.3.	No change

Issue Code	Description	Final Response	Section #s of Change
CUL_59	In the Cultural Resources Management Plan, it is unclear why the word 'consultation' is used here: "This Plan provided an overview of cultural resource identification, consultation, and …"	USACE appreciates the comment. Part of the intent of the CRMP is to provide an overview of all cultural resources work conducted, including consultation efforts.	No change
CUL_6	Consultation with the State Historical Preservation Office needs to be worked into the first paragraph of Section 5.5.2.1 of the Cultural Resources Management Plan	The CRMP is currently under development and review by the 106 work group. AGDC has updated the CRMP has been updated to reflect recent consultation comments and concerns (including those of the SHPO) and to layout the mitigation elements that all consulting parties (again, including the SHPO) are agreeing to as part of the PA process.	No change
CUL_60	In the Cultural Resources Management Plan, it's unusual to have the exact same number of direct and indirect Ares of Potential Effect (APEs). Is 202 correct for both counts?	Comment acknowledged. During Section 106 consultation meetings in September, it was decided that the CRMP would be the vehicle for all the information that would normally be included in an HPTP.	No change
CUL_61	In the Cultural Resources Management Plan, the definition for "undertaking" in the Section 106 regulations should be 36 CFR 800.16(y). Unsure where the 36 CFR 500.16(y) reference is coming from.	USACE appreciates the comment. This has been corrected in the CRMP.	Appendix K
CUL_62	Update the second paragraph of Section 5.3.1 of the Cultural Resources Management Plan. Was the report that was expected to be complete on May 10, 2017 completed?	Yes, this language was included because the CRMP included in the Draft SEIS was prepared prior to May 10, 2017. The CRMP has been updated to reflect the current status of DOEs for the AHRS sites in the APEs.	Appendix K
CUL_63	In Section 5.5.1 of the Cultural Resources Management Plan (CRMP), the State Historical Preservation Office would prefer to have the Historic Properties Treatment Plan as part of the CRMP and not as part of the Programmatic Agreement.	Comment acknowledged. During Section 106 consultation meetings in September, it was decided that the CRMP would be the vehicle for all the information that would normally be included in an HPTP.	Appendix K
CUL_64	In Section 5.5.1.1 of the Cultural Resources Management Plan, how much has been re-routed to accommodate un-evaluated sites? Rerouting the pipeline before Determinations of Eligibility (DOE) have been done on the cultural sites discovered can be both costly (compared to mitigating effects on the resource), and unnecessary, as the DOE may find that the cultural resource may not be eligible for the National Register and thus not an impediment to going forward with the project. After the DOEs have been made on the sites the ones not eligible can be ignored, and the sites eligible can have mitigation spelled out in an MOA and the project moves forward without needing any re-routing. Whether the site(s) are determined to be eligible or not, rerouting the pipeline before the DOE's were done could potentially cost substantially more versus just following the Section 106 process evaluation process to completion.	The USACE appreciates the comment. The alignment routing has been developed to accommodate a number of resource and engineering concerns, however it is difficult to say how many small shifts (if any) occurred due solely to the presence of cultural resources. In the case of Montana Creek, the alignment was rerouted to help address concerns expressed by the Knik Tribe over the alignment's proximity to cultural resources, not to avoid having to evaluate the eligibility of resources or to follow the 106 process to completion.	No change
CUL_65	In Section 5.5.1.1 of the Cultural Resources Management Plan, we recommend modifying "Specifically, these measures may include…" to using "conditions/parameters" instead of measures.	The USACE appreciates the suggested change. The CRMP has been updated and the term measures has been replaced with "uses of conditions and parameters".	Appendix K
CUL_66	In Section 5.5.2.1 of the Cultural Resources Management Plan, we recommend modifying "…avoided by ground disturbing activities can be mitigated through the recovery of a site's data…" to replace recovery with excavation.	The USACE appreciates the suggested change accepted and the CRMP has been updated to reflect the suggestion.	Appendix K
CUL_67	In Section 5.5.2.1 of the Cultural Resources Management Plan, we recommend modifying "…Determining how much of a site must be excavated to constitute data recovery…" by using "…constitute sufficient data recovery…"	The USACE appreciates the suggested change and the CRMP has been updated to reflect the suggestion.	Appendix K
CUL_7	Additional information regarding consultation methods, including who has been invited and how, should be included or referenced in this discussion. Modify "The Section 106 process, which is ongoing and being conducted…and AGDC."	Additional information has been added regarding invited participants.	4.19.1
CUL_8	The concept of a visual APE has not been discussed previously in the SEIS chapters. The PA will outline consultation processes regarding the discovery and NRHP evaluation of new cultural resources within the entire APE. Modify "The PA will identify steps to address consultation…."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The text has been revised to include the recommendations described in the comment.	4.19.1
CUL_9	This sentence is not appropriate in the Cultural Resources Management Plan: "AGDC recommends the USACE and consulting parties take a closer look at the definitions of these APE's to confirm that they adequately capture cultural resources that may be affected by the Project."	Comment acknowledged. AGDC has revised the CRMP.	Appendix K
ECO_1	The Project's economic benefits to urban versus rural communities will not be fair. How will the Project benefit bush communities?	The USACE appreciates the comment. AGDC is mandated by State law to investigate opportunities to provide reasonably priced natural gas to in-state communities. AGDC is working with utilities, municipal governments, local communities and others to evaluate how to provide reasonably priced natural gas to local users. Bush communities may not be able to directly access natural gas from the pipeline, but should indirectly benefit from the Project-generated revenue deposited into the State's general fund. The Alaska Legislature will determine how revenues are appropriated and AGDC can make no commitment related to funding of the Power Cost Equalization Program. The Alaska Energy Authority (AEA) was tasked in 2014 by the 28th Alaska Legislature under Senate Bill 138 to provide recommendations to improve the affordability of energy in areas of the state that are not expected to have access to a North Slope natural gas pipeline. The Alaska Affordable Energy Strategy (AkAES) was the result of this effort and information from AEA can be accessed at: http://www.akenergyauthority.org/Policy-Planning/AlaskaAffordableEnergyStrategy.	No change
ECO_10	The Project will lower the cost of natural gas throughout the state of Alaska. This affordable resource will be a long-term source of energy for residents of Interior Alaska and at other locations along the corridor.	Comment acknowledged.	No change
ECO_11	The Alaska Gasline Development Corporation will not hold true to their promises because Alyeska did not hold their promises that they would provide long-term jobs to village residents.	The AGDC Board of Directors is comprised of Alaskans appointed by the Governor. The Board has made a point to emphasize that the Project should use Alaskan contactors, businesses and workers. AGDC cannot comment on the previous experience described in the comment, but Alaska's Gas Pipeline Development Corporation is serving the citizens of the State of Alaska and there is a strong commitment within the organization to support local Alaskan businesses and to facilitate the participation of local residents in the Project.	No change
ECO_12	Questions regarding funding and if the State of Alaska has funded the Project this year.	The AGDC capital funds balance totaled approximately $128 million for the fiscal year ending June 30, 2016. The Project did not receive additional Legislative capital funding fiscal year 2017 or 2018. Additional financial information can be found in the AGDC 2016 Annual Report : https://agdc.us/wp-content/uploads/2016/08/AGDC_2016-Annual-Report_Final.pdf	No change
ECO_13	Questions regarding which companies are supporting/funding the Project. How much profit will remain in-State and how much will go to lower 48 corporations?	Currently, the ASAP Project only receives funding from the State of Alaska and is 100% owned by AGDC (an independent public corporation of the State of Alaska).	No change
ECO_14	There would not be a positive return on investment for this Project. $4.20 per million British thermal units (BTUs) is required to be profitable, but the current spot price is $2.85.	We believe your comment is targeted to the Alaska LNG Project, which is an LNG export Project that has included participation from North Slope Producers. North Slope Producers have not participated in developing the ASAP Project. The ASAP Project is being pursued at the direction of the Alaska Legislature. AGDC has a Board of Directors, appointed by the Governor, comprised of Alaskans that oversee the ASAP Project and ensure the mandates of the Legislature are being fulfilled. The ASAP Project has been referred to as "Plan B" because, from an economic perspective, the larger Alaska LNG Project would deliver gas at a lower cost per unit due to the higher throughput volume. The Alaska LNG Project is preferred by the State, but if it is unable to move forward, ASAP provides a viable method to commercialize North Slope natural gas through in-state delivery. The costs to existing natural gas users in the Fairbanks area would be less than the current LNG truck delivered price and would encourage additional distribution in the area. The costs to existing Southcentral users may be slightly higher than current costs, however, the ASAP pipeline will ensure the long-term reliability of supply that Cook Inlet natural gas cannot provide. Additionally, the ASAP Project is a mega-Project in size and will provide a significant boost to the State economy as a whole and many of the communities along the corridor in particular.	No change
ECO_15	The residents of Willow are a great resource to utilize for determining a pipeline alignment in the area. These resources should be utilized.	Comment acknowledged.	No change

Issue Code	Description	Final Response	Section #s of Change
ECO_16	Alaska's natural gas is a stranded resource. A natural gas pipeline from the Arctic coast to tidewater could bring more than 240 tcf of natural gas (by mean estimates) to market.	Comment acknowledged.	No change
ECO_17	A natural gas pipeline is vital to the state's economic future. Alaska Gasline Development Corporation's proposed pipeline projects have the potential to produce about 12,000 direct jobs during construction and approximately 1,000 full-time jobs during operation. And, by historical estimates, these projects could generate $40 billion to $80 billion over the life of the initial 34 trillion cubic feet (tcf) of gas. Recent estimates have pegged the state's revenue from a gas line at "billions of dollars," while previous studies point to the federal government receiving about $50 billion in tax revenue.	Comment acknowledged.	No change
ECO_18	Alaska's gas has been stranded far too long. It's time we used it for the benefit of Alaska's people. The ASAP project brings hope to Alaska, and will provide affordable energy to lower heating costs, improve air quality, and provide a foundation for other business development within the state.	Comment acknowledged.	No change
ECO_19	The National Parks Conservation Association supports the use of cleaner natural gas wherever possible. A well-defined and funded plan that allows the park to use natural gas could change the cost-benefit evaluation of the route through the park.	Comment acknowledged.	No change
ECO_2	How would the community of Manley Hot Springs benefit from the Project?	Project related revenue would be deposited into the State's general fund and the legislative appropriation process would determine how the funds are spent. Oil and gas revenue to the State has helped support statewide education funding, power cost equalization, construction and maintenance of rural roads and airstrips, management of fish and game, public health services.	No change
ECO_20	The Denali Citizens Council find the ASAP and Alaska LNG processes needlessly duplicative and suggest that efficiencies can be obtained by further merging the projects. Running separate NEPA processes on these two projects expends valuable public funds at a time when financial realities make the smaller line barely viable. The state of Alaska has been reluctant to fund large projects, given budget shortfalls. A moratorium on planning, at least for ASAP, is advisable at this time.	The ASAP Project is in the final stages of the NEPA process. The Final ASAP NEPA document should provide a significant resource for other similar Projects such as the Alaska LNG Project, which is a much larger Project.	No change
ECO_21	The Denali Citizens Council is not convinced that ASAP will reduce the price of gas to any individual Alaskans, even in more populated areas, given the high cost of building the line and the availability of gas from other sources.	The ASAP Project is being pursued at the direction of the Alaska Legislature. AGDC has a Board of Directors, appointed by the Governor, comprised of Alaskans that oversee the ASAP Project to ensure the mandates of the Legislature are being fulfilled. The ASAP Project has been referred to as "Plan B" because, from an economic perspective, the larger Alaska LNG Project would deliver gas at a lower cost per unit due to the higher throughput volume. The Alaska LNG Project is preferred by the State, but if it is unable to move forward, ASAP provides a viable method to commercialize North Slope natural gas through in-state delivery. The costs to existing natural gas users in the Fairbanks area would be less than the current LNG truck delivered price and would encourage additional distribution in the area. The costs to existing Southcentral users may be slightly higher than current costs, however, the ASAP pipeline intends to ensure the long-term reliability of supply that Cook Inlet natural gas cannot provide. Additionally, the ASAP Project is a mega-Project in size and will provide a significant boost to the State economy as a whole and many of the communities along the corridor in particular.	No change
ECO_22	The cost estimated presented in the Draft SEIS associated with an aboveground should include an estimate for only elevating the first 62 miles of pipeline. The Alaska Gasline Development Corporation maintains the costs associated with an aboveground pipeline are more expensive than the belowground pipeline. Based on an average increased cost per mile (i.e., 81% divided by 733 miles = 0.111% per mile), elevating the pipeline on vertical support members (VSMs) for the first 62 miles will increase the project cost by 6.85 percent.	Information on the potential costs associated with constructing Alternative 2 in aboveground pipeline mode through the approximate length of the Arctic Coastal Plain has been added to Section 2.6.3 of the SEIS. Based on information provided by AGDC, the proposed hybrid design to elevate the pipeline MP 0 – 168 presents additional geotechnical challenges. In the area between MP 62 (the edge of the Arctic Coastal Plain) and MP 168 (approximately the base on Atigun Pass), the subsurface conditions are less uniform (i.e., a mixture of silts, sands, gravels, cobbles, boulders, and rock) than the Arctic Coastal Plan. Installing VSMs in this area would require that multiple types of specialized equipment be on location depending on conditions encountered. Based on information provided by AGDC, the extra cost to consumers associated with a completely aboveground Project is estimated at a minimum of $670,000,000 per year. A hybrid project in which approximately 634 miles is aboveground would be approximately 10 percent less [than the completely elevated pipeline].Additional cost information provided by AGDC is confidential. As described in Section 2.6.3, a hybrid pipeline which includes elevating the pipeline from MP 0 -168 has been eliminated as a reasonable alternatives based on the screening criteria presented in Table 2.6-1 of the SEIS.	2.4 and 2.6
ECO_23	The Fairbanks North Star Borough strongly supports the ASAP Project and its underlying purpose. The affordable natural gas the ASAP Project could provide the Fairbanks area is vital for the economic well-being of Interior Alaska.	Comment acknowledged.	No change
ECO_24	The section "Impacts on O&M Employment" understates the Project's impact on unemployment.	Comment acknowledged. Adequate justification has not been provided to support the modification.	No change
ECO_25	The section "Impacts on O&M Housing" understates the Project's impact on housing.	Comment acknowledged. Adequate justification has not been provided to support the modification.	No change
ECO_26	Sections regarding state and local property tax state that the Project will permit taxes to be applied to the Project, this may not be the case.	Comment acknowledged.	No change
ECO_27	In Section 4.6, the SOA has selected land in the Ray River drainage for its alluvial rare-earth-element (REE) potential. The ASAP may cross this area, and alluvial materials may be extracted from material sites. The economic potential of this area's gravel should be determined, and if the ASAP uses these material sites, REE's should be recovered if economically feasible to do so and of financial benefit to the SOA.	AGDC would be required to apply to the DNR for material sales for any material sites on State land. During this permitting process, DNR would ask for a review by other State agencies, and if there are potential conflicts with valuable subsurface resources within any specific material site, then those conflicts will be resolved at that time. AGDC would rely on the expertise of DNR's Division of Geologic and Geophysical Surveys to determine if economically viable concentrations of REEs occur within those sites, and how best to address the situation.	No change
ECO_28	Under Alternative 1 for Operations, the Impact Rating for Population Trends and Projections and Housing Property Values being the same as Construction is not supported. Operations should clearly be less negative impact than Construction due to many orders of magnitude less activity. In addition, the characterization that impact to Infrastructure and Services from Operations is higher than Construction is not supported. Long-term operations with a workforce of approximately 240 represents negligible impact to Infrastructure and Services. Ratings should be revised accordingly in Table 4.18-23.	A detailed analysis is provided in the text and tables referenced below, while the overall impact categories referenced in Table 4.18-23 provide a more generalized impact rating. Although the overall the impact to one resource may be greater during construction than during operations (i.e. population impacts would likely be slightly greater during construction), the four general impact criteria ratings (negligible, minor, moderate, major) may not reflect this level of detail. In many cases the magnitude and geographic extent of the impact could be greater during construction, but duration of the impact would offset part of this rating as it would be greater during operations and maintenance than construction. Detailed reasoning for the impact findings in terms of the impact criteria are described in Tables 4.18-6 and Table 4.18-15 for population, in Tables 4.18-9 and Table 4.18-16 for employment, and in Tables 4.18-13 and Table 4.18-21 for infrastructure and services.	No change
ECO_29	In the Socioeconomics section (page 4-851), some of the direct impacts need to be changed from moderately positive to major.	Comment acknowledged. Adequate justification has not been provided to support the modification.	No change
ECO_3	The project would benefit the MatSu Borough.	Comment acknowledged.	No change
ECO_30	Table 4.18-22 understates the Project's impact on access to natural gas.	Comment acknowledged. Additional justificaiton is needed to support the requested modification.	No change
ECO_31	In several tables (Tables 4.18-12, 4.18-20, 4.18-21, 4.18-22, and 4.18-23) there is lack of clarity on application of Impact Criteria for Socioeconomic Resources and inconsistent with (+) and (-) indicators. The identified Impact Level of "Major" is inconsistent with Table 4.18.9 and summary Table 4.18-23 which identifies "Major Positive Impact." The Impact Level as "Major" does not indicate whether this is positive or negative. The impact should clearly be positive.	Thank you, this comment is appreciated. Tables 4.18-12, 4.18-20, 4.18-21, 4.18-22 have been revised to indicate whether the impact is anticipated to be positive or negative, consistent with Table 4.18-23. For employment, the impacts are identified as major positive in both Table 4.18-9, and Table 4.18-23.	4.18.4
ECO_32	The section "Impacts on Government Revenue" understates the benefits to the government revenues.	Comment acknowledged. Adequate justification has not been provided to support the modification.	No change
ECO_4	The project will benefit Alaskan villages by providing a less expensive heating option.	Comment acknowledged.	No change
ECO_5	There is a great need for natural gas in remote areas of the state, such as Rampart, Bethel, and Atqasuk.	Comment acknowledged.	No change
ECO_6	What are the cost differences between burying and above ground?	USACE appreciates the comment. The cost differences between buried and aboveground pipeline options are described in Section 2.6. These differences in labor and logistics costs associated with an aboveground pipeline option would include: additional mainline wall thickness for low temperature fracture control; pre-insulated pipe and jacketing for aboveground piping; insulation kits at girth welds; horizontal support members (HSM) for slide and anchor supports; and slide, guide, and anchor shoes.	No change

Issue Code	Description	Final Response	Section #s of Change
ECO_7	Which communities/villages will have access to the gas?	At this point of the Project planning process, only Fairbanks and the ENSTAR facility near Big Lake will have direct access to the gas from the pipeline. Other communities along the pipeline will need to develop individual plans and their own facilities with AGDC to access gas.	No change
ECO_8	The State of Alaska cannot afford this Project. The pipeline will be expensive for Alaska and its people.	Comment acknowledged.	No change
ECO_9	We request that to the maximum extent allowed, that employment opportunities be afforded to the Ahtna people and our shareholders. We also request that contracting and other business opportunities be afforded to Ahtna and Alaska Native owned businesses.	AGDC believes in local hire and using qualified Alaska businesses and contractors to complete Projects. Employment opportunities will be provided to qualified Alaskans, businesses and contractors to the maximum extent allowed by law.	No change
EDI_1	The determinations in the BA need to match those listed in the Draft SEIS. There are currently discrepancies in the BA which should be reconciled.	USACE appreciates this comment. The summary table in the Biological Assessment (BA) was incorrect. The determinations for the two species are correctly stated in section 5.1.1 of the BA and the table has been corrected.	BA
EDI_10	Page: ES-34 Original Phrase: Legend on Map, fourth line, ASAP v6.1 MP 62 - 733 (Aboveground) Comment: Legend in Map would indicate that the pipe is above ground from MP 62 to MP 733 (purple line). This is incorrect. Alternative 1 is below grade for the entire length with the exception of fault crossings and aerial bridge crossings.	Figure ES-12 has been updated to show the correct belowground configuration for Alternative 1.	Figure ES-12
EDI_11	Page: ES-35 Original Phrase: Legend on Map, fourth line, ASAP v6.1 MP 62 - 733 (Aboveground) Comment: Legend in Map would indicate that the pipe is aboveground from MP 62 to MP 733 (purple line). This is incorrect. Alternative 2 is below grade from MP 62 to MP 733 with the exception of fault crossings and aerial bridge crossings.	Figure ES-13 has been updated to show the correct aboveground configuration for Alternative 2.	Figure ES-13
EDI_12	Page: 1-14 Original Phrase: Consequently, following completion of the SEIS, the State of Alaska will make some decisions on the entire proposal. AGDC submitted a Right-of-Way Leasing Act AS 38.35.050 Application for Pipeline Right-of-Way Lease on March 21, 2011. The State of Alaska issued Right-of-Way Lease ADL 418977 to AGDC on July 25, 2011 (Appendix B). Comment: ADNR amended the ROW lease in 2014 and 2016.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Chapter 1
EDI_13	Page: 1-14 Original Phrase: The State of Alaska is responsible for regulating activities and developments on federal, state, and private lands that may affect air or water quality or resident species of fish and wildlife. Comment: ADF&G is also responsible for managing anadromous fish streams in Alaska. AS 16.871.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Chapter 1
EDI_14	Page: 1-27 Original Phrase: Protect fish habitats and populations. Comment: Specify the protections are only for species specifically identified under the EFH statute.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Chapter 1
EDI_15	Page: 2-30 Original Phrase: At MP 638, the proposed alignment would cross the Chulitna River and move south, west of the river, to avoid private land crossed by the 2012 route located east side of the river. Between MP 658 and MP 732, several sections of the current alignment shifts slightly (less than 1 mile) from the 2012 route to minimize impacts to wetlands and avoid private property. Comment: Change MP 732 to: MP 707	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Chapter 2
EDI_16	Page: 2-41 Original Phrase: AGDC proposes to establish 13 stationary construction camps (SCCs) (12 along the Mainline, plus one at the GCF) and 26 PSYs to support construction (Figure 2.2-16) (AGDC, 2016b). Most of the SCC locations would be collocated within 1 mile of a PSY. Schematics of proposed campsites are provided in Appendix D, beginning on Sheet 48. The PSYs and SCCs would primarily be located in previously disturbed areas that were used for construction of TAPS, ARRC facilities, or public events. PSYs have been sized based on conditions at each specific location, but would average about 9 acres, and SCCs would range between15 and 40 acres in size. Comment: Place a space between "between" and "15"	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Chapter 2
EDI_17	Page: 2-43 Original Phrase: By regulation, these MLBVs would be aboveground features, with one valve at least every 20 miles. Comment: This statement is not correct as written. These MLBVs would be primarily belowground features, with one valve at least every 20 miles.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Chapter 2
EDI_18	Page: 2-43 Original Phrase: The proposed Project would install and maintain 40 MLBVs and one Fairbanks Lateral block valve. By regulation, these MLBVs would be aboveground features, with one valve at least every 20 miles. Siting of exact locations would depend on suitability of terrain. The MLBVs would be spaced in accordance with 49 CFR 192.179 and are currently proposed to be controlled by the pipeline Supervisory Control and Data Acquisition (SCADA) system. Comment: The statement: By regulation, these MLBVs would be aboveground features is incorrect and should be struck or modified to read in accordance with the regulations. 49 CFR 192 has no position on abovegrade versus belowgrade valve locations. It is correct that MLBVs can be spaced no further than 20 miles.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Chapter 2
EDI_19	Page: 2-44 Original Phrase: 2.2.10.7. Temporary Workspaces, HDD Pads, and False Right-of-Ways Comment: This is grammatically incorrect. It should read: …Rights-of-Way. Please make consistent throughout the document.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Chapter 2
EDI_2	Page: ES-12 Original Phrase: Additionally, no operations and maintenance requirements would not exist. Comment: Additionally, no operations and maintenance requirements would exist.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Executive Summary
EDI_20	Page: 2-44 Original Phrase: Horizontal bores would also require two pits, typically 100 feet by 250 feet, a majority of which would typically be contained within the construction footprint, on either side of the road or railroad to be crossed. These TWs would be set back at least 50 feet from all waterbodies and wetlands. Comment: The statement is not correct and should be removed. The TWs are not setback 50 feet from all waterbodies or wetlands. Some are in wetlands. This is likely to have been a relic statement that should be removed.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Sections 2.2.9.7 and 4.11.4.1.8.5

Issue Code	Description	Final Response	Section #s of Change
EDI_21	Page: 2-46 Original Phrase: The Seward Marshalling Yard would be located near the Seward Harbor and the ARRC terminus. Pipe would arrive by barge and would be transported directly to the Seward Marshalling Yard or placed on railcars. The Seward Marshalling Yard would be required for 30 months, allowing 4 months to coordinate mobilization activities and 2 months for demobilization. It is assumed that pipe would be delivered to the Port of Seward and transferred to the Seward Marshalling Yard over a 24-month period, with each ship requiring 7 to 10 days to fully discharge the load. During the ship offload cycles, operations would proceed for 24 hours each day with multiple crews. Comment: The term ship is used twice later in the paragraph, replace ship with: vessel	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Chapter 2; Chapter 4
EDI_22	Page: 2-79 Original Phrase: For a completely elevated (aboveground) pipeline, the extraordinary capital costs for construction and maintenance, as well as concerns for safety and security risks, make this alternative infeasible and impracticable. Therefore, it has been eliminated from detailed analysis. While Alternative 2 also proposes to use the aboveground mode between MP 0 and 634, the portion of the pipeline that would intersect more populated areas (i.e., where they may be additional safety or security risks) would be buried (see Section 2.4). Comment: The highlighted segment should read: MP 0 and 62	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Chapter 2
EDI_23	Page: 2-1 Original Phrase: Alternative 1: ASAP Project including use of Dock Head 3 (DH3) at West Dock, nearshore disposal of dredge material, buried pipeline (except at fault crossings, elevated bridge stream crossings, pigging facilities, and block valve locations), strain-based pipeline design in discontinuous permafrost as required, and Horizontal Directional Drilling (HDD) at the Yukon River. Comment: Delete highlighted reference to strain-based design, as strain-based design is not required for the belowgrade installation of the pipeline. Ensure Alternative 1 description matches description in the Executive Summary.	Based on further geotechnical analysis and a decision by AGDC to use thicker wall pipe, AGDC has determined that there is no need for a SBD Special Permit. In a letter from PHMSA, dated 16 January, 2018, PHMSA is no longer considering the request for a special permit understanding that the pipeline would comply with Part 192, which requires the pipeline be able to "maintain the structural integrity of the pipeline under temperature and other environmental conditions that may be anticipated: and "withstand anticipated external pressures and loads that will be imposed on the pipe after installation" to include strains imposed by permafrost and discontinuous permafrost soils.	Executive Summary, Sections 2.2.5.3, 4.25.9.3, 4.25.12, 4.6.4.2, 4.7.4.2.5, and 4.25.2
EDI_24	Page: 2-1 Original Phrase: Alternative 2: Denali National Park and Preserve (NPP) Route Variation, use of Dock Head 2 (DH2) at West Dock, ocean disposal of dredge material, pipeline elevated on vertical support members (VSMs) from MP 0 to 62, no strain-based design used in discontinuous permafrost, and aerial crossing at Yukon River. Comment: Delete highlighted reference to strain-based design as strain-based design is not required for the belowgrade installation of the pipeline. Ensure Alternative 2 description matches description in the Executive Summary.	Based on further geotechnical analysis and a decision by AGDC to use thicker wall pipe, AGDC has determined that there is no need for a SBD Special Permit. In a letter from PHMSA, dated 16 January, 2018, PHMSA is no longer considering the request for a special permit understanding that the pipeline would comply with Part 192, which requires the pipeline be able to "maintain the structural integrity of the pipeline under temperature and other environmental conditions that may be anticipated: and "withstand anticipated external pressures and loads that will be imposed on the pipe after installation" to include strains imposed by permafrost and discontinuous permafrost soils.	Executive Summary, Sections 2.2.5.3, 4.25.9.3, 4.25.12, 4.6.4.2, 4.7.4.2.5, and 4.25.2
EDI_25	Page: 2-7 Original Phrase: Four lines supported on 17 VSMs spaced 60 feet apart; approximately 1 kilo foot of line required Comment: 1 kilo foot should read: 1,000 feet	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Chapter 2
EDI_26	Page: 2-22 Original Phrase: Table 2.2-3 identifies the pipeline location classes, wall thickness, and MAOP for the Mainline, which has a 36-inch outer diameter, gradeline pipe. Comment: Delete: , gradeline pipe	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Chapter 2
EDI_27	Page: 2-25 Original Phrase: As described in detail in Appendix G, using route geotechnical data in conjunction with the results of the demand and capacity analyses, a segment-by-segment design would be completed to identify the frost heave potential along the proposed alignment. The segment-by-segment design approach would follow the general steps described below. Comment: Prior to frost heave add: thaw settlement and	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Chapter 2
EDI_28	Page: 2-26 Original Phrase: The ASAP Project would propose a permanent operational ROW that would range from a 53-foot easement at its narrowest point to a 350-foot easement at its widest point. This maximum distance would be used during the O&M phase of the proposed Project to maintain certain side slope cuts performed during the construction phase of the Project. The Fairbanks Lateral Operational ROW would range from a 30-foot easement at its narrowest point to a 350-foot easement at its widest point to access and maintain the land. Comment: After cuts add: and/or fills	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Chapter 2
EDI_29	Page: 2-29 Original Phrase: The proposed route would follow the Yukon River to approximately MP 402. From MP 402 to MP 435, the proposed alignment departs to higher elevation contours to the east of the route proposed in the 2012 FEIS. Moving southward, the revised route would climb the crest of the Summer Ridge lying east of Minto Flats to the junction with the Fairbanks Lateral at MP 440, 2.5 miles south of the Mainline Chatanika River crossing. This change was made to avoid wetlands and improve constructability. As in the 2012 alignment, the proposed route crosses lands in the Minto Flats State Game Refuge and the Tanana Valley State Forest. Comment: Replace Yukon River with: Dalton Highway	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Chapter 2
EDI_3	Page: ES-20 Original Phrase: Impacts to navigation resources result ng from increased navigational resource use by vessels Comment: This appears to be a typographical error that should read "resulting".	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Executive Summary
EDI_30	Page: 2-29 Original Phrase: South of the Fairbanks Lateral, the proposed alignment deviates from the 2012 route near MP 440.8, moving upslope to the east to traverse drier terrain and avoid crossing Native allotments and private lands. Around MP 471.5, the proposed alignment shifts to the west side of the Nenana River. The two alignments cross at MP 497.5 where the proposed alignment shifts east closer to the Nenana River to avoid crossing Native allotments and private lands. Both alignments overlap between MP 511 and MP 521. Comment: Delete: Both alignments overlap between MP 511 and MP 521.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Chapter 2
EDI_31	Page: 3-37 Original Phrase: The Nenana River originates in the Alaska Range in Denali NPP. Comment: The Nenana River does not originate in Denali NPP. Delete: in Denali NPP.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 3.3.4.2.1.8

Issue Code	Description	Final Response	Section #s of Change
EDI_32	Page: 3-01 Original Phrase: Significant changes have been proposed that have the potential to impact soil and geologic resources. Much of the information provided in the 2012 FEIS was preliminary, and in many cases, current estimates have been revised due to Project refinement rather than significant Project changes, which include: Winter dredging of a navigation channel and turn basin at West Dock; Nearshore disposal of dredge material on bottomfast sea ice; Pipeline burial along the entire route, except at elevated bridge crossings, fault crossings, pigging facilities, and valves; Topsoil to be replaced only on agricultural lands; Increase in the volume of required fill from 13.1 million cubic yards to 25 million cubic yards needed from gravel sources as a result of Project refinement; Decrease from 546 potential borrow sources to 91 borrow sources, including 89 new sites and two existing sites (5,200 acres of land total); and Increase from 133 access roads to 298 new access roads totaling 174.4 miles. Comment: The highlighted statement is untrue and should be corrected. While there have been changes in the project as it was further developed since the 2012 FEIS, the intent of having a buried pipeline between Prudhoe Bay and Southcentral Alaska has not changed. With regards to the bulleted list: Bullet 1 is a change; Bullet 2 is a change; Bullet 3 is neither a change or a refinement and should be deleted from the list. The pipeline was always intended to be buried; Bullet 4 is a refinement; Bullet 5 is a refinement; Bullet 6 is a refinement; Bullet 7 is a refinement	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 3.2.1
EDI_33	Page: 3-06 Original Phrase: The portion of the Bering Sea that would be impacted by the proposed Project is described in the next subsection. Comment: Replace Bering Sea with Beaufort Sea.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 3.2.3
EDI_34	Page: 3-25 Original Phrase: A second significant change between the 2012 FEIS project description and the current project description is the addition of West Dock for receiving barge loads of material. This made providing details for the dredging and disposal operation necessary. Dredging and disposal would include: Comment: After West Dock, add: DH3	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 3.3.1
EDI_35	Page: 3-29 Comment: The first and last row on this page appear to be duplicates (although the language is a little different).	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The first row regards EPA's authority under Section 404 of the CWA and the last row the USACE's under Section 404 of the CWA.	No change
EDI_36	Page: 3-297 Original Phrase: A complete list of agencies, and regulations that apply to this project are included in Chapter 1, Section 1.10 of this SEIS. A list of the land owners and their associated regulations that pertain to land use in the Revision 6.1 alignment are included below: Comment: Section 1.10 is "Tribal Government-to-Government Consultation;" not a list of agencies, and regulation that apply to this project. 1.12 Permits, Approvals, Compliance with Executive Orders and Regulatory Requirements may be the intended reference. The term "Statutes" should be added to "regulations" in both the original SEIS phrase commented on here as well as the 1.12 title as the applicable legal authorities include statutes as well as regulations.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 3.11.2.1
EDI_37	Page: 3-297 Original Phrase: NPS Comment: The NPS statutes and regulations section should also include: Denali National Park Improvement Act (P.L. 113-33), Title XI Implementing Regulations (43 CFR 36), and NPS right-of-way regulations (36 CFR Part 14).	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 3.11.2.2
EDI_38	Page: 3-298 Original Phrase: Section 6(f) of the Land and Water Conservation Fund (LWCF) Comment: Duplicate entries.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 3.11.2.2
EDI_39	Page: 3-298 Original Phrase: ARRC Comment: Duplicate reference to ARRC land.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 3.11.2.2
EDI_4	Page: ES-20 Original Phrase: While impacts would be similar overall under each alternative, Alternative 2 would result in the following slightly increased impacts to navigation: dredging impacts at Prudhoe Bay; vessel traffic at Prudhoe Bay; navigational impacts along the Yukon River as a result of aerial suspension bridge construction; and two crossings of the Nenana River proposed along the Denali NPP Route Variation, one HDD and one suspension bridge. Comment: There should be no impacts to Navigation Resources due to dredging at Prudhoe Bay (for either Alternative), because the dredging will be done in the winter off of the ice, when there will be no vessel traffic.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Table ES-1
EDI_40	Page: 3-298 Original Phrase: ROW Leasing Act AS 38.35.050 Application for Pipeline ROW Lease Comment: Delete this reference as it is included under ADNR (AS 38.35 ROW Leasing Act).	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 3.11.2.3
EDI_41	Page: 3-298, 299 Original Phrase: State Comment: The University of Alaska is not listed. UofA lands are managed consistent with the Board of Regents' Policy 05.11 - Real Property.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 3.11.2.3
EDI_42	Page: 3-299 Comment: The University of Alaska should be included under the State section.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 3.11.2.3
EDI_43	Page: 4-80 Original Phrase: Minor affects to stream bank stability are expected to be associated with both the OC crossing, as described in Section 4.7.4.1.3, Stream Bank Stability and Geomorphology. Comment: Remove "both".	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 4.7.5.1.1
EDI_44	Page: 4-89 Original Phrase: Various compressor stations, the Straddle and Offtake Facility, and the natural gas liquid extraction plant were omitted from the proposed Project, eliminating vegetation and wildlife impacts from those Project elements. Comment: The term omitted may have negative connotations. Please use the term 'removed from the project as described in the 2012 EIS.'	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 4.8.3

Issue Code	Description	Final Response	Section #s of Change
EDI_45	Page: 4-1 Original Phrase: The environmental impact assessment presented is based on the following technical reports and updates, as appropriate: Comment: Include the following document to the list: The ASAP Belowground Pipeline Mode: Selection, Construction, Operation, and Maintenance on Alaska's North Slope ASAP-22-RTA-DDD-DOC-00066 March 24, 2016	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 4.0
EDI_46	Page: 4-324 Original Phrase: Table 4.14.3 Comment: References to vessel activities in Proposed Action Causing Potential Impact for Operations and Maintenance in the table should be removed. There are no planned vessel activities during operations and maintenance of the ASAP Project.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Table 4.14-3
EDI_47	Page: 4-480 Original Phrase: Footnote 1- For AHRS site descriptions…. Comment: Recommend rewording second sentence in footnote to read "The list of sites in the direct impact area in this table does not include unevaluated cultural resources"	Comment acknowledged.	No change
EDI_48	Page: 4-484 Original Phrase: Other potential mitigation may be identified… Comment: Recommend "Other potential minimization and mitigation strategies may be identified"	Comment acknowledged.	No change
EDI_49	Page: 4-652 Original Phrase: Mitigation Measures Comment: In this section AGDC commits to a blast control plan. At this time, we have not developed such a plan.	Comment acknowledged.	No change
EDI_5	Page: ES-20 Original Phrase: While impacts would be similar overall under each alternative, Alternative 2 would result in the following slightly increased impacts to navigation: dredging impacts at Prudhoe Bay; vessel traffic at Prudhoe Bay; navigational impacts along the Yukon River as a result of aerial suspension bridge construction; and two crossings of the Nenana River proposed along the Denali NPP Route Variation, one HDD and one suspension bridge. Comment: With reference to the crossings of the Nenana River utilizing the Denali NPP Route Variation, the first aerial crossing is placement of the pipe on the existing pedestrian bridge (not a suspension bridge). The second crossing of the Nenana River (northeast from McKinley Village) is an open cut crossing, not an HDD crossing. The Navigational impacts should not change, but the crossing types need to be correctly identified.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Executive Summary
EDI_50	Page: 4-721 Original Phrase: Table 4.26-2 Comment: This summary table should be revised to reflect comments presented on contributing tables.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	No change
EDI_51	Page: 4-754 Original Phrase: A new plant expansion project at Plant 2 would provide 120 MW when complete in 2016 Comment: This plant has been completed and was placed into operation in 2016. Suggest updating this section to address the plant as being in service.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.26.7
EDI_52	Page: 7-795 Original Phrase: The Kenai LNG project currently has a 2-year export license approved by DOE through February 2018, allowing export of up to 40 billion cubic feet (bcf). ConocoPhillips is currently in the process of selling its Cook Inlet gas field but plans to retain the Nikiski LNG plant. The facility shipped five cargoes between May and September 2014, and six cargoes between May and October 2015. Cook Inlet production in 2016 has instead been sold to local markets. Comment: This statement needs to be updated, as CPAI found no buyers and is currently in the process of shutting down the plant.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.26.9.7
EDI_53	Page: xiv Original Phrase: A: Part I: Rationale for ASAP Strain Based Design, and Part II: The ASAP Belowground Pipeline Mode: Selection, Construction, Operation, and Maintenance on Alaska's North Slope Comment: Part I and Part II address different issues. Each should be a stand alone appendix, especially Part II as it addresses the first 60 miles of pipeline construction.	Rationale for ASAP Strain Based Design has been removed from the document as AGDC no longer proposes strain based design.	Appendices
EDI_54	Page: 7 Original Phrase: South of the Nenana River, the alignment has moved to the west of the Nenana River into undeveloped forest and away from the disturbed transportation corridor. This change was made to straighten the alignment and move onto drier terrain. The route moved onto steeper slopes but improves the crossings of streams and reduces bog crossings; and Comment: Shouldn't the first Nenana River in this sentence read Tanana River ?	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 4.9.3.1
EDI_55	Page: 13 Original Phrase: Train operation and construction crews regarding polar bear awareness. Comment: This is stated twice.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 4.14.3
EDI_56	Page: 14 Original Phrase: Prior to construction, AGDC would enter into a comprehensive agreement with ADOT&PF for the use of highways and other facilities under the jurisdiction of ADOT&PF. Comment: This is a duplication of Item 122.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 4.15.3.1
EDI_57	Page: 4-126 Original Phrase: ENTIRE SECTION Comment: See Comment 61, same comments apply This section requires editing. There will be no clearing, grubbing, or grading during operations. Clearing, grubbing and grading will have been completed during construction. Mowing will be the only maintenance of the ROW, and mowing will preclude any necessity for clearing. All references to clearing, grubbing, or grading need to be removed from the section. Mowing will not be required on the Beaufort Coastal Plain.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 4.8.5.2.1.1
EDI_73	More specifically, in Section 4.26.8.3.2, on page 4-769, the Bureau of Land Management recommends restating the paragraph to note that while wildfires can be destructive to man-made structures and activities, they play a very important part in sustaining the ecological health of many systems in Alaska. Additionally, the information about the 2015 fire season should be removed. There is no reason to highlight 2015, as opposed to any other season in the context of the paragraph. An average of acres burned or a range of acres over the years would provide better context. Statistics can be found at https://fire.ak.blm.gov/predsvcs/intel.php.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 4.26.8.3.2

Issue Code	Description	Final Response	Section #s of Change
EDI_58	In Table 3.7-2, the discussion about Coho salmon "Found in coastal waters of Southeast and South-central Alaska and in the Yukon River to the Alaska-Yukon border. Occur in nearly all accessible bodies of fresh water; avoid riffles." should have "avoid riffles" removed from the description.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Table 3.7-2
EDI_59	In the Fish section, the word "Statutes" is misspelled as "statues" in at least one location.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Chapter 3
EDI_6	Page: ES-20 Original Phrase: A buried pipeline is considered less susceptible to random acts of violence and somewhat less susceptible to terrorism. The very remote location of the portion of the Alternative 2 pipeline on VSMs also provides significant protection from intentional damage. Comment: The following statement needs to be struck: "somewhat less susceptible to". A buried pipe is much harder to damage than a pipe elevated above the ground.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Table ES-1
EDI_60	3.17.6; Text: This information has been updated where both of the following conditions are met: …. Comment: The information following this sentence provides 3 conditions. Change wording of 'both'	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 3.17.6
EDI_61	3.17.6.1; Text: Table 3.17-4; Comment: Double check the SEIS section numbers for the HEC locations. Some of these appear to be incorrect or missing	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Table 3.17-4
EDI_62	3.17.6.2.1.6; Text: Table 3.17-10; Comment: Table is almost unreadable. Recreate.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Table 3.17-10
EDI_63	Air Quality; Text: Paragraph three: Reginal Haze modeling would need to be performed. Comment: The text should refer to Regional Haze modeling.	This request is unclear, the text in question refers to regional haze modeling.	
EDI_64	Air Quality; Text: However, it is known that natural gas combustion has fewer air quality impacts than from combustion of the more commonly (and currently) used fuel oil or wood burning stoves. Comment: This sentence should be edit to read "combustion of the more commonly (and currently) used fuel oil, coal, or wood burning stoves.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 4.22.6
EDI_65	Cumulative Effects; Text: Increases in climate temperature (RFFA No. 67) could result in earlier breakup of river ice…. Comment: The word "climate" refers to the prevailing weather conditions in an area over a long period and as such does not have a temperature. Perhaps the writer meant to say "increases in climate change could result in earlier breakup of river ice….	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 4.26.9.2.1
EDI_66	In multiple places, it is not clear why the Umiat Access project is included. On page 4-738 it was made clear that the project was not considered in environmental consequences, so why would it be included in RFFAs? Please explain.	The USACE appreciates the comment. The Umiat Access Road was considered in environmental consequences; the "N" in Table 4.26-3 was in error. Table 4.26-3 has been updated to reflect recent information (i.e., ADNR's North Slope Road Network)	Table 4.26-3
EDI_67	Cumulative Effects; Text: Paragraph two: The impacts to noise resulting from Alternative 1, the proposed Action are described in Section 4.23, Noise. Comment: This sentence should be rewritten to read " The noise impacts resulting from Alternative 1, the proposed Action are described in Section 4.23, Noise. Noise is not a resource that can be impacted.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 4.26.9.18
EDI_68	An incorrect acronym (ANDR) is used for Alaska Department of Natural Resources (ADNR) in at least one location.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	All
EDI_69	On page 1-31 in the table, the correct name of the permit is a Temporary Water Use Authorization.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Table 1.10-1
EDI_7	Page: ES-20 Original Phrase: According to PHMSA, each alternative would require a special permit issued by PHMSA to waive the requirement to comply with one or more of the federal pipeline safety regulations. Comment: This entire statement is incorrect and should be struck. Recent analysis has shown that differential pipe movement can be mitigated with the addition of thicker pipe in specific locations, thus reducing the strain below the levels requiring Strain Based Design by 49 CFR Part 192.	Based on further geotechnical analysis and a decision by AGDC to use thicker wall pipe, AGDC has determined that there is no need for a SBD Special Permit. In a letter from PHMSA, dated 16 January, 2018, PHMSA is no longer considering the request for a special permit understanding that the pipeline would comply with Part 192, which requires the pipeline be able to "maintain the structural integrity of the pipeline under temperature and other environmental conditions that may be anticipated: and "withstand anticipated external pressures and loads that will be imposed on the pipe after installation" to include strains imposed by permafrost and discontinuous permafrost soils.	Executive Summary, Sections 2.2.5.3, 4.25.9.3, 4.25.12, 4.6.4.2, 4.7.4.2.5, and 4.25.2
EDI_70	The current director of ADNR DML&W is Brent Goodrum, this is incorrect on page 6-1.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Chapter 6
EDI_71	On page 6-4 in the list, the correct department is the Alaska Department of Natural Resources and not Alaska Department of Fish and Game.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Chapter 6
EDI_72	Section 4.19.1; Text: first sentence …discusses AGDC's proposed mitigation strategies that are being developed as part of the PA to avoid, minimize, etc. Comment: should read as …developed as part of the Section 106 PA to avoid	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.19.1
EDI_8	Page: ES-20 Original Phrase: Assuming a special permit could be obtained, pipelines built under Alternatives 1 or 2 would provide similar levels of reliability and safety as both would use strain-based design. Comment: Based on the comment above, strike the following: Assuming a special permit could be obtained,. The balance of the bullet is correct.	Based on further geotechnical analysis and a decision by AGDC to use thicker wall pipe, AGDC has determined that there is no need for a SBD Special Permit. In a letter from PHMSA, dated 16 January, 2018, PHMSA is no longer considering the request for a special permit understanding that the pipeline would comply with Part 192, which requires the pipeline be able to "maintain the structural integrity of the pipeline under temperature and other environmental conditions that may be anticipated: and "withstand anticipated external pressures and loads that will be imposed on the pipe after installation" to include strains imposed by permafrost and discontinuous permafrost soils. Reference to the requirement for a Special Permit for the ASAP Project have been removed from the document.	Executive Summary, Sections 2.2.5.3, 4.25.9.3, 4.25.12, 4.6.4.2, 4.7.4.2.5, and 4.25.2
EDI_9	Page: ES-21 - ES-27 Original Phrase: General comment on Table ES-2 Comment: Any changes to Direct, Indirect, or Cumulative Effects caused by comments above need to be reflected in Table ES-2.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Table ES-2
EFF_1	The sections "Impact level" and "Summary of Impacts" understate the positive impacts of the Project.	USACE appreciates the suggestion to modify the referenced impact rating; however, justification or evidence are necessary to support this modificaiton. No changes have been made to the SEIS in response to this comment.	No change
EFF_10	In cumulative effects, it would be useful for the casual reader to briefly explain why the Port of Seward is included in the geographic scope of this cumulative impact analysis.	Section 4.1 of the SEIS has been revised to clarify why the Port of Seward has been included in the cumulative effects analysis due to anticipated delivery of Project materials in this location.	4.1
EFF_11	It is not clear why land use plans are included in a list of major actions and natural events considered in the cumulative effects analysis (Table 4.26-3). The text appears to imply that the plans would provide additional protection, but some plans could encourage additional resource development, so this does not make sense.	Management plans have been included as a positive net effect in regard to potential impacts to resources because they establish goals and objective for the resource, establish standards and guidelines, assist in fulfilling state and federal requirements, and create an additional venue for regulatory and community input into resource management.	No change
EFF_12	The 'additional description' boxes in Table 4.26-3 needs to be updated.	USACE appreciates the comment. This table has been updated to reflect changes to RFFAs.	No change
EFF_13	In Section 4.26.7.1.1, this sentence is difficult to understand "In general, these facilities are capable (and include infrastructure for) oil/gas/water separation, gas dehydration/compression/reinjection, and water treatment/reinjection." Please clarify the point you are trying to get across.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.26.7.1.1

Issue Code	Description	Final Response	Section #s of Change
EFF_14	In Section 4.26.7.1.4 regarding the Point Thomson Project Badami Pipeline, the pipeline has already been constructed so the text should be updated to reflect that.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.26.7.1.4
EFF_15	This sentence needs clarification "The following activities are expected to result in effects to water resources that are affected by the proposed project." There is not a list of activities following this sentence. Is this sentence meant to read that climate change and natural occurrences are activities?	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The sentence in question has been removed from the text. The following section, 4.26.9.2.1 has been updated to begin with the following, "Climate change and natural occurrences are also expected to result in effects to water resources that are also affected by the proposed Project."	4.26.9.2
EFF_16	It is not clear how management plans are classified as having a major positive net effect when the management plans could actually lead to large-scale resource development and filling of wetlands with gravel pads and roads. Tables 4.26-8 and -9.	Management plans have been included as a positive net effect in regard to potential impacts to resources because they establish goals and objective for the resource, establish standards and guidelines, assist in fulfilling state and federal requirements, and create an additional venue for regulatory and community input into resource management.	No change
EFF_17	It is not clear how proposed Project winter construction activities would intersect with regularly scheduled supply deliveries for Prudhoe Bay and other North Slope operations, since those happen during the open water season. Please clarify this sentence "At West Dock (see Figure 4.26-1), proposed Project winter construction activities are not likely to intersect with many RFFAs aside from regularly scheduled supply deliveries for Prudhoe Bay and other North Slope operations."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.26.9.7
EFF_18	This statement needs to be updated "Currently, the Bureau of Ocean Energy Management (BOEM) is undertaking an EIS to evaluate the potential effects of a lease sale in Cook Inlet." Cook Inlet Lease Sale 244 was held on June 21, 2017 and resulted in $3 million in bids for 14 tracts covering roughly 76,615 acres.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The text has been updated to reflect the most current status of the Cook Inlet Lease sale.	4.26.9.7
EFF_19	This sentence is not clear "These events would occur regardless of whether the proposed Project were constructed, and are considered cumulative effects associated with Alternative 3, the no action alternative." It is not clear what "these events" is referring to in this sentence. Are they referring to the effects outlined in the previous bullets?	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.26.9.16
EFF_2	Wiseman does not want to see borrow pits near the community. The noise will disrupt our way of life. Previous proposals had borrow pits farther away from Wiseman than what is currently proposed.	The USACE appreciates the comment. The Project material sites near Wiseman are existing material sites. According to AGDC, the commenter is correct in that changes were made to the shape of the material site to minimize the visual impacts. Federal, state, and borough permits, and other land manager agreements, would be required for developing new or existing material extraction sites.	No change
EFF_20	This statement is not clear "While the likelihood of these events ranges from unlikely to very likely, it is overall somewhat likely that the effects resulting from the majority of these events would occur at the same time." It is not clear what "the majority of these events" refers to in this sentence and it is equally confusing to summarize a broad range of possibilities with the phrase "it is overall somewhat likely". This does not follow with the NEPA focus on taking a hard look and making informed decisions.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.26.9.16
EFF_21	This statement is not clear "When combined with Alternative 1, the proposed Action, the impacts resulting from the events described above would be expected to increase in magnitude and geographic extent." It is not clear what "the impacts resulting from the events described above" is referring to.	USACE appreciates the observation. The "impacts resulting from the events described above" refers to the bullet list of activities preceding the statement in question. The text has been updated to better reflect to purpose of the statement.	4.26.9.15.1
EFF_22	In general, the ASAP will not affect non-fuel mineral resources (excluding industrial minerals such as sand and gravel). There may be minor impacts to placer gold operators if there are claims within ASAP right-of-way. Claim activity should be checked prior to construction, and claim owners notified.	Prior to issuing the ROWs for the Project, state and federal agencies each will review the ROW corridor and identify any potential land conflicts, including active mining claims. If there are any active mining claims within the corridor, AGDC and the relevant agency must address the impacts to the subsurface claim holder.	No change
EFF_23	The key assumption that "Past federal, state, and local authorizations (including the relatively recent 30-year right-of-way renewal) to operate the TAPS are effective in avoiding and minimizing adverse cumulative impacts from that project" (Section 4.26.5.1, third bullet) suggests all past authorized activities are negligible and, therefore, do not contribute to the ASAP Project's cumulative assessment. The Service believes avoidance and minimization measures developed for each individual project do not nullify the residual cumulative impacts of each project. Individual projects have no quantitative way of stipulating how synergic and additive impacts from future projects will influence cumulative impacts. We recommend a comprehensive analysis to determine which direct and indirect effects warrant an in-depth assessment of cumulative effects. The cumulative effects analysis, therefore, needs to take into account cumulative impacts of past actions, not just the action of interest. The Service suggests cumulative impacts should assess the baseline of the environment prior to disturbance (e.g., before the development of Prudhoe Bay), incorporating the impacts of past development through the development of the current proposed project and into the foreseeable future as defined. Prudhoe Bay development should be included in Table 4.26-3 under oil and gas as a cumulative impact to assess for all resources (e.g., soils, vegetation, wetlands, wildlife, etc.).	Section 4.26.5.1 has been revised to reflect consideration that TAPS likely contributes to cumulative effects on certain resources that may also be impacted by the proposed Project. USACE does not intend to suggest that mitigation measures and other avoidance measures nullify potential effects and this is not stated in the SEIS. A comprehensive cumulative effects analysis is provided in the SEIS following CEQ (1987) and EPA (1999) guidance as described in detail in Section 4.26.1.	4.26
EFF_24	It is unclear whether impacts of pads used during construction have been considered temporary or permanent impacts. The revegetation Plan states that the compacted gravel areas would be ripped to mitigate compaction, graded for drainage, and scarified to allow natural revegetation. These impacts appear to be permanent and should be accounted for as such in the SEIS and in proposed mitigation.	The impacts of the gravel pad and scarification/revegetation of the pad are designated as permanent impacts to wetlands.	No change
EFF_25	It is not clear whether impacts due to spreading excess ditch topsoil (as described in the Revegetation Plan) are considered temporary or permanent impacts. If fill material is discharged to wetlands along the alignment, it should be considered a permanent impact unless fill is removed and impacted areas restored.	The ROW will already be permanently impacted by construction. Areas within the ROW are currently accounted for as permanent impacts.	No change
EFF_26	The proposed alignment will pass within close proximity to a large number of public and private drinking water sources. Additional analysis of potential effects and on-site mitigation should be considered to address this issue. The SEIS should include finer-scale maps to show areas designated as Source Water Protection Areas to help the Alaska Gasline Development Corporation with future consultations and compliance with regulations related to protecting water supply.	ADEC maintains an interactive web map on their website that displays Drinking Water Protection Areas and well/intake locations for known active public water systems. This map can be found at: http://www.arcgis.com/home/webmap/viewer.html?webmap=13ed2116e4094f9994775af9a62a1e85. The SEIS Has been updated to include this reference. AGDC has indicated that they are using this map to ensure compliance with recommendations to avoid impacts to the quality of the water supplies traversed by the Project, and to ensure compliance with all applicable ADEC laws and regulations for the protection of water supplies.	Section 3.3.5.3, 3.3.6
EFF_27	It is not clear that the proposed project's direct, secondary, and cumulative impacts on aquatic resources have been adequately evaluated to support the factual determinations required by the CWA 404(b)(1) Guidelines.	Project changes related to construction techniques, the relocation or elimination of infrastructure, avoidance, minimization and additional mitigation measures have occurred as a result of public comment and discussions with the Project proponent. The Army Corps of Engineers is continuing its evaluation of the Project for adherence to the CWA 404(b)(1) Guidelines.	No change
EFF_3	The Project would negatively impact tourism.	Comment acknowledged. Tourism is discussed in Sections 4.16 and 4.18 of the SEIS. Although the proposed Project may have some impact to tourism, they would be limited to the construction phase of the proposed Action and localized to the area of construction. The phased approach of the Project would also limit the geographic extent of the impact during a single tourism season.	No change
EFF_4	The Project would negatively impact the community of Willow.	Comment acknowledged. AGDC met with residents at the USACE's Anchorage / Willow meeting, the Trapper Creek meeting, and again at an added Willow meeting. AGDC indicates that they have met regularly engaged with the residents of Willow at meetings and through other correspondence since 2014.	No change

Issue Code	Description	Final Response	Section #s of Change
EFF_5	The cumulative effects analysis should be revised to address potential effects in each ecoregion.	Section 4.26.9.3 has been updated to include potential cumulative effects by ecoregion.	4.26.9.3
EFF_6	The temporal scope for the cumulative effects analysis should be extended to include a longer period of time.	The rationale for the temporal scope is described in detail in Section 4.1 which states "While the design life and the amount of gas reserves available on the North Slope may extend beyond 30 years, the timeframe for the SEIS analysis is defined as 2018 through 2038, approximately 10 years into operation of the pipeline. Analysis beyond 2038 is considered speculative given the dynamic nature of the environment. In addition, future Project-related activities, such as permit renewals or decommissioning of the pipeline, would warrant a new evaluation under the National Environmental Policy Act (NEPA), providing an opportunity for agencies and the public to review and evaluate the proposed activities.	No change
EFF_7	We recommend the cumulative effects analysis compare the baseline prior to development of Prudhoe Bay with past, present and reasonably foreseeable future projects, not just the action of interest.	Section 4.26.7.1 of the Draft SEIS generally describes the baseline environment on Alaska's North Slope prior to oil and gas activities beginning in the 1970s. This important context provides an understanding of how oil and gas exploration and development activities have affected this region as described in Section 4.26.	No change
EFF_8	Not only would the Minto Flats Route directly damage "a unique biological resource" as a result of construction and maintenance of the pipelines and access roads within the Refuge, but the increased access to the area as a result of introducing new ROWs, where none previously existed, will also cause long-term continual degradation of the environment. USACE has stated that "increased user access along the proposed Project ROW, particularly in the Minto Flats region, would be a long-term concern and could affect subsistence uses" and that access roads required for the construction and maintenance of the pipeline in the Refuge "would add to the impact of a cleared ROW by increasing the ease of access." USACE also recognizes that concerns about "contamination, risk of fires, decreased resource availability, and increased competition ... near Minto Flats, have potential indirect implications for hunters' efforts, costs, and risks associated with having to travel to other places in search of resources or obtaining substitute foods."	The primary reason to modify the ASAP alignment in the Minto Flats area was to reduce construction and operation activities in wetlands and to avoid the associated impact to wetlands. From version 6.1 milepost (MP) 413 to 435 the alignment shifted significantly to the east to access uplands. From MP 455 to 465 the alignment did move slightly to the west. The potential impacts to Minto Flats wetlands are discussed in Section 4.9.4 of the SEIS.	No change
EFF_9	Figures ES-7 through ES-29 tend to generalize impacts, either positively or negatively and do not accurately reflect the actual character of a project which spans over 733 miles in length. Suggest deletion of ES-29 through ES-51, unless more resolution (additional figures at reasonable scale) is added to accurately reflect project impacts, both positive and negative.	USACE appreciates the comments regarding context figures throughout Chapter 4 of the SEIS. The context figures are intended to summarize the Project's overall impacts at a larger scale. The figure page size has been increased to improve clarity.	Executive Summary, Chapter 4
ENG_1	The pipeline should be made from U.S.-made materials rather than importing materials.	USACE appreciates the comment. The material vendors for ASAP have not yet been selected. Vendors will be selected based on compliance with Project specifications, material quality, and pricing, which will represent the best value to AGDC and the State of Alaska.	No change
ENG_10	A new bullet should be added after "Areas of continuous permafrost, low water table, or where the pipeline operating temperature is greater than 32°F would not be susceptible to frost heave, and therefore, no rigorous frost heave analysis would be required." Add "Areas of continuous permafrost where the pipeline operating temperature is less than 32°F would not be susceptible to thaw settlement, and therefore, no rigorous thaw settlement analysis would be required."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	2.2.7
ENG_11	Several edits are needed in this sentence "Areas where the predicted curvature (from digital pigging analysis) due to frost heave for any span length exceed the allowable curvature are classified as having high heave potential and mitigation measures would be implemented during design and construction." Prior to "Areas" add: "During Operations"; Prior to "frost heave" add: "thaw settlement"; and Replace "length exceed" with: "lengths exceeding"; Delete: "during design and construction."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	2.2.7
ENG_12	Several edits are needed in this sentence "Areas where the predicted curvature (from digital pigging analysis) due to frost heave for any span length remain below the allowable curvature are classified as being heave susceptible and would require ongoing monitoring. Should the measured curvature reach the intervention curvature limit over time, then mitigation measures would be implemented; and" Prior to "Areas" add: "During Operations"; Prior to "frost heave" add: "thaw settlement and"; Replace "length remain" with: "lengths remaining"; Replace "second heave" with: "movement".	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	2.2.7
ENG_13	There appears to be errors referring to CNG, which is not a product used by FNG. A larger, prototype trailer with a 13,000 gallon-capacity successfully transported LNG via the road system in 2016. In the fall of 2016, the Alaska Railroad also began test shipping LNG via rail from Anchorage to Fairbanks, where the LNG-containers would be transferred to the Fairbanks Natural Gas company storage facility (Frontiersman, 2016). Edit these sentences accordingly "A larger, prototype trailer with a 13,000 gallon-capacity successfully transported CNG via the road system in 2016. In the fall of 2016, the Alaska Railroad also began shipping CNG via rail from Anchorage to Fairbanks, where the CNG containers would be transferred to the Fairbanks Natural Gas company storage facility (Frontiersman, 2016)."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.14.5.3
ENG_14	As of this time, strain-based design is not being utilized as a mitigation for liquefaction. Edit this sentence accordingly "Other options include utilization of strain-based design, increased pipe wall thickness, and changes to the pipeline profile (to go deeper or wider to be outside of the area of influence of lateral spreading)."	Based on further geotechnical analysis and a decision by AGDC to use thicker wall pipe, AGDC has determined that there is no need for a SBD Special Permit. In a letter from PHMSA, dated 16 January, 2018, PHMSA is no longer considering the request for a special permit understanding that the pipeline would comply with Part 192, which requires the pipeline be able to "maintain the structural integrity of the pipeline under temperature and other environmental conditions that may be anticipated: and "withstand anticipated external pressures and loads that will be imposed on the pipe after installation" to include strains imposed by permafrost and discontinuous permafrost soils. Reference to the requirement for a Special Permit for the ASAP Project have been removed from the document.	Executive Summary, Sections 2.2.5.3, 4.25.9.3, 4.25.12, 4.6.4.2, 4.7.4.2.5, and 4.25.2
ENG_15	This sentence needs modification: "Re-accessing remote portions of the pipeline to mitigate design or construction issues may not be practical and could result in long-lasting environmental consequences." This seems to editorialize, and does not take into account Alaska Gasline Development Corporation's (AGDC) primary responsibility which is pipe integrity. If a segment of pipe needs maintenance, AGDC will perform the maintenance no matter where the pipe is located along the alignment.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.6.5
ENG_16	The assumption that the installation time required for the suspension bridge is the same as the HDD is incorrect. The suspension bridge would take substantially longer than the HDD, probably on the order of a couple of years. The impact rating for the HDD should be the same or lower than the bridge alternative. This needs to be reflected in this sentence: "This impact rating accounts for the distance to the closest residential receptor (i.e., 0.55 mile from the camp), short term duration (10-25 weeks)" and in Table 4.23-7.	The SEIS has been revised to reflect the longer duration for the suspension bridge construction and increased noise magnitudes from piling. The impact rating for the Yukon Aerial Crossing in Alternative 2 has also been revised.	4.23.5.1.3 and Table 4.23-7
ENG_17	This sentence needs to be removed: "As a result, it may be possible to use thinner pipe (pending completion of strain-based design)." The pipe wall thicknesses utilized on the project are correctly stated in Section 2.2.5.2, Table 2.2-3.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.25.1

Issue Code	Description	Final Response	Section #s of Change
ENG_18	This statement needs modification "However, 49 CFR 192.179 requires spacing between block valves as not more than 10.0 miles in Class 1; 7.5 miles in Class 2; 4.0 miles in Class 3; and 2.5 miles in Class 4, unless the PHMSA Administrator finds that alternative spacing would provide an equivalent level of safety." 49 CFR 192.179 as of July 25, 2017 clearly states: (a) Each transmission line, other than offshore segments, must have sectionalizing block valves spaced as follows, unless in a particular case the Administrator finds that alternative spacing would provide an equivalent level of safety: +G74 (1) Each point on the pipeline in a Class 4 location must be within 21⁄2 miles (4 kilometers)of a valve. (2) Each point on the pipeline in a Class 3 location must be within 4 miles (6.4 kilometers) of a valve. (3) Each point on the pipeline in a Class 2 location must be within 71⁄2 miles (12 kilometers) of a valve. (4) Each point on the pipeline in a Class 1 location must be within 10 miles (16 kilometers) of a valve. It appears the author has miss-interpreted the code. Item 4 for instance would allow the valves to be spaced on 20 mile increments in a Class 1 location.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The following text has been added to address the concern, "Block valve spacing regulations are set forth in 49 CFR 192.179, which requires that each point on a pipeline must be within 10.0 miles of a valve in Class 1 locations, within 7.5 miles of a valve in Class 2 locations, within 4.0 miles of a valve in Class 3 locations, and within 2.5 miles of a valve in Class 4 locations, unless the PHMSA Administrator finds that alternative spacing would provide an equivalent level of safety."	4.25.2 and 4.25.9.2
ENG_19	This statement needs modification "Preliminary class locations for Alternative 1 (Proposed Action) have been developed based on the relationship of the pipeline centerline to other nearby structures and manmade features. This assessment is based on aerial photographs of the pipeline route and has not been field verified." Class location 2 and Class location 3 areas have been field verified. For remote areas of Class location 1, field verification is not required as the aerial photography has fine enough resolution to show buildings intended for human habitation.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The following text has been added to address the concern, "The Class 2 and Class 3 locations have been field verified; field verification was not used for Class 1 locations as aerial photography resolution was sufficient to identify nearby structures and manmade features."	4.25.2
ENG_2	The permafrost thaw lobe in the Dietrich River Valley is a danger to the Project. The Project alignment is parallel to this area and should instead be routed way out into the floodplain to avoid the thaw lobe. The State of Alaska is moving the highway in this area soon as well.	The current alignment avoids the debris lobe near ASAP MP 196. AGDC is exploring utilizing a trenchless installation method for the pipeline in the area of the debris lobe.	No change
ENG_20	This statement should be modified "Forest fires are not considered an instantaneous threat. Should a facility or valve location be threatened, there would likely be sufficient time to muster resources to protect the pipeline or shut down the transportation of gas until the fire risk has passed. Under Alternatives 1 and 2, portions of the pipeline would be located near a highway for access to the buried and aboveground facilities." Shutting down the pipeline may not be the safest thing for the pipeline, as the flowing gas can cool the areas where the pipe is exposed. Suggest deleting "or shut down the transportation of gas."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.25.5.2
ENG_21	This statement should be modified "The pipeline burial depth of at least six feet below grade in permafrost areas." Suggest using "at least 30 inches of cover", as this is more accurate.	The bullet point referenced in the comment has been updated based on AGDC's suggestion and now states, "Pipeline burial with at least 30 inches of cover in permafrost areas.	Section 4.25.8.1
ENG_22	This statement is untrue "In comparison to the Alternative 1, Alternative 2 would require less material handling." While there would be less gravel movement, each vertical support member (VSM) would have to be shipped to the north slope. Potentially there would be more truck or barge traffic bringing in the VSMs than hauling the gravel required for Alternative 1.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Section 4.25.10.1
ENG_23	The section beginning with "Aboveground Construction for First 62 Miles and Remote Location" and the general category of safety risk throughout this section is woefully inadequate at presenting the significant risk of an aboveground pipeline in Alternative 2 for MP 0-62. Regardless of remote location, the above-ground pipeline is available to be accessed directly from a nearby public highway that has no access restrictions. This section should be revised to fully account for the safety risk of an aboveground pipeline alternative.	The safety risks associated with aboveground pipelines on the North Slope of Alaska are well understood. This approach has been used successfully for many hundreds of miles of pipe. The associated risks were evaluated and rated based on the extensive use of aboveground pipelines in this setting.	No change
ENG_24	To reduce wetland impacts in permafrost areas, we recommend increased consideration of vertical support members (VSMs) through the continuous permafrost region. Incorporating the use of VSMs appears to be environmentally preferable, and may be the Least Environmentally Damaging Practicable Alternative.	AGDC has proposed additional avoidance and minimization of wetland impacts over areas of continuous permafrost by utilizing ice pads and ice roads from MP0-MP62. Information on the potential costs associated with constructing Alternative 2 in aboveground pipeline mode through the approximate length of the Arctic Coastal Plain has been added to Section 2.6.3 of the SEIS. Based on information provided by AGDC, the proposed hybrid design to elevate the pipeline MP 0 – 168 presents additional geotechnical challenges. In the area between MP 62 (the edge of the Arctic Coastal Plain) and MP 168 (approximately the base on Atigun Pass), the subsurface conditions are less uniform (i.e., a mixture of silts, sands, gravels, cobbles, boulders, and rock) than the Arctic Coastal Plan. Installing VSMs in this area would require that multiple types of specialized equipment be on location depending on conditions encountered. Based on information provided by AGDC, the extra cost to consumers associated with a completely aboveground Project is estimated at a minimum of $670,000,000 per year. A hybrid project in which approximately 634 miles is aboveground would be approximately 10 percent less [than the completely elevated pipeline].Additional cost information provided by AGDC is confidential. As described in Section 2.6.3, a hybrid pipeline which includes elevating the pipeline from MP 0 -168 has been eliminated as a reasonable alternatives based on the screening criteria presented in Table 2.6-1 of the SEIS.	2.6.3, 4.9.4.1.1
ENG_25	VSMs and aboveground pipeline provide a safety hazard to subsistence users traveling by snowmachine, potentially resulting in human injury or mortality. This should be included in the document and noted in the scoring tables.	The following text will be added to the document: "During periods of poor visibility due to inclement weather, VSMs and aboveground pipeline could potentially pose a safety hazard to subsistence users traveling by snow machine, potentially resulting in human injury or mortality." A primary safety concern of off road travel on the North Slope is lack of landmarks to guide navigation in the flat, almost featureless terrain. The pipeline would serve as such a landmark. No change to the rating is warranted.	4.25.10.2
ENG_26	According to tables presented in Draft SEIS, many of the identified private drinking water wells in proximity to the proposed right-of-way are very shallow. Construction and operation of the pipeline could affect the quantity and/or quality of shallow drinking water sources by altering hydrology. We recommend that the applicant commit to avoiding construction in close proximity to private drinking water wells to the maximum extent practicable by making any available adjustments to trench location within the right-of-way.	AGDC will avoid construction activities in close proximity to these wells and adjust the location of construction activities within the ROW where necessary and practicable. There are 21 identified drinking water wells within 500 feet of the pipeline route, ranging in depth from 38 feet to 420 feet.	Final SEIS Appendix M, Section 4.7.3
ENG_27	Ninety-six percent of commercial and private residences along the route are within a Class I location, which requires a pipeline to be buried to a minimum of 30 inches of depth. A majority of the commercial and private residences along the Parks Highway right-of-way corridor are currently in close proximity to the Parks Highway right-of-way limit, which in most instances is 150 feet on both sides of the highway centerline. The proposed pipeline is planned to be off the running surface of the highway and remain within the highway right-of-way corridor. The distance between the highways running surface, the proposed pipeline route and commercial and private residences will be only several feet distance from pipeline to constant human activity. The safety of residents located in close proximity to the pipeline through acts of terrorism, pipe integrity, mechanical failure, arctic hazards, human error or incidental accidents are too great a risk to leave unaccounted for and are not adequately addressed in the ASAP Draft SEIS.	The pipeline is required to be designed, constructed, operated, and maintained in accordance with 49 CFR Part 192, Transportations of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards, Part 192, which specifies depth of cover, proximity to habitual structures, and proximity to road rights of way. The ASAP will be designed, constructed, operated, and maintained in accordance with Part 192. This is addressed in Section 1.9.2.2 of the Draft SEIS.	No change

Issue Code	Description	Final Response	Section #s of Change
ENG_28	While the Department recommends elevating the pipeline to prevent thermokarsting where thaw-unstable permafrost is encountered, especially on the Arctic Coastal Plain, if the proposed pipeline must be buried in soils prone to thermokarst, it should be positioned at some distance from these existing linear infrastructure as permafrost in their embankment vicinity has generally been degrading (e.g., active layer deepening, warmer permafrost temperatures). The Department also recommends maintaining an adequate distance from TAPS and its associated Fuel Gas Line for reasons of reliability and safety. These concerns are described in detail in Enclosure 2.	Please refer to response to ENG_24 regarding the aboveground pipeline alternative. AGDC indicates that the proposed Project would comply with PHMSA requirements. PHMSA regulates pipeline proximity to other infrastructure, pipeline crossings and highway crossings. The ASAP, TAPS and Dalton Highway alignments are all within a utility corridor with several pinch points that minimize alignment options. Landowners have commented that use of previously disturbed areas is preferred which by design consolidates infrastructure into a smaller footprint. The ASAP alignment considers all of these factors, including the requirement to minimize wetland impacts. This issue may be considered under an existing MOA between AGDC and Alyeska Pipeline Company.	No change
ENG_29	In Section 4.25, Reliability and Safety, BLM recommends evaluating the proximity of the ASAP to the Trans-Alaska Pipeline System (TAPS). Particularly at crossings, the consequences of a gas pipeline rupture pose risks to the integrity of TAPS. Incidental damage to TAPS resulting in an oil spill or combustion could lead to significant environmental and socioeconomic impacts. The BLM recommends incorporating the information and methodology contained in the recently released Resource Report No. 11 from the Alaska LNG Project to analyze the risks that the proposed Project presents to the integrity of TAPS and identify the potential measures that would mitigate those risks.	AGDC indicates that the Project would comply with all PHMSA requirements for pipeline proximity, pipeline crossings and highway crossings. The ASAP, TAPS and Dalton Highway alignments are all within a utility corridor with several pinch points that minimize alignment options. Landowners have commented that use of previously disturbed areas is preferred which by design consolidates infrastructure into a smaller footprint. AGDC also understands that the BLM grant of right-of-way and the State of Alaska right-of-way leases will contain technical stipulations that require coordination/consultation with the TAPS owners.	No change
ENG_3	How fast will the pipeline be laid?	Pipe lay will typically average between 1/2 to 1 mile per day over the course of a construction season.	No change
ENG_30	The Service particularly has concerns regarding the installation of new aerial infrastructure on the ACP where poor visibility conditions often exacerbate this risk. We encourage pursuing alternatives to elevated and aerial lines whenever possible or co-locating such lines with other, more visible infrastructure. If aerial lines will be required on the ACP, the Service can provide input on design and placement to minimize potential impacts to migratory birds.	Comment acknowledged. AGDC agrees that buried pipeline would eliminate impacts to bird strikes which would otherwise be associated with an aboveground pipeline and VSMs. Buildings and approximately one mile of smaller aboveground connecting lines from the GCF to the CGF will be required. Buildings would be lighted to provide mitigation for bird strikes on these features.	No change
ENG_4	The proposed gasline should be designed to maximize safety, and minimize any actual or potential conflicting resource use and environmental quality issues.	For most of the length that ASAP parallels TAPS, the land is managed by either the State of Alaska or BLM. The TAPS owners have a right-of-way agreement with both ADNR and BLM. Although the agreements are not exclusive, ADNR and BLM must consider or have a mechanism to consider existing authorized uses prior to issuing a right-of-way for ASAP. This would include existing water sources used by Alyeska. The air shed is regulated by the Alaska Department of Environmental Conservation and prior to construction, ASAP must undergo a rigorous permitting process to ensure air quality standards can be maintained.	No change
ENG_5	The AKLNG TAPS Impact Study may provide an initial design framework for ASAP to progress its project objectives while minimizing impacts to TAPS.	Comment acknowledged.	No change
ENG_6	Will there be HDD drilling in the Denali area under both Alt 1 and Alt 2?	HDD drilling would not occur in the Denali National Part and Preserve (NPP) under Alternative 1. The Alternative 1 route does not enter the Denali NPP, that route is specific to Alternative 2.	No change
ENG_7	Above ground portions of the pipeline should be made bullet proof.	Comment acknowledged.	No change
ENG_8	We encourage the use of multi-customer, multi-user material sites to prevent the generation of numerous smaller material sites throughout the state.	Comment acknowledged. AGDC proposes the use of several pre-existing sites that have been used by other entities.	No change
ENG_9	A new bullet should be added after "Areas of continuous permafrost where the pipeline operating temperature is less than 32°F would not be susceptible to thaw settlement, and therefore, no rigorous thaw settlement analysis would be required." Add "In areas predicted during design to have thaw settlement or frost heave in excess of 0.5 percent strain for standard wall thickness pipe, the Project will add heavier wall thickness pipe and/or utilize other means to stabilize the pipe and prevent ground movement (such as thermal siphons), these areas will be identified for curvature surveillance during operations utilizing digital pigging analysis."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	2.2.7
FISH_1	The Project needs to avoid spawning seasons for select fish species.	Comment acknowledged. The ASAP Project will be required to obtain a Fish Habitat Permit from the ADF&G prior to any in-water work in fish bearing streams. In addition, the current ASAP right-of-way lease from the State of Alaska authorizes the State Pipeline Coordinator to protect spawning habitat. AGDC assumes, when finalized, the BLM grant of right-of-way will have a similar stipulation.	No change
FISH_10	3.7.2 Of these waterbodies, 70 support anadromous fish; Comment: There are 70 anadromous crossings for mainline and access roads, but there is also 1 impacted anadromous waterbody by material sites….so the total is 71 (as described in chapter 2 (2.2.12)	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.7.2
FISH_11	3.7.3. Amphidromous fish include Dolly Varden, Arctic char, Arctic cisco, and broad whitefish; Comment: Although Arctic char are documented as anadromous/amphidromous in other regions of North America, they are not found in this form along the pipeline corridor.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.7.3
FISH_12	3.7.6. A total of 181 fish-bearing waterbodies (70 anadromous) have been documented with approximately 50 percent of fish streams located in the Interior Region (Table 3.7-1).; Comment: Again this number of anadromous streams (70) is different from that stated in chapter 2 (2.2.12)…it says there is also 1 anadromous stream impacted by a material site.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.7.6
FISH_13	3.7.6.: by the pipeline and off ROW features, and document resident fish species' occurrences. The ASAP Fish Stream List provides information on the name, location, and species information for streams known to contain fish, the name and location for streams targeted by ASAP for fish sampling, life stage information for salmon, the year of site visit, and the proposed stream crossing mode.; Comment: This paragraph reads strange, consider revision.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.7.6
FISH_14	In Table 3.7-2., the text "Alaska brook lamprey: Found in Chatanika and Chena rivers near Fairbanks and the Alaska Peninsula and Kenai Peninsula. Spawn in spring and summer is shallow streams and lakes. Spend 4 years as ammocoetes (lamprey larva), then matures in the fall, and moves downstream into lakes over winter." should be edited to say "…in shallow streams and lakes" Should say "…into lake habitat ? to over winter". This species is also found in Southcentral (Mat-Su).	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Table 3.7-2
FISH_15	In Table 3.7-2, Rainbow Smelt also occurs in Southcentral, so the Southcentral box should be checked.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Table 3.7-2
FISH_16	3.7.6.3.1: Waterbodies on the North Slope known to support overwintering fish are considered sensitive from October through April, not November through December.; Comment: Delete "not November through December".	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.7.6.3.1
FISH_17	What is the plan for identifying all the overwintering areas within the proposed project area? This would be a significant effort that, to this point, has not been pursued in any effective way. To achieve this, winter-time sampling effort will need to be applied at many crossing locations. This mitigation measure sounds good, but I have seen no evidence that the Alaska Gasline Development Corporation (AGDC) plans to pursue any effective overwintering habitat assessments. Fish and habitat assessments undertaken by AGDC in 2014 and 2015 marginally assessed the possibility of overwintering habitats at most of the stream crossings, but this was based on characteristics observable during summer months and is therefore non-conclusive.	AGDC is not attempting to characterize or identify overwintering fish habitat across Alaska and does not intend to conduct fish overwintering surveys. AGDC will work with ADF&G to summarize existing information along the TAPS corridor (from Prudhoe Bay to Livengood). ADF&G routinely issues Fish Habitat Permits for winter in-water work and in the past ADF&G has worked with permittees to create overwintering fish habitat as restoration for material sites. AGDC will work with agency biologists as each individual Fish Habitat Permit is requested.	No change

Issue Code	Description	Final Response	Section #s of Change
FISH_18	4.11.3: Bullet 11: Avoid constructing crossings where reds (nests of fish eggs) are present; implement standard BMPs to protect any downstream crossings. Comment: Is it supposed to say, "implement standard BMPs to protect any downstream habitats"?	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.11.3 and Final SEIS Appendix M
FISH_19	4.11.4.1.6: Water Withdrawals: Last sentence 4th paragraph reads: Also in the Arctic region, spring freshet is the only time when fish can move around because of the ephemeral nature of many watercourses. Comment: This sentence is misleading and unnecessary; suggest removal or revision.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.11.4.1.6
FISH_2	Elevated stream crossings over specific stream crossings could benefit fish species, e.g. the TAPS crossing of the Jim River.	The ASAP Project will be required to obtain a Fish Habitat Permit from ADF&G prior to any in-water work in fish bearing streams in order to minimize impacts. Section 4.11 of the SEIS assesses potential impacts to freshwater, marine, and anadromous fishes and their habitat resulting from all aspects of the proposed Project construction and operations. The crossing locations were selected by hydrologist and were based primarily on optimal hydrologic and geomorphologic conditions for pipeline integrity, while also taking into account fish habitat. In addition to elevated stream crossings, horizontal directional drilling, a trenchless crossing method would be used at several locations to avoid direct impacts to waterbodies by drilling beneath them.	No change
FISH_20	4.11.4.1.8.1: Stream Crossings: Last 2 sentences in paragraph 4 reads: Additionally, as a stipulation, all known overwintering fish habitat would be avoided. Overwintering fish habitat would be identified through close coordination with ADF&G, and review of existing fish distribution data. Comment: This is misleading. Aside from a scattered few known sensitive overwintering habitats, There is no significant understanding of overwintering habitat distribution across Alaska. Without additional collected information, overwintering habitat locations will not be known and therefore not avoided. This statement makes it sound like overwintering habitats will be identified and avoided; Without significant additional research this will not be the case.	AGDC is not attempting to characterize or identify overwintering fish habitat across Alaska and does not intend to conduct fish overwintering surveys. AGDC will work with ADF&G to summarize existing information along the TAPS corridor (from Prudhoe Bay to Livengood). ADF&G routinely issues Fish Habitat Permits for winter in-water work and in the past ADF&G has worked with permittees to create overwintering fish habitat as restoration for material sites. AGDC will work with agency biologists as each individual Fish Habitat Permit is requested.	No change
FISH_3	Based on the information provided, NMFS agrees with your EFH determination that any adverse effects will be short-term during the construction phase and practicably alleviated through proposed mitigation measures.	Comment acknowledged.	No change
FISH_4	NMFS' primary concerns are with roadway and pipeline alignments and anadromous stream crossings. We have recommended that (1) waterway crossings be designed, constructed, and installed according to the Anadromous Salmonid Passage Facility Design (NMFS 2011), (2) bridges and culverts span waterways to not restrict adequate fish passage and to retain full access to spawning areas where streams are braided, and (3) all crossings should be based on site-specific information, such as anadromy, seasonal instream flows and peak discharge, and flood plain regime (50-year to 100-year flood events). Typically, open-bottom arch culverts, or similar designs, prove sufficient to retain substrate and maintain channel complexity for rearing and migrating fish. We recommend post-construction evaluation to ensure the crossings function as intended and to assist in designing future projects.	AGDC indicates that for culvert and bridge installation and maintenance in fish bearing streams, AGDC is required to apply to the Alaska Department of Fish and Game for a Fish Habitat Permit. ADF&G maintains specific guidance documents for these activities which are located on their website: (http://www.adfg.alaska.gov/index.cfm?adfg=uselicense.culvertdocshttp://www.adfg.alaska.gov/index.cfm?adfg=uselicense.culvertdocs). AGDC will utilize these guidelines in the design and maintenance of stream crossing structures.	4.11.3
FISH_5	The Alaska Gasline Development Corporation has conducted many years of fish surveys to inventory the presence of fish at the time of survey. No information on life phase was collected (unless juveniles, eggs, etc.) were observed during the survey.	This mitigation measure has been revised to "Identify all known fish streams within the proposed Project construction and operations area where soil material is excepted to be suspended in water as a result of proposed pipeline activities."	4.11.3
FISH_6	Original Phrase: Each water crossing would be individually permitted by ADF&G and all in-stream pipeline crossing construction methods would avoid the anadromous and resident fish migration and spawning time periods for in-stream work. Comment: ADF&G has determined that, at times, the best time for in-stream construction work is during periods of migration.	USACE appreciates the comment. The original text will be revised to now read, "Each water crossing of a fish stream will require a Fish Habitat Permit from the Alaska Department of Fish and Game (ADF&G)." AGDC will comply with site specific ADF&G permit stipulations designed to protect fish and fish habitat	4.11.3
FISH_7	Original Phrase: A Fish Habitat Permit from ADF&G would be required for any blasting operations that occur either in or near the banks of a fish-bearing waterbody. Comment: Change to: A Fish Habitat Permit may be required for any blasting operations that occur either in or near the banks of a fish-bearing waterbody as determined by AS 16 jurisdiction.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.11.3 and Final SEIS Appendix M
FISH_8	Original Phrase: ADF&G would apply Blasting Standards to both anadromous and resident fish stream crossings, where appropriate. Comment: Change to: ADF&G would apply Blasting Standards stipulations to both anadromous and resident fish stream crossings permits, as required by AS 16.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.11.3 and Final SEIS Appendix M
FISH_9	3.3.5.1 Last paragraph; Text: Many are important bird nesting habitat during the summer. Comment: Given that the previous paragraphs focusing on waterbodies classified as "streams" explicitly indicate that important fish habitats are often present, this paragraph describing HPOI's is misleading in that it does not mention fish habitat. Many HPOI's are in fact important fish habitat. Of the 179 HPOI's, 40 are currently documented to support fish including 13 that support anadromous species.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.3.5.1
GEO_1	The Soil and Geology Figure 4.6-1 context map is an inaccurate generalization of the whole project.	USACE appreciates the comments regarding context figures throughout Chapter 4 of the SEIS. The context figures are intended to summarize the Project's overall impacts at a larger scale at a quick glance.	No change
GEO_10	4.6.4.2. Operations and Maintenance: List of geohazards resulting from seismic events; In a thrust system, blind reverse/thrust faults (and their backthrusts) can cause significant co-seismic tilting and warping without any co-seismic surface rupture. This makes them more difficult to identify in the geomorphology and it complicates behavioral forecasts of other known faults. Suggest adding "Co-seismic tilting/warping of ground surface" (or similar) to list of geohazards.	Comment acknowledged. AGDC indicates that in reference to the comment pertaining to tilting/ warping of the ground surface as a result of seismic events, please refer to Final SEIS Appendix D "Identification and Evaluation of Time-Dependent Route Geohazards" Section 7.1, pg. 55. The technical analyses covering topics inclusive of surface fault rupture, tectonics, seismicity, liquefaction, landslides and mass movement (slope stability) specific to the risk of seismic activity along the proposed mainline route have been assessed through probabilistic seismic analyses, seismic liquefaction and fault displacement hazards, and slope stability and mass movement assessments.	No change
GEO_11	4.6.4.2. Operations and Maintenance; "Buoyancy" is ambiguous and not explained anywhere. Suggest defining/describing this phenomenon and how it is related to seismic activity.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The following text has been added following the word buoyancy, "(forces that cause the pipeline to rise vertically)."	4.6.5

Issue Code	Description	Final Response	Section #s of Change
GEO_12	4.6.4.3. Summary of Potential Direct and Indirect Effects of Alternative 1 on Soil and Geologic Resources: "The potential for heat to be added to the system through water flow paths is not considered in the model used to provide the predicted thaw depth."; Neglecting the potential for heat to be added to the system may give results that seriously underestimate the amount of thawing. Recognizing the limitations of the modeling, appropriate monitoring and mitigation should accommodate the potential greater extent of thawing.	Comment acknowledged. AGDC has not proposed additional mitigation for this potential impact as they do not expect subsurface water flow on the ROW to be significant based on the following justification: "Fine-grained soils (silts and clays) have very low hydraulic conductivity and as such, any groundwater flow through these soils is expected to have an insignificant effect on subsurface heat transfer along typical overland terrain sections of the pipeline. Although coarse-grained soils (sands and gravel) have relatively high hydraulic conductivity, these soils are typically not ice-rich and as such are not thaw sensitive. In terrain that is generally flat with a relatively shallow active layer depth (such as terrain conditions on the North Slope), there is little to no terrain slope to drive subsurface flow. In areas where terrain is naturally sloped, surface water control measures will avoid the possibility of free flowing water at the ground surface on the ROW. Furthermore, AGDC expects that monitoring programs for pipeline integrity will provide data regarding any unexpected thaw settlements along the pipeline route." The following additional considerations have been raised by the Corps as disclosed in Section 4.6.4.3 of the SEIS and have been considered in the impacts analysis: Although it is true that finer grain sized soils have lower hydraulic conductivity (K), in areas of patterned ground (like much of the North Slope) the primary flow paths for supra-permafrost groundwater (SPGW) are not between individual soil particles, but along the tops of ice wedges. In that scenario, K becomes irrelevant. Although rates of SPGW flow are expected to be low, they are unlikely to be insignificant. Even a small amount of flow can have significant thermal impacts and result in new surface water bodies.	No change
GEO_13	4.6.4.3. Summary of Potential Direct and Indirect Effects of Alternative 1 on Soil and Geologic Resources; Permafrost thaw of more than 6.5 meters in interior Alaska, estimated based on thermal conductance, can cause major changes in surface water concentration and routing. It has been observed that these surface changes in the landscape can thermally erode ice wedges and form below ground conduits. These conduits cause very fast thermal erosion in the path of the water flow. These are also known as thermal erosional gullies (Fortier et al., 2007). Modeling this behavior is difficult but the risk can be reduced with monitoring of subsidence and repairing damage quickly, as per the mitigation measures proposed. Reference: Fortier, D., Allard, M., and Shur, Y., 2007, Observation of rapid drainage system development by thermal erosion of ice wedges on Bylot Island, Canadian Arctic Archipelago: Permafrost and Periglacial Processes, v. 18, no. 3, p. 229-243.	Comment acknowledged. In reference to monitoring please refer to Chapter 4 Section 4.6.4.2 pg. 4-29; Final SEIS Appendix G "Identification and Evaluation of Time-Dependent Route Geohazards" Section 7.1 comment 1e, page 55; and Appendix M Part I: Applicant Proposed Design Features, Mitigation Measures and Best Management Practices.	No change
GEO_14	4.26.9.2.1. Climate Change and Natural Occurrences: There is discussion over whether the effects of permafrost degradation would occur in the next 10 years. The damage to the energy balance of the ground and permafrost is immediate and major. The loss of ground ice is very likely to occur within 10 years. Subsidence due to the loss of ground ice could take longer to be visual due to relaxation of the soil above the damaged permafrost. However, any ground ice that is lost is likely irreversibly lost, because climate change very likely prevents the formation of new ground ice. Especially in discontinuous permafrost where ground ice is deeper, the effects of disturbance and warming on subsidence will be delayed; however, heat entering the ground is immediate and cannot be stopped. The described careful monitoring and prompt mitigation will be critical to minimizing impacts in the next 10 years and beyond.	Comment acknowledged. AGDC indicates that "Changes to the energy balance at the ground surface, and subsequently to the underlying permafrost, are dependent on the degree of ground surface disturbance. On the North Slope, construction techniques intended to protect tundra terrain are expected to result in little to no damage to the tundra on the ROW except at the pipeline trench. Accordingly, the surface energy balance is not expected to be significantly altered on the ROW and no thaw settlement is expected on the North Slope ROW. In treed terrain in discontinuous permafrost, tree clearing on the ROW changes the surface energy balance and is expected to result in long-term progressive thaw depth deepening beneath the ROW. However, thaw deepening on the ROW does not necessarily result in thaw settlement and will depend on the excess ice content of the fine-grained soils. It is expected that the rate of thaw settlement will be greatest in the first several years after ROW tree clearing and will decrease thereafter because of the reduced rate of thaw depth penetration with time, and because of the decrease in excess ice content with depth below the active layer. Thaw settlement itself in the areas where it could occur may be of little environmental consequence as long as it does not negatively affect other environmental components such as surface water drainage or wildlife habitat."	No change
GEO_15	The Service recommends reconsidering the following broad statement in Section 4.26.9.5: "Cumulative impacts to habitat associated with changes in permafrost and vegetation are therefore considered minor adverse for all alternatives." Stripping the organic layer and topsoil from the pipeline corridor may have major effects that could degrade the value, integrity, and function of soil and geologic resources where permafrost is present. Destruction of this material could cause long-term changes not likely to be reversed over a period of decades (pages 4-32 and 4-33).	Thank you for your comment. Although not currently proposed as a mitigation measures, stripping of the top layer of soil in wetland areas is required by the Corps. The SEIS has been revised to include a new subsection titled "Agency-Proposed Mitigation Measures" describing this proposed measures and the impact analysis has been updated to include a discussion of the associated impacts. The SEIS has been updated to include an assessment of impacts to wetlands, vegetation, and soils under the assumption that the top layer of soil would be segregated and replaced on the top of the excavated trench, for comparison. The Corps requires the following Special Conditions of the 404 permit: 1) To prevent erosion, disturbed areas shall be stabilized immediately after construction. Revegetation of the site shall begin as soon as site conditions allow and in the same growing season as the disturbance unless climatic conditions warrant additional time. Additional time must be approved by the Corps. Native vegetation and topsoil removed from Project construction shall be stockpiled separately and used for site rehabilitation. Topsoil is defined as the upper, outermost layer of soil, usually the top two to eight inches. When backfilling, topsoil shall be placed as the uppermost layer to provide a seed bed for native species. Within 30 days from the date of completing the work authorized, the Permittee is required to conduct restoration of temporary wetland impacts to pre-existing contours, elevations, vegetation, habitat type, and hydrology. 2) Natural drainage patterns shall be maintained using appropriate ditching, culverts, storm drain systems, and other measures to ensure hydrology is not altered. 3)Trenches cannot be constructed or backfilled in such a manner as to drain waters of the U.S. (e.g., backfilling with extensive gravel layers, creating a French drain effect). Ditch plugs or other methods shall be used to prevent this situation. 4) Except for material placed as minor trench over-fill or surcharge necessary to offset subsidence or compaction, all excess materials shall be removed to a non-wetland location. The backfilled trench shall achieve the original surface condition, within a year of disturbance unless climatic conditions warrant additional time and is approved by the Corps. 5) Excavated material temporarily sidecast into wetlands shall be underlain with geotextile, ice pads, or similar material, to allow for removal of the temporary material to the maximum extent practicable. 6) Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures (e.g. ice roads, compacted snow, low psi ground bearing weight, etc) must be taken to prevent soil disturbance. 7) Culverts in fish bearing waters must be installed in accordance with a valid Alaska Department of Fish and Game, Fish Habitat Permit.	4.26.5.9
GEO_16	Section 3.2.5 generally omits any references to paleontological resources along the route outside of the North Slope. Specifically, no mention is made of scientifically significant resources located in the Alaska Range, such as in Denali National Park from the Cantwell Formation. The Bureau of Land Management recommends adding information about paleontological and other significant resources in the Final SEIS.	A general baseline description of paleontological resources is included in Section 3.2.5 and Section 4.6 of the Final SEIS has been revised to include a discussion of potential impacts to paleontological resources.	4.6
GEO_17	Thermal modeling on the North Slope for the proposed cold-temperature gasline shows that impacts to the continuous permafrost (deep, solid blanket of frozen soil) will be localized and will occur slowly over decades. Even when climate change is factored in, the continuous permafrost will only be slightly impacted by the Project. The scoring tables and maps overinflate these negligible impacts to soils, geology and permafrost.	The 17 February 2017 Technical Memorandum on the subject of "Effect of Climate Warming on Expected Long-Term Thaw Depths on the ASAP Right-of-Way, Alaska Stand-Alone Pipeline Project" (Appendix M to the Final SEIS) indicates that it provides a broad scale analysis of the available thermal data and accounts for heat/cooling from the pipeline and additional thermal input from climate change. The Technical Memorandum does not appear to account for many of the changes that will take place as a more localized scale: the degraded condition of the vegetative mat, other modified surface conditions such as the potential accumulation of water, modifications to albedo, changes to soil hydraulic conductivity due to the proposed construction technique, and modifications superpermafrost groundwater flow pathways. Stripping of the vegetative mat and associated soil from the pipeline corridor may have major effects that could degrade the value, integrity, and function of soil and geologic resources in areas where permafrost is present. A healthy vegetative mat moderates the albedo of the surface and insulates. Destruction of this material could cause long-term changes not likely to be reversed over a period of decades. As stated by AGDC in the Environmental Evaluation Document: some sections of inundated trench may propagate permafrost thaw into the surrounding area. Rehabilitation of thawed permafrost generally requires spans of ten years and longer, and only after many decades do plant communities, ground ice conditions, and other site characteristics return to preexisting conditions (NSSI 2015). Propagation of thaw may occur directly adjacent to the pipeline or, due to the flow of suprapermafrost groundwater or surface water, at some distance to the pipeline. In areas of massive ground ice, propagation can cause a feedback loop, such that thaw and settling makes adjacent areas more susceptible to additional thaw.	No change

Issue Code	Description	Final Response	Section #s of Change
GEO_2	In Table 4.6-4, under Alternative 1, the characterization of Impact Ratings for Operation as "Major" is not supported by the fact that once the construction has occurred, and the ROW is stabilized, the pipeline will be an ambient temperature pipeline that will not contribute to major effects to soil and geology. The Impact Ratings should be reduced for Operations accordingly.	Although AGDC plans to construct an ambient temperature pipeline, significant differences between the exterior temperature of the pipeline and the temperature of the surrounding subsurface environment would be present during the operations period. Such impacts would vary in location and time, but are expected to be most pronounced in areas of discontinuous permafrost. Pipeline temperature variability could result in the significant effects of permafrost thaw or creation of frost bulbs. In particular, impacts may occur in areas where soil temperatures and other characteristics change significantly over short distances. Such impacts may include alterations to drainage patterns and changes to the thermal regime. The impact level may be major resulting from a wide impact area and impacts that could last decades if the thermal regime is disrupted.	No change
GEO_3	Seismic events: Seismic events are not uncommon for west coast 48 contiguous states pipelines. Recommend deleting this bullet.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.25.4
GEO_4	The statement "The pipeline would be located in the active layer, which lies above the permafrost, and the active layer tends to thaw each year." should be edited to be more correct. It should be written "The pipeline would be located below or in the active layer, which lies above the permafrost, and the active layer tends to thaw each year."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.25.5.2
GEO_5	The Department is concerned that the pipeline will be buried in areas of ice-rich and thaw-sensitive permafrost, and trenching may result in significant permafrost degradation that can induce stresses to the buried pipeline and divert overland flow away from traditional flow patterns. The potential accumulation of snow and water along the trench is also a great concern for exacerbating permafrost degradation. The Department continues to strongly recommend elevating the pipeline on vertical support members (VSMs) in the Arctic Tundra ecoregion and in other areas where thaw-unstable permafrost exists. The Department has concerns regarding potential impacts to ice-rich permafrost, which is typically characterized by a heterogeneous spatial distribution of ground ice. Excavating in ice-rich permafrost can expose ground ice to warmer temperatures and lead to differential thaw settlement that, in turn, induces stresses to a buried pipeline. Melting of wedge ice, which is widely present along the northern portions of the pipeline, can lead to severe differential thaw settlement and rapid linear erosion. Snow and surface water may also accumulate with time along the trench as thaw settlement progresses and further exacerbate permafrost degradation. Moreover, water may infiltrate below the buried pipeline and freeze back in winter, inducing stresses to the structure. Such thermokarsting can also damage fish and wildlife habitat. Thus, the Department recommends minimizing excavation of ice-rich permafrost and instead elevating the pipeline in these areas.	AGDC has revised the proposed project description to reduce wetland impacts over areas of continuous permafrost by utilizing ice pads and ice roads from MP0-MP62. Based on information provided by AGDC, the proposed hybrid design to elevate the pipeline MP 0 – 168 presents additional geotechnical challenges. In the area between MP 62 (the edge of the Arctic Coastal Plain) and MP 168 (approximately the base on Atigun Pass), the subsurface conditions are less uniform (i.e., a mixture of silts, sands, gravels, cobbles, boulders, and rock) than the Arctic Coastal Plan. Installing VSMs in this area would require that multiple types of specialized equipment be on location depending on conditions encountered. Based on information provided by AGDC, the extra cost to consumers associated with a completely aboveground Project is estimated at a minimum of $670,000,000 per year. A hybrid project in which approximately 634 miles is aboveground would be approximately 10 percent less [than the completely elevated pipeline].Additional cost information provided by AGDC is confidential. As described in Section 2.6.3, a hybrid pipeline which includes elevating the pipeline from MP 0 -168 has been eliminated as a reasonable alternatives based on the screening criteria presented in Table 2.6-1 of the SEIS.	2.6.3, 4.9.4.1.1
GEO_6	As discussed in the Draft SEIS, concerns arise if gas with a temperature below freezing travels in unfrozen ground and vice versa, as this may result in permafrost degradation (in frozen ground) or aggradation (in unfrozen ground) and potentially induce stresses to the pipeline. Modeling may be useful to estimate spatial distribution of frozen and unfrozen ground; however, the Department emphasizes that the permafrost-terrain-vegetation relationship is especially complex in the discontinuous permafrost areas, and changes from frozen to unfrozen soils (and vice versa) may occur on a very short distance/depth. Therefore, it is quite challenging to predict the ground thermal state, and a thorough understanding of the permafrost-terrain-vegetation relationship is critical to positioning the geotechnical boreholes at key locations.	The permafrost-vegetation relationship has been modeled. An analyses of terrain units derived from geotechnical information collected from over 10,000 boreholes, Project-wide wetlands and vegetation data, and an analyses of potential indirect impacts to wetlands from the start of the pipeline to the terminus at MP733. Initial work is contained in the ASAP FEIS. Since the 2012 FEIS, additional technical reports were developed in 2016 and 2017. Analysis of potential indirect impacts to wetlands related to buried pipeline construction is provided in Appendix E Part II of the Final SEIS and identification and evaluation of time-dependent route geohazards is provided in Appendix D of the Final SEIS. Additional technical reports were developed in 2016 and 2017 as summarized in the SEIS impacts discussions.	No change
GEO_7	General comment on terminology: Permafrost does not melt, it thaws. Ice in permafrost can melt, but the permafrost itself is said to be thawing. Recommend replacing all instances of "melting permafrost" with "thawing permafrost."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Throughout Chapter 4
GEO_8	4.6.4.2. Operations and Maintenance; "The proposed Project route would cross two seismic zones and five fault lines." (as well as any other instances in report); The term "fault lines" is ambiguous. Recommend changing all instances to "fault traces." A so-called "fault line" is not to be confused with a "fault-line scarp," which is an erosional remnant of a once-active fault (that juxtaposed materials of varying erosional resistance). A fault-line scarp, by definition, is inactive.	The term "fault line" has been replaced with "fault trace." The definition for fault trace has been added as a footnote, "Fault trace: The fault trace is the intersection of a fault with the ground surface; also, the line commonly plotted on geologic maps to represent a fault (USGS, 2017)."	4.6.5
GEO_9	4.6.4.2. Operations and Maintenance: "The proposed Project route would cross two seismic zones and five fault lines."; It may be worth clarifying that the proposed project crosses two seismic zones and five mapped Holocene-active fault traces. There are more unmapped faults out there, and there are others that are mapped but not Holocene active (e.g., the Healy Creek fault and the Stampede fault, active in the last 130,000 years).	Comment acknowledged. The text has been revised to clarify that "The proposed Project route would cross two seismic zones and five mapped Holocene active or potentially active fault traces (Table 4.6.3)."	4.6.4.2
HAZ_1	Cumulative Effects: It is not clear how an increase in population could lead to an increase in the potential for exposure to hazardous materials. Please explain.	Comment acknowledged. The referenced text has been updated to state, "The increase in population would, however, place stress on current health services. Increasing populations within a limited geographical area could increase the number of people occupying areas in close proximity to hazardous materials, such as military installments."	4.26.9.16
HIA_1	Pipelines kill caribou and Eskimo making them sick with pollution.	Wildlife and subsistence resource impacts are discussed in 4.10 and 4.20 of the SEIS. Each of these sections also include a section called "Applicant-Proposed Design Features, Mitigation Measures, Best Management Practices, and Project Management Plans." These sections describe how the impacts suggested by the commenter would be minimized or prevented by AGDC.	No change
HIA_10	Give a definition of what poverty means in the statistics. Also, qualify this data with information on subsistence and that many communities are mixed economy and that the U.S. definition of poverty does not take the high cost of living in Alaska into account	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.17.6.2.1.2
HIA_11	The statement "Given the small sample size for the various communities, there is a large margin of error for some communities' median income estimates." is an example of a broad statement that would be useful to include at the beginning of PH section.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.17
HIA_12	Table 3.17-7 needs a footnote for Coldfoot, Livengood, Prudhoe Bay, and Wiseman explaining why no median household income data are presented.	An '-' following a median estimate means the median falls in the lowest interval of an open-ended distribution. A footnote has been added.	Table 3.17-7
HIA_13	Access to health care section; More current information is available, especially specifics on MUA and HPSA populations	USACE appreciates the comment. Table 3.17-11 (HPSAs and MUAs/MUPs for Potentially Affected Boroughs and Census Areas) has been updated to include the most current information available.	Table 3.17-11
HIA_14	Data presented in several locations are not rates. Use the correct statistical terminology.	USACE appreciates the comment. The text has been revised.	3.17.6
HIA_15	2017 life expectancy data is now available and would be useful in this section	This section has been updated with information from the ADHSS Alaska Vital Statistics 2016 Annual Report.	3.17.6.3.1
HIA_16	Figure 3.17-2 presents the leading five causes of death for the state of Alaska in 2014 compared with the U.S. in 2013. Table 3.17-2 title says that 2014 data are compared. This should be corrected.	The title of Figure 3.17-2 has been updated to show the correct dates: "Leading Causes of Death, Alaska (2014) Compared with U.S. (2013)"	Figure 3.17-2
HIA_17	More current data should be presented for Section 3.17.6.3.1.2 and .3.	Thank you for your comment. Revised data has been provided for Tables 3.17-13 through 3.17-16	3.17.6.3.1.2 and .3.
HIA_18	A footnote is needed to mention the issue of small numbers potentially leading to unstable rates in Figures 3.17-3 and -4.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	No change

Issue Code	Description	Final Response	Section #s of Change
HIA_19	3.17.6.3.1.3; Text: Alaska Native males have substantially lower age-adjusted cancer incidence rates than the U.S. White populations. There is an overall upward trend for both populations, but a downward trend in recent years. Comment: Clarify if these statements are significant.	These statements are significant as they provide baseline cancer incidence rates and trends for Alaska Natives and US white populations. There is potential for people from both of these categories to experience health impacts as a result of the proposed Project.	No change
HIA_2	FNSB strongly supports the ASAP Project and its underlying purpose. The affordable natural gas the ASAP Project could provide the Fairbanks area is vital for the health and safety of FNSB residents. Poor air quality in the Fairbanks area is directly linked to the unavailability of affordable natural gas for heat and power generation. Providing the Fairbanks area with natural gas, which would allow conversion of residential and commercial heating systems, is estimated to reduce PM2.5 emissions from approximately 2,200 tons per year to less than 200 tons per year. Accordingly, providing affordable natural gas to the Fairbanks area is essential to eliminating the deleterious particle pollution presently occurring.	Comment acknowledged.	No change
HIA_20	In Figure 3.17-13, please clarify if this is all Alaska population or AN/AI data. If this is just AN/AI data, that should also be reflected in the sentence preceding this figure.	This figure reflects all of the Alaska Native population.	No change
HIA_21	Both axes need to be labeled on the charts in Figures 3.17-18 and -20.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Figure 3.17-18 and Figure 3.17-20
HIA_22	A summary of baseline PH strengths and challenges most relevant to the project would be useful at the conclusion of this section.	In order to determine which strengths and challenges are most relevant to the Project, the reader should be familiar with the potential Project impacts. As a result, baseline information that is most relevant to the Project is summarized and referenced in Chapter 4, Environmental Consequences based on the anticipated Project impact ratings.	No change
HIA_23	There is a lack of regional data (i.e. comparisons by borough) throughout this section (PH), particularly in terms of health indicators. Where possible, this level of data should be presented and discussed, especially since this project spans multiple boroughs that may have significant differences in burden for some of the health indicators.	The document has been revised to acknowledge that statewide data was used in place of regional data when regional or local data was not available.	4.21.1.1
HIA_24	In Table 4.21-1, under accidents and injuries, increased rail/truck use should be included in the operations and management column. While less than in the construction phase, shipping of equipment/people will still be needed.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Table 4.21-1
HIA_25	Table 4.21-1 disagrees with statement in the Operations and Maintenance (O&M) column for infectious disease. This received a moderate impact rating and is discussed in section 4.21.4.2.6. Suggest comparing the table with subsequent sections to ensure consistency.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Table 4.21-1
HIA_26	Table 4.21-1 is inconsistent with water and sanitation access. Is an increase in access expected, or is it better characterized as a 'change'? Use consistent descriptor in each column.	The first column of Table 4.21-1 has been revised to state "Change in potable water access" and "Change in demand on water and sanitation infrastructure."	Table 4.21-1
HIA_27	Impact ratings should be focused on actual health outcomes/indicators rather than a collective and vague ranking of each HEC. Not all impacts within an HEC will always have the same rating.	Health outcomes/indicators that may be impacted by the proposed Project are summarized in Table 4.21-1. A detailed description of impacts related to these health outcomes/indicators is provided in the document text. The text also describes the reasoning for determining the overall impact ranking for the HEC based on the applicable health outcomes/indicators and the impacts criteria. The overall impact categories are intended to summarize this information and provide a more generalized impact rating for each HEC.	No change
HIA_28	Entire rating sections; There is a lack of regional data discussed throughout these sections. Where possible, this level of data should be presented and discussed (i.e., the issue of greater subsistence impacts in Minto and Nenana), especially since this project spans multiple boroughs that may have significant differences in degree of burden for some of the potential health impacts (or even HEC ratings, in the case of this chapter)	The document has been revised to acknowledge that statewide data was used in place of regional data when regional or local data was not available. Section 4.21.4.1.4 acknowledges that "The impact would likely be major in three communities, moderate in 10 communities, and minor in 16 communities (Table 4.20-6). The impact of construction on subsistence activities was ranked the highest in the communities of Wiseman, Coldfoot, and Minto (Table 4.20-4)." The differences in degree of burden for some of the potential health impacts or HEC ratings are captured in the text. The overall impact categories (HECs) are intended to summarize this information and provide a more generalized impact rating for each HEC.	4.21.1.1
HIA_29	It is not clear what is meant by "could potentially result in human exposure to hazardous materials" in this public health section. The air quality section provided a clear detailed overview of the potential for impacts due to air emissions, but this general statement could be interpreted to imply that the current regulations are not protective of human health. Please summarize the air quality conclusion from elsewhere instead of using this sentence.	Thank you for your comment. This statement has been revised accordingly: "Although air quality concentrations would be regulated by NAAQS regulatory thresholds, air quality could be degraded and pollutant concentrations could approach HAPs criteria pollutant thresholds."	4.26.9.16
HIA_3	Hazardous air pollutants (HAPs) from oil and gas activities on the north slope impact arctic residents east and west of the facilities. HAPs put our children and elders at risk of developing respiratory illnesses and life-long diseases. HAPs make the animals sick. HAPs increase acids in the atmosphere. The toxic emissions slowly make changes to the land and water, which changes people, animals, and their habitats.	Thank you for your comment. Section 4.22 and 4.26.9.16 of the SEIS acknowledge that air quality could be degraded and pollutant concentrations could approach HAPs criteria pollutant thresholds.	4.26.9.16
HIA_4	Table 3.17-3 lists the population for each PAC from north to south and the percentage of each population comprised of American Indian or Alaska Native descent.; Comment: Suggest mentioning why this statistic is included (E.J.).	Thank you for your suggestion. The text has been revised to state: "Table 3.17-3 includes the percent of the population that is Alaska Native. This information is useful to identify whether a proposed action would have a disproportionately high adverse impact on low-income populations, minority populations or Indian tribes due to a proposed action. "	Table 3.17-3
HIA_5	3.17.5; Text: The previously discussed community profiles have not changed since the 2012 FEIS and are therefore not presented in this SEIS.; Comment: Include a word such as substantially. The communities have changed, just not much (according to this chapter).	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.17.5
HIA_6	3.17.6.1; Text: HECs that were rated with “medium” or “high” potential effect by the proposed Project in the 2012 FEIS are discussed in this SEIS in the sections provided in Table 3.17-4.; Comment: Disagree with this approach. Just because something was rated 'low' in the 2012 FEIS doesn't mean the same applies to a newly included community. Additionally, the baseline information still needs to be discussed in relation to the project changes necessitating this SEIS. Additionally, not all communities were in this 2012 assessment, so data for these communities should be included.	The following sections have been added to Chapter 3: 3.17.6.3.2.3, Exposure to Hazardous Materials; Section 3.17.6.3.2.4, Water and Sanitation; and 3.17.6.3.2.5, Health Services Infrastructure.	3.17.6.3.2
HIA_7	3.17.6.1; Text: These HECs were therefore discussed only in limited detail, if at all, in this SEIS Affected Environment section: -Exposure to Hazardous Materials -Water and Sanitation -Health Services Infrastructure and Capacity; Comment: This baseline information still needs to be discussed in relation to the project changes necessitating this SEIS. Additionally, not all communities were in this 2012 assessment, so data for these communities should be included.	The following sections have been added to Chapter 3: 3.17.6.3.2.3, Exposure to Hazardous Materials; Section 3.17.6.3.2.4, Water and Sanitation; and 3.17.6.3.2.5, Health Services Infrastructure. Section 4.21.1.1 has been revised to acknowledge that statewide data was used in place of regional data when regional or local data was not available.	3.17.6.3.2, 4.21.1.1
HIA_8	At some point early on in the PH section, there needs to be a mention of small numbers leading to potentially unstable/misleading rates	The following text has been added to Section 3.17.1 of the Final SEIS "Please note that in many instances throughout this section, data and rates have been calculated using small sample sizes for various communities, which may display a large margin of error or an unstable or misleading representation of results. "	3.17.1
HIA_9	For the 2014 data presented, the poverty threshold for Alaska for a family of four was approximately $30,000 (U.S. Department of Health and Human Services, 2016). This is higher than the 2014 poverty threshold of the 48 contiguous states of $24,000. Comment: Suggest mentioning why the state poverty threshold is higher	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.17.6.2.1.2

Issue Code	Description	Final Response	Section #s of Change
INA_1	A research study should be implemented to determine the natural gas pipeline impacts on customary and traditional use of wild game.	The affects on customary and traditional use of wild game is discussed throughout the SEIS in wildlife and subsistence chapters and throughout the FEIS. The subsistence section for the ASAP SEIS was developed based on existing information. In the Final SEIS, see Environmental Consequences Section 4.10 and 4.20; Affected Environment Section 3.6 and 3.16; and Analysis of Subsistence Impacts Appendix P.	No change
INA_10	The Draft SEIS states that impacts to Minto Flats have been minimized due to realignment; however, the alignment presented in Appendix E appears to have shifted further into Minto Flats. The Final SEIS should include more information about how impacts to Minto Flats have been reduced.	Comment acknowledged. The primary reason to modify the ASAP alignment in the Minto Flats area was to reduce impacts to wetlands and streams. From version 6.1 milepost (MP) 413 to 435 the alignment shifted to the east to access uplands. From MP 455 to 465 the alignment shifted to the west.	No change
INA_11	Based on our review and evaluation of the adequacy of the information and the potential environmental impacts of the action alternatives, the U.S. Environmental Protection Agency (EPA) is rating the Draft SEIS as Environmental Objections -Insufficient Information (E0-2). The EO rating indicates that the EPA review has identified significant environmental impacts to wetlands that should be avoided, as well as a need to consider additional means to mitigate those impacts, in order to adequately protect the environment. The "2" rating indicates that the EPA has identified additional information, data, analyses, or discussion as outlined in the enclosed comments that we recommend for inclusion in the Final SEIS.	Since publication of the Draft SEIS, USACE has incorporated additional information provided by the Project proponent as well as other relevant scientific literature as necessary to address the most critical impacts associated with the proposed action.	Chapter 4
INA_12	The Public Notice on the proposed ASAP project did not include information required by both the EPA's and the Corps' regulations on how impacts associated with the proposed activity are to be avoided, minimized, and compensated for.	The public notices published in the Federal Register (FR) (79 FR 44758, 82 FR 29859 and 82 FR 39424) announced the USACE's intent to prepare the SEIS as well as the public comment period, respectively. These notices follow NEPA requirements for public notification. Proposed avoidance, minimization and mitigation measures are included in detail in the SEIS as required under NEPA.	No change
INA_13	The EPA also has a number of concerns regarding the adequacy of the proposed compensatory mitigation. In this case, because of the lack of information in the Draft CMP regarding the direct, secondary, and cumulative impacts of the proposed discharges on approximately 99 percent of the potentially affected wetland acreage discussed above, sufficient information does not exist to determine if additional compensation would be required to avoid causing or contributing to significant degradation. For the same reason, sufficient information does not exist to determine if there are appropriate and practicable compensation measures that would be required by the Guidelines to address some or all of the remaining approximately 8,802 acres of wetland impacts where compensation is not currently proposed.	AGDC has indicated that "the potential for indirect impacts to wetlands are noted in the Draft SEIS and in 'Analysis of Potential Indirect Impacts to Wetlands Related to Buried Pipeline Construction; ASAP-22-RTA-ENV-DOC-00002; March 10, 2017' (Appendix E of the Final SEIS). Degradation of permafrost (after 30 years) will not be uniform, but will not necessarily result in an impact to wetlands or wetlands function. The adequacy of the proposed compensatory mitigation is under review by the Corps. Changes in the Project footprint, additional avoidance and minimization measures, watershed and wetland functions and a determination of the LEDPA assist the Corps in assessing the need for comenpsatory mitigation and the types of habitat-specific functional loss which may occur. These variables result in changes to permanant and temporary impacts to streams and wetland acreages. Additional changs within the Project footprint have occured since the Draft SEIS publication, as a result of public and agency comments. The USACE will evaluate the suitablilty of the Project proponent's proposed compensatory mitigation based upon the content of the Compensatory Mitigation Plan, as well as, consider incorporating additional General and Reginal conditions approprate for use when evaluating potential DA authorizations which establish standard best management practices and revegetation standards.	No change
INA_14	The negative impact of continual shade from 62 miles of aboveground large-diameter pipe and large diameter vertical support members (VSMs) on wetlands where long days occur is not adequately discussed or scored.	This potential impact has been added to the Final SEIS Section 4.9.4.	Section 4.9.5
INA_2	The SEIS has almost no information on how the pipeline affects the communities it could cross through or the private property and homes the route proposes to clear a 125' wide swath of forest through. In effect the pipeline corridor with create a 125' wide snowmobile and ATV trail from the north end of Trapper Creek to the south end for over 20 miles and yet no mention of the impact of such a reality will have on the community and it's residents. This holds true for all the communities of the entire route. How will clearing this heavily forested community like Trapper Creek affect the residents and visitors of those communities. How will it change the wildlife movements, recreational uses, impacts of off road vehicles on wetlands and stream crossings.	USACE recognizes that construction of a new pipeline ROW and new access roads may allow new users to access previously inaccessible areas with ATVs and other vehicles. The impact of the new ROW to subsistence use is discussed in Section 4.20.4.2.1.3 of the SEIS. Impacts of the new ROW to wildlife is discussed in Section 4.10.4.1.4. Impacts of the new gravel access roads to wetland access is discussed in Section 4.9.4.1.1.1 and clearing of the new ROW is discussed in Section 4.9.4.1.1.2, additional text has been added here. Additional text has been added to the forestland portion of the land use section, Section 4.15.4.1.3. Additional text has been added to the operations and maintenance portion of the recreation section, Section 4.16.4.2 and Section 4.7.4.2.4, Surface Water Quality.	4.7.4.2.4, 4.9.4.1.1.2, 4.15.4.1.3, and 4.16.4.2
INA_3	The SEIS is lacking caribou migration studies and information on lichen, caribou's main food source. Studies need to be completed on these to show that there would be no impact when the Project development starts.	Potential impacts to caribou migration are described in Section 4.10.4.1.4 of the Final SEIS. The potential impacts to vegetation associated with the pipeline are included in Section 4.8 and 4.9.	No change
INA_4	There needs to be more health assessment in specific communities (i.e. Nuiqsut) because the oil companies don't report the results of their health assessments.	USACE appreciates the comment. Potentially affected communities are described in Section 3.17.5 and Section 4.21 of the SEIS. As described in the SEIS, incorporated cities and unincorporated places with boundaries that would be intersected by the proposed Project ROW were defined as the communities that might experience potential health effects. Communities that do not fit this description were not included in as potentially affected communities. The general assessment methodology is included in Section 3.17.4, Table 3.17-2.	No change
INA_5	Further study should involve the physical and quality of life impacts of the newly disclosed access roads and material sites. Specifically, the material sites in the Valley are immediately adjacent to the rivers and major recreational and wildlife opportunities in the Valley. Several of them immediately border navigable rivers utilized by tens of thousands of recreational and tourist related visitors each year. The major access road from Glitter Gulch to the McKinley Village area itself roughly doubles the affected area from MP 539 to MP 541, and terminates in a residential district in which commercial development is prohibited and the Denali Borough Subarea Use Plan has imposed the objective to minimize vehicular traffic on the roads within the subdivision in order to maintain a quiet and pedestrian-friendly neighborhood. The location and scope of this access was incomplete and misleading in the original FEIS process. Further, the discussion in Section 5.9 of the FEIS, on Land Use, was inadequate in that it misrepresented the land status and ignored the subarea plan for Village View Subdivision.	Potential impacts associated with access roads are presented for resources including land use, recreation, socioeconomics, and public health (Sections 4.15 - 4.18, and 4.21). Specifically, the effects on land use (Section 4.15) have been significantly revised since publication of the 2012 FEIS to which this comment refers. F80omment repeats specific comments on the 2012 FEIS which this comment refers.	No change
INA_6	Engineering analyses and the technical environmental information associated with a buried pipeline, supplied by the Alaska Gasline Development Corporation (AGDC), was absent from the body, analysis, and conclusion of the Draft SEIS. This information should appear as major discussion points in the body of the document and should be reflected in the overall analysis, scoring, and conclusions. Also, the impact analysis and conclusion for the belowground pipeline mode appears subjective, as does the conclusion concerning wetland habitat fragmentation from belowground pipeline construction. Eliminate subjective statements/conclusions regarding the impacts of a belowground pipeline not based on technical analyses. Also, provide a more realistic discussion of impacts to habitat function using statements that address the magnitude of the direct impact acreage in relation to total acreage of similar habitat available; acknowledge disturbed and revegetated areas in the belowground mode would ultimately return to wetland; acknowledge all meaningful, long-term impacts to wildlife, wetlands, and watersheds during the different project phases for both modes; and state whether the proposed burial practices and methodology would be effective in mitigating impacts based on the technical information AGDC has provided.	The introduction to Chapter 2 of the Draft SEIS specifically lists technical documents provided by AGDC that present detailed information on the pipeline design, proposed mitigation measures and associated environmental impacts. Specific citations of these references are included throughout the Draft SEIS and many are included as appendices for readers to easily access and review. The Council on Environmental Quality's (CEQ) 1981 Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, (CEQ March 23, 1981, http://ceq.eh.doe.gov/nepa/regs/40/20-29.HTM, #25) specifically state: "Lengthy technical discussions of modeling methodology, baseline studies, or other work are best reserved for the appendix. If only technically trained individuals are likely to understand a particular discussion, then it should go in the appendix, and a plain language summary of the analysis and conclusions of that technical discussion should go in the text of the EIS". Following this guidance, the Draft SEIS includes four technical appendices specifically related to engineering and technical environmental information including: Appendix A Part I Rationale for Strain-Based Design and Part II The ASAP Belowground Pipeline Mode: Selection, Construction, Operation, and Maintenance on Alaska's North Slope; G ASAP Identification and Evaluation of Time-Dependent Route Geohazards; H Part I Revegetation Plan and Part II Indirect Impacts to Wetlands Related to Buried Pipeline Construction, and; V Part I Applicant Proposed Design Features, Mitigation Measures and Best Management Practices and Part II Rationale for ASAP Pipeline Route Refinement. Each of these documents are referenced in Section 4.6, which presents an evaluation of potential impacts of the alternatives on soils and geology. Section 4.6.3 summarizes AGDC's proposed mitigation measures specific to soils and geology and explains how they were considered in the evaluation of impacts. Information and specific citations from these technical documents as well as the ASAP EED are cited throughout Section 4.6 as well as other sections of Chapter 4. Information provided by AGDC is considered along with other best available scientific literature to evaluate the potential impacts of the alternatives on resources within the Project Area.	No change

Issue Code	Description	Final Response	Section #s of Change
INA_7	The potential impacts associated with the aboveground pipeline mode for the first 62 miles were not given proper weight in the impact analysis. Specifically, the Bureau of Land Management (BLM) concluded in the Alaska National Interest Lands Conservation Act Section 810 preliminary analysis that changes in caribou migration and behavior due to habitat fragmentation caused by an aboveground pipeline may have a significant impact to local subsistence users. The text, analysis, scoring, and conclusions of the Draft SEIS should take into account these statements from the BLM, as well as those of other cooperating agencies, such as the Alaska Department of Natural Resources State Pipeline Coordinator's Office. The Draft SEIS should weigh these comments accordingly and in fairness with statements from other agencies.	The following sections have been added to Chapter 3: 3.17.6.3.2.3, Exposure to Hazardous Materials; Section 3.17.6.3.2.4, Water and Sanitation; and 3.17.6.3.2.5, Health Services Infrastructure.	3.17.6.3.2
INA_8	The SEIS evaluated the belowground pipeline mode on the Arctic Coastal Plain (note that the first seven miles of pipeline were in the aboveground mode for the 2012 evaluation). The 2011 U.S. Fish and Wildlife Service Biological Opinion, which was included as an attachment to the ASAP Final EIS in 2012, did not oppose the design and construction of a belowground pipeline on the North Slope to MP 62. The Alaska Gasline Development Corporation feels this issue was settled in 2012 and there is no new information that alters the original Biological Opinion. To summarize, three separate National Environmental Protection Act (NEPA) analyses over the last 3 decades have all concluded that belowground gas pipeline construction was the preferred mode or alternative. It is important that the NEPA precedent for a belowground natural gas pipeline on the North Slope is described and acknowledged in the Final SEIS. The Draft SEIS is silent on these issues.	While the Biological Opinion from 2011 may provide useful background information, the agencies (NMFS and USFWS) will develop new Biological Opinions with conclusions based on the updated Project design and the best available, recent scientific data since the 2012 Final EIS was published.	No change
INA_9	The Final SEIS should include an analysis of the change in the amount and type of wetlands impacted by the current design compared to the previous design published in the 2012 FEIS. The Draft SEIS does not include sufficient information to evaluate the full extent to which wetlands impacts have been avoided and minimized.	Potential impacts to wetlands and Waters of the U.S. are discussed in detail in Sections 4.9.4 (Alternative 1 - Proposed Action), 4.9.5 (Alternative 2 - Denali Route Variation) and 4.9.6 (Alternative 3 - No Action). Impacts to wetlands are also summarized in Chapter 4 Table 4.9-11 and Table ES-1 of the Executive Summary. The discussions found in each of these sections include the following impatcs: the number of acres impacted, percentage of impacts by wetland type, clearing, soil compaction and erosion, dust deposition and introduction of non-native plants. The 2012 Final EIS did not include an evaluation of ancillary facilities such as access roads, work camps, pads and staging areas. Therefore, to compare the 2012 Final EIS to the existing evaluation of impacts on wetlands based on the proposed Action and alternatives would not be meaningful. The 2016 Draft SEIS provides a more thorough, quantitative and qualitative assessment of potential impacts to wetlands sufficient to compare alternatives and provide decision-makers information for choosing a preferred alternative.	No change
LNG_1	Comment opposing the LNG project because the State of Alaska cannot afford it and there would be no profit gained from the project.	USACE appreciates the comment. We believe your comment is targeted to the Alaska LNG Project, which is an LNG export project. The ASAP Project does not include an LNG component and is intended to provide stable and long-term supply of natural gas for in-state use at the lowest possible cost.	No change
LNG_2	The Project should move the alignment to the east side of the Parks Highway at MP 131 because the Alaska LNG project was able to move their alignment at this location.	USACE appreciates the comment. The alignment for ASAP will be moved to the proposed AKLNG alignment approximately between ASAP MP 646 and MP 655.	No change
LNG_3	The State of Alaska is at this time also proposing a LNG gas pipeline along the same route as the ASAP pipeline that is also proposing a takeoff for the Fairbanks and Anchorage communities as well as possible take offs for other communities along the route. The State is wasting valuable resources in pursuing both pipelines simultaneously, which is directly harming the citizens and ultimately the environment of Alaska.	Comment acknowledged. The ASAP Project is being pursued at the direction of the Alaska Legislature. AGDC has a Board of Directors, appointed by the Governor, which is comprised of Alaskans that oversee the ASAP Project to ensure that the mandates of the Legislature are being fulfilled. AGDC indicates that the ASAP Project has been referred to as "Plan B" because, from an economic perspective, the larger Alaska LNG Project would deliver gas at a lower cost per unit due to the higher throughput volume. The Alaska LNG Project is preferred by the State, but If it is unable to move forward, ASAP provides a viable method to commercialize North Slope natural gas through in-state delivery. The costs to existing natural gas users in the Fairbanks area are expected to be less than the current LNG truck delivered price to encourage expanded distribution in the area. The costs to existing Southcentral users may be slightly higher than current costs, however, the ASAP pipeline would improve the long-term reliability of supply that Cook Inlet natural gas cannot provide. Additionally, AGDC indicates that the ASAP Project would be expected to provide a significant boost to the state economy and many of the communities along the corridor. The ASAP Project is solely funded by the State of Alaska. The Alaska Legislature controls the AGDC budget through the appropriation process and will make decisions concerning the Project in the best interest of the State.	No change
LNG_4	Cumulative Effects: "If the Alaska LNG project progresses through the construction, the potential vessel traffic associated with delivery of equipment and modules to West Dock could be moderate given the number of barges required for the anticipated larger facility though the details associated with this aspect of the project are still being evaluated" It is not clear why this statement was in included in an EIS document for the ASAP pipeline. If the Alaska LNG project comes to fruition, it has been noted that the ASAP project would not happen. Conversely if the ASAP project proceeds to the permitting stage, it would be obvious that the Alaska LNG project would not come to fruition.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.26.9.19
LNG_5	Cumulative Effects: "Under Alternative 3, the cumulative impacts of increased vessel traffic associated with increased shipping or barge traffic associated with the Alaska LNG project as well as construction associated with the Seward Terminal Expansion project could result in negligible to moderate cumulative impacts on navigation although changes in specific details of proposed activities have to be re-evaluated once those details are available". It is not clear why this statement was in included in an EIS document for the ASAP pipeline. If the Alaska LNG project comes to fruition, it has been noted that the ASAP project would not happen. Conversely if the ASAP project proceeds to the permitting stage, it would be obvious that the Alaska LNG project would not come to fruition.	We agree that given the magnitude of both projects to deliver natural gas from the North Slope to Southcentral Alaska, it is unlikely both the AKLNG and ASAP Projects would be built. Section 4.26.9 of the Draft SEIS explains that under the No Action Alternative, it is recognized the AK LNG Project could proceed through the EIS and FERC permitting processes. Section 4.26.9.1.9 has been revised to clarify this assumption.	4.26.9.19
MIT_1	Parking and trail access will need to be replaced for the old gravel pit parking area and access points such as near MP 645.5 (there are two, one at Parks Highway mile 127 and one at mile 126.5). The Project needs to meet with local users to develop mitigating measures that are acceptable to the local users and are sufficient to protect the existing land and trail use.	Comment acknowledged, please see response for comment ALT_9. The abandoned gravel pit at approximately ASAP MP 645 is a proposed camp location. AGDC intends to work with the landowner to arrive at a suitable agreement and stipulations for land access.	No change
MIT_10	To substantially reduce collision risk to migratory birds from lighting, communication towers, and power lines associated with the proposed project, we recommend including specific BMPs recommended by the agency (see Submission 053).	Comment noted. AGDC has reviewed the USFWS suggested BMPs and agree to include the following: 1) remove or turn of lights as they become spatially or temporally unnecessary; 2) minimize external lights, except as needed for safety; 3) where possible, avoid pointing downcast or down-shielded lights towards reflective surfaces, excluding snow and ice; 4) install blackout shades on outward-facing windows at night when migratory birds are present (e.g., May through October on the Arctic Coastal Plain); 5) when guy wires are necessary, mark each wire for its full length, using daytime markers that stand out against the wire and the environment. Not all markers are designed for use in extreme conditions, such as those encountered in the Arctic. Markers would be regularly maintained for the life of the Project. AGDC also reviewed USFWS suggested changes to the existing BMPs and agree to the changes to BMP 12. While AGDC has not changed BMP 9, many of the USFWS suggestions can be accomplished by inclusion in the contractor execution plans.	Final SEIS Appendix M and 4.10

Issue Code	Description	Final Response	Section #s of Change
MIT_11	We suggest salvaging the uppermost portion of the organic layer in the soil profile containing seeds, plant propagules, roots, organic matter, and soil microbes.	Thank you for your comment. Although not currently proposed as a mitigation measures, stripping of the top layer of soil in wetland areas is required by the Corps. The SEIS has been revised to include Section 4.5.2 describing the proposed measures and the impact analysis has been updated to include a discussion of the associated impacts. The SEIS has also been updated to include an assessment of impacts to wetlands, vegetation, and soils under the assumption that the top layer of soil would be segregated and replaced on the top of the excavated trench, for comparison. The Corps requires the following Special Conditions of the 404 permit: 1) To prevent erosion, disturbed areas shall be stabilized immediately after construction. Revegetation of the site shall begin as soon as site conditions allow and in the same growing season as the disturbance unless climatic conditions warrant additional time. Additional time must be approved by the Corps. Native vegetation and topsoil removed from Project construction shall be stockpiled separately and used for site rehabilitation. Topsoil is defined as the upper, outermost layer of soil, usually the top two to eight inches. When backfilling, topsoil shall be placed as the uppermost layer to provide a seed bed for native species. Within 30 days from the date of completing the work authorized, the Permittee is required to conduct restoration of temporary wetland impacts to pre-existing contours, elevations, vegetation, habitat type, and hydrology. 2) Natural drainage patterns shall be maintained using appropriate ditching, culverts, storm drain systems, and other measures to ensure hydrology is not altered. 3)Trenches cannot be constructed or backfilled in such a manner as to drain waters of the U.S. (e.g., backfilling with extensive gravel layers, creating a French drain effect). Ditch plugs or other methods shall be used to prevent this situation. 4) Except for material placed as minor trench over-fill or surcharge necessary to offset subsidence or compaction, all excess materials shall be removed to a non-wetland location. The backfilled trench shall achieve the original surface condition, within a year of disturbance unless climatic conditions warrant additional time and is approved by the Corps. 5) Excavated material temporarily sidecast into wetlands shall be underlain with geotextile, ice pads, or similar material, to allow for removal of the temporary material to the maximum extent practicable. 6) Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures (e.g. ice roads, compacted snow, low psi ground bearing weight, etc) must be taken to prevent soil disturbance. 7) Culverts in fish bearing waters must be installed in accordance with a valid Alaska Department of Fish and Game, Fish Habitat Permit.	4.5.2
MIT_12	Revegetation, as proposed in this situation, likely will be an unreliable technique for aiding in long-term protection against thermal erosion and subsequent subsidence.	Thank you for your comment. Although not currently proposed as a mitigation measures, stripping of the top layer of soil in wetland areas is required by the Corps. The SEIS has been revised to include Sections 4.5.2 describing proposed measures and the impact analysis has been updated to include a discussion of the associated impacts. The SEIS has also been updated to include an assessment of impacts to wetlands, vegetation, and soils under the assumption that the top layer of soil would be segregated and replaced on the top of the excavated trench, for comparison. The Corps requires the following Special Conditions of the 404 permit: 1) To prevent erosion, disturbed areas shall be stabilized immediately after construction. Revegetation of the site shall begin as soon as site conditions allow and in the same growing season as the disturbance unless climatic conditions warrant additional time. Additional time must be approved by the Corps. Native vegetation and topsoil removed from Project construction shall be stockpiled separately and used for site rehabilitation. Topsoil is defined as the upper, outermost layer of soil, usually the top two to eight inches. When backfilling, topsoil shall be placed as the uppermost layer to provide a seed bed for native species. Within 30 days from the date of completing the work authorized, the Permittee is required to conduct restoration of temporary wetland impacts to pre-existing contours, elevations, vegetation, habitat type, and hydrology. 2) Natural drainage patterns shall be maintained using appropriate ditching, culverts, storm drain systems, and other measures to ensure hydrology is not altered. 3)Trenches cannot be constructed or backfilled in such a manner as to drain waters of the U.S. (e.g., backfilling with extensive gravel layers, creating a French drain effect). Ditch plugs or other methods shall be used to prevent this situation. 4) Except for material placed as minor trench over-fill or surcharge necessary to offset subsidence or compaction, all excess materials shall be removed to a non-wetland location. The backfilled trench shall achieve the original surface condition, within a year of disturbance unless climatic conditions warrant additional time and is approved by the Corps. 5) Excavated material temporarily sidecast into wetlands shall be underlain with geotextile, ice pads, or similar material, to allow for removal of the temporary material to the maximum extent practicable. 6) Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures (e.g. ice roads, compacted snow, low psi ground bearing weight, etc) must be taken to prevent soil disturbance. 7) Culverts in fish bearing waters must be installed in accordance with a valid Alaska Department of Fish and Game, Fish Habitat Permit.	4.5.2
MIT_13	We recommend using a generally accepted timeline of five years for achieving 70% coverage in the Intermontaine Boreal and Alaska Range Transition ecoregions. Because revegetation in the Arctic Tundra ecoregion can take a substantial amount of time, we recommend reconsidering the timeline performance standards for this ecoregion.	Comment acknowledged. AGDC indicates "AGDC will work with landowners to revegetate the appropriate or required amount of cover. The ADNR Plant Materials Center suggests the reclamation standard of at least 30 percent vegetative cover over a three-year period would be an interim action level criterion, which would indicate to ASAP whether additional revegetation action would need to be taken to ensure that a viable vegetative cover is established and that natural succession of plant species would continue, unless documented adjacent reference site conditions show a lesser percent cover for the surrounding area. Remedial action could include seeding or reseeding an area, additional application of soil amendments, and/or incorporation of additional growth media on a particular site. ASAP would be responsible for determining the cause and resolution of the substandard revegetation cover, and if appropriate, to seek approval for an adaptive management solution. The cover standard should be achieved without the use of fertilizer or reseeding for the last two growing seasons in the 5-year period."	No change
MIT_14	We recommend considering fish and wildlife in all reclamation work, and providing new beneficial habitat in areas where the original habitat type cannot be fully restored.	Comment acknowledged. This information has been taken into consideration in finalizing the proposed mitigation measures appended to the SEIS. This recommendation is included in the list of regulatory agency recommendations appended to the Final SEIS.	No change
MIT_15	The Service does not object to issuing a permit for proposed action provided specific conditions are met as specified in our comment letter (please refer to submission ID 053, Enclosure 2).	Comment acknowledged. This information has been taken into consideration in finalizing the proposed mitigation measures appended to the SEIS. This recommendation is included in the list of regulatory agency recommendations appended to the Final SEIS.	No change
MIT_16	The following mitigation measure should include the phase "in consultation with ADF&G". Avoid disturbance and sedimentation to fish spawning beds, rearing areas, and overwintering areas designated by State Pipeline Coordinator's Section/Bureau of Land Management (SPCS/BLM). However, where disturbances could not be avoided, proposed modifications and appropriate mitigation measures would be designed by the National Environmental Protection Act and approved by SPCS/BLM.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.11.3 and Final SEIS Appendix M
MIT_17	In-stream pipeline construction would be completed in 1 to 3 days from initiation.	Comment acknowledged. This is listed as a mitigation measure in the Draft SEIS.	No change
MIT_18	Since the terrorist attack of September 11, 2011 terrorism has become a safety and security concern for energy facilities and distribution lines. The possibility of foreign terrorism exists in Alaska but also at a higher risk is local terrorism, where a mentally unstable or radical resident could seriously disrupt the safety along various points throughout the 737-mile route. Incidental accidents by residents along the route will require much closer monitoring than what has been identified in the Draft SEIS.	Comment acknowledged. Section 4.25.5.1 does address potential terrorism and security issues relevant to the proposed Project in an appropriate level of detail without speculating an infinite number of scenarios that could threaten pipeline safety.	No change
MIT_19	The Bureau of Land Management recommends that the authors of Appendix V clearly define which of these measures are Design Features, Mitigation Measures, and Best Management Practices (per subject, i.e. Wildlife, Vegetation). The only place where non-definitive language (should, may, etc.) can be used are for Best Management Practices.	Comment acknowledged. The measures included in the Draft SEIS Appendix V (Final SEIS Appendix M) are considered mitigation measures.	No change
MIT_2	A possible mitigation for subsistence users in Nuiqsut are fuel vouchers to accommodate for needing to hunt at further distances. The Project could also subsidize community members' diets by providing a food package at least once a month.	Comment acknowledged.	No change
MIT_20	The language in Section 4.6.3 about retaining surface materials (including topsoil and vegetative materials) when crossing federally-managed lands needs to be repeated in the Vegetation Section of Part 1, perhaps in Measure 30 or as a stand-alone measure in this section.	USACE appreciates the editorial suggestion, however, the Project proponent does not intend to retain surface materials when crossing all federally-managed lands. The proposed Project would entail segregating the surface layer (approximately the top 3-4 inches comprised of loose surficial herbaceous material overlaying a thin layer of organics and weak, compressible mineral soils) and replacing it as the last layer of backfill in the trench only within designated areas as described in the AGDC planning document, Segregation of the Surface Layer [Final SEIS Appendix EIII], and in the Revegetation Plan [Final SEIS Appendix E1].	No change

Issue Code	Description	Final Response	Section #s of Change
MIT_21	Appendix V, Measure 8: The Bureau of Land Management (BLM) notes that topsoil is defined in Appendix H and recommends similarly defining 'surface materials.' BLM also recommends specifying the time frame of restoration rather than using open-ended language, such as "as soon as practicable."	USACE appreciates the comment. The mitigation measure intends to communicate that when materials can be opportunistically stockpiled for use in stabilization of the ROW, stream bank restoration, erosion protection, etc., that material will be stockpiled and used in those efforts, based on where the material is located and what the needs are in a given location rather than bringing in materials over longer distances. Surface materials that might be stockpiled include logs, trees, vegetation, boulders, and soils. Surface materials are not equvalent to topsoils or the surface layer.	Final SEIS Appendix M
MIT_22	In Appendix V, the retention of surface materials for BLM-managed lands is only mentioned in Mitigation Measure 8. BLM recommends adding similar language to Appendix H in Sections 3.1.2, 3.1.5, 3.1.6, and 3.1.7. For instance, in Appendix H, Section 3.1.6, it currently states, "The separation of topsoil will apply only to where the ROW [right-of-way] is graded and will be limited to agricultural areas." This should be modified universally throughout the document to say, "The separation of topsoil will apply only to where the ROW is graded and will be limited to agricultural areas and where the ROW crosses federal lands." Appendix H should also be universally modified to say that topsoil will be separated, retained, and replaced on the soil surface (discriminately, not indiscriminately) where the development crosses federal lands, regardless of seasonality and whether the activity is ditch digging, backfilling, or other.	USACE appreciates the comment. AGDC will work with BLM through land access agreements to ensure that the ROW is stabilized, revegetated, and impacts avoided and minimized to the extent practicable. Retention of surface material will be used in stabilizing the ROW, including ROW and stream bed restoration and erosion control. The mitigation measure does not intend to communicate that topsoil will be stripped or segregated, such as in removal of sod blocks, as this is not practicable.	No change
MIT_23	In Appendix V, Mitigation Measure 61 suggests that the Alaska Gasline Development Corporation (AGDC) plans to avoid sensitive periods in lifecycles. While that is appreciated, the following comment bears repeating: if clearing of vegetation occurs on Bureau of Land Management (BLM)-managed lands within the Central Yukon Field Office (CYFO) during the U.S. Fish and Wildlife Service's regional time periods for avoidance, standard BLM permit requirements necessitate a nest search within a few days prior to the clearing.	Comment acknowledged. AGDC intends to adhere to all requirements of permits it secures.	No change
MIT_24	The Bureau of Land Management's (BLM) original comment on dust suppression does not appear to have been addressed. In Appendix V, Part I, BLM recommends including language about mitigating substantial water level changes during the breeding season for waterfowl and shorebirds. This issue is partially addressed in Measure 68.	AGDC intends to secure required water use permits from ADNR for collection and use of water in dust suppression on access roads. The stipulations of these permits will limit water use to ensure protection of fish and wildlife.	No change
MIT_25	In Chapter 4, Section 4.10.3 outlines various Design Features, Best Management Practices, and Project Management Plans. Some of these are repeated in Appendix V, but not all. BLM highly recommends incorporating all of these elements into Appendix V. Additionally in this section under Eagle and Migratory Bird Protection, much of the language is incorporated into Appendix V. However, there are various incorrect statements made regarding seasonality, timing, etc. The Bureau of Land Management recommends that the authors consult with the U.S. Fish and Wildlife Service, Division of Migratory Bird Management, for clarification on language.	The measures listed in Section 4.10.3 been incorproated into Final SEIS Appendix M (Draft SEIS Appendix V). USACE and AGDC have consulted with the USFWS regarding proposed mitigation measures during and following a cooperating agency meeting. Clearing and grubbing would occur in accordance with the recommended times described in the USFWS' Timing Recommendations for Land Disturbance & Vegetation Clearing guidance and would avoid disturbance or destruction of migratory bird nests (USFWS, 2017b).	Section 4.10.3, Final SEIS Appendix M
MIT_26	4.21.2: Document would flow better and be better understood by the reader if mitigations measures/BMPs and project management plans were discussed after the impact rating sections. Presenting the impact ratings before this section would put this section into better context.	Thank you for your suggestion. Section 4.5 explains that the environmental analyses presented in Chapter 4 considers the mitigation measures proposed by AGDC in the impact assessment. For this reason we feel that it is important for the reader to familiarize with the mitigation measures prior to describing the impacts and presenting the impact rating.	No change
MIT_27	4.21.2: Suggest including an example of 'standard public health practices to minimize health impacts to PACs' that might be utilized.	AGDC indicates that examples of standard public health practices that would be utilized inlcude education and outreach. The Final SEIS has been revised accordingly.	4.21.2
MIT_28	A surveillance and monitoring program should be required for health impacts, but it is too broad as presented in the SEIS and Appendix V. Suggested surveillance/monitoring parameters (i.e., which health outcomes, who monitors them, etc.) should be presented with proposed mitigations and BMPs.	AGDC plans to conduct internal audits to evaluate the HSSE program performance (ASAP Environmental Evaluation Document, Section 5.15.1.15). More specific health related requirements and related record keeping would likley fall under the Quality Assurance Plan rather than the Monitoring and Surveillance Plan. The SPCS provides Lessee Annual Reports so an example of what parameters would be included for monitoring can be found in Appendices B and C of this report: http://dog.dnr.alaska.gov/Documents/SPCS/Publications/LesseeAnnualReports/2013/2013AnnualReport-BP-Combined.pdf	No change
MIT_29	4.21.4.1 and 4.21.4.2: It would be much easier for the reader if the applicable mitigations/BMPs listed by number after rating each HEC were summarized. Not all of the listed mitigation numbers can be found in Appendix V, and for those that can be located, it is not always clear how they relate to the HEC	Sections 4.21.4.1 and 4.21.4.2 have been revised to summarize the mitigation measures referenced. All of the mitigation measures listed in Section 4.21.2.2 are listed in Final SEIS Appendix M; however, many of the mitigation measures apply to several resources. Section 4.21.2.2 has been modified so that their location in Appendix M can be more easily identified.	4.21.4.1, 4.21.4.2, 4.21.2.2, Final SEIS Appendix M
MIT_3	How will the Project mitigate for subsistence impacts in our villages?	The proposed mitigation measures for impacts to subsistence species are discussed in the Subsistence section of Appendix K in the Final SEIS. Potential impacts to subsistence are also discussed in Section 4.20 of the SEIS.	No change
MIT_30	The proposed mitigation measures in the Draft SEIS do not appear to be as proactive as those proposed in the 2012 FEIS. The Revegetation Plan should be more robust and provide details to ensure revegetation. In 2012, the applicant had proposed separating the topsoil layer along the alignment and replacing it when possible to promote revegetation. The current Revegetation Plan only proposes separating topsoil in agricultural areas which is a small percentage of the project's footprint.	Comment acknowledged. AGDC has stated that the Draft Revegetation Plan was developed by ANDR Plant Materials Center staff. The Draft Revegetation Plan takes into account AGDC's Project design, in which separation of topsoil on a Project-wide basis is considered impracticable. Following construction and installation of the pipe, impacted lands will be stabilized through revegetation.	No change
MIT_31	The Final SEIS should include a complete compensatory wetland and stream mitigation package, including wetlands impacts characterized as temporary and the indirect impacts modeled from permafrost degradation. This should also include biological, chemical and physical success criteria of the stream channels and wetlands mitigation.	Proposed mitigation measures are included in each resource section of Chapter 4 to indicate which measures may minimize potential effects of the alternatives. A complete list of mitigation measures is also provided as Appendix M to the Final SEIS. The Compensatory Mitigation Plan is subject to change during evaluations leading up to a permit decision and potentially post-authorization. Mitigation strategies will incorporate a range of options including mitigation banks and on-site or off-site permitee responsible mitigation in order to fulfill the provisions of the 404 (b)(1) Guidelines. Where appropriate, district engineers shall account for regional characteristics of aquatic resource types, functions and services by utilizing performance standards and monitoring requirements. Compensatory mitigaiton willl include site specific performance measures and goals aligned to replace target functions lost as a result of a DA authorization. For permitee-responsible mitigation, the special permits within a DA authorization must clearly indicate the party or parties responsible for the implementation, performance, and long-term management of the compensatory mitigation Project.	No change
MIT_32	The proposed mitigation package should include monitoring and adaptive management containing corrective actions if the mitigation efforts are not meeting success criteria. If onsite mitigation is not practicable to fully replace the functions and values of the impacts, alternative site mitigation should be considered.	Since publication of the Draft SEIS, the language used in the proposed mitigation measures has been revised to include additional information regarding when and under what conditions specific measures may not be followed. Adaptive management techniques have been included as part of proposed mitigation measures to accommodate varying field conditions encountered during Project construction. This recommendation is included in the list of regulatory agency recommendations appended to the Final SEIS.	No change
MIT_33	The applicant should mitigate for impacts to drinking water sources.	AGDC stated, "The pipeline will be buried at a shallow depth (generally 6.5 feet to bottom of trench) and no impact to drinking water is anticipated from pipe installation. Drinking water wells for camps and other facilities must be permitted by the Alaska Department of Environmental Conservation and the Alaska Department of Natural Resources. Part of the regulatory process will be evaluation and mitigation of impacts to adjacent users, if necessary. AGDC will comply with the regulatory requirements for well installation."	No change
MIT_34	The Final SEIS should include mitigation measures to reduce air emissions. It is important that mitigation commitments include all controls that were applied in developing the emissions inventory. For example, the emissions calculations to date assumed 50 percent control of fugitive dust. The Final SEIS should list specific fugitive dust control measures, such as speed limits and frequency of watering during non-watering months, etc.	Acknowledged. Additional mitigations for air quality would be provided through the Alaska Department of Environmental Conservation's regulatory/permits process.	No change

Issue Code	Description	Final Response	Section #s of Change
MIT_35	A large number of applicant-proposed design features, mitigation measures, best management practices, and project management plans listed in the Draft SEIS contain the language, "In areas where a lease is required from the SPCS or a federal grant of ROW is required from BLM ... " These measures generally represent a best management approach that we recommend using to the maximum extent possible along the entire pipeline route, while acknowledging the outstanding need to complete coordination with private landowners.	USACE appreciates the comment. AGDC indicates that they would develop specific plans, i.e. a quality management plan, that are applicable regardless of land ownership. The SPCS and BLM would review and approve the plans and AGDC would implement the plan requirements on a system-wide basis.	No change
MIT_36	It is not clear that all appropriate and practicable steps have been taken to ensure that impacts to aquatic resources have been avoided, minimized, and compensated for, consistent with the CWA 404(b)(1) Guidelines.	The USACE is continuing its evaluation of the Project for adherence to the CWA 404(b)(1) Guidelines. Through close coordination with Cooperating Agencies and the Project proponent, proposed measures to avoid, minimize and mitigate potential impacts to aquatic resources have been taken into account in the assessment of potential impacts associated with the proposed alternatives and a complete list of measures is appended to the SEIS. Additional permit stipulations and requirements may also be included in each agency's permit for this Project.	No change
MIT_4	There is no way to mitigate for the loss of land, loss of subsistence, or loss of life.	Comment acknowledged. Mitigation measures proposed by AGDC are described in Final SEIS Appendix M. Detailed analysis of potential impacts to subsistence, land use, and public safety are discussed in sections 4.15, 4.20, and 4.21 of the SEIS.	No change
MIT_5	The oil and gas industry does not provide enough dedication (in the form of money) to the communities impacted by the industry.	Comment acknowledged.	No change
MIT_6	The State of Alaska has provided no indication if/how they would provide assistance to communities or private property owners that are negatively affected once a pipeline is constructed.	USACE appreciates the comment. AGDC indicates "AGDC is managing the ASAP Project in compliance with Legislative direction (AS 31.25, Alaska Gasline Development Corporation and AS 38.34, In-State Natural Gas Pipeline). In an effort to work with local communities, AGDC has facilitated the formation of the Community Advisory Council (CAC). The CAC's mission statement is to bring stakeholders and project personnel together to discuss, collect, and distribute timely, factual, and reliable project information for the purpose of educating Alaskans about the ASAP Project while identifying and minimizing social and environmental impacts in an effort to deliver the greatest benefit to Alaskans. The CAC is composed of senior representatives from communities along the pipeline corridor (see http://asapgas.agdc.us/cac.html for a list of the communities and representatives). AGDC meets with the CAC to inform the representatives of current project status and to discuss community concerns related to the ASAP Project. Although the details of community assistance are not yet finalized, the matter is a topic of discussion for the AGDC and the CAC."	No change
MIT_7	If the proposed pipe storage yard 1 mile down the Willow Creek Parkway is constructed, it will need to be mitigated because it interferes with a multi-use trail.	Comment acknowledged. The trail is on the eastern side of the pipe storage yard; this pipe storage yard does not bisect the trail. The pipe storage yard has been moved 150' to the west of the north-south feeder to Lucky Shot Trail from Willow Creek Parkway. This will provide a 150' vegetative buffer from the eastern edge of the pipe storage yard and the feeder trail. The access road for the pipe storage yard will not move.	Appendix M, Part II: Rationale ASAP Pipeline Route Refinement
MIT_8	Thus, the Borough will support this project if it is able to tax the infrastructure, or receive a payment in lieu of taxes, to help mitigate the impacts of the project on affected communities and to secure revenue to fund its services and operations.	Comment acknowledged. AGDC will continue to work with the legislature and local municipalities/communities to mitigate Project related impacts.	No change
MIT_9	In the Denali Citizens Councils' minds, these impacts (to scenic resources and socio-economic landscapes) would not be mitigated by any promise of an increased local gas supply, since the local market is so small that costs are likely to be prohibitive.	Comment acknowledged. AGDC's purpose and need of the ASAP Project is to provide Alaskans with a stable, affordable, long-term supply of natural gas for heating and powering their homes and businesses. The NEPA process is intended to identify, communicate, and evaluate environmental impacts associated with the Project and identify the preferred alternative with appropriate impact mitigation. Providing local gas supply to small communities, such as in the Denali Borough, has not been proposed as mitigation of environmental impact associated with the Project.	No change
NEPA_1	Ahtna presumes that the U.S. Army Corps of Engineers (USACE) is undertaking this Draft SEIS effort with the recognition that the specific, unique statutory provisions enacted by Congress under the Alaska Native Claims Settlement Act, the Alaska National Interest Lands Conservation Act, and Executive Order 13175 will not apply to gas development activities. Ahtna urges the USACE to clarify that this is not the case in any proposed rulemaking and in the associated EIS process, and to clearly address the unique circumstances applicable to nonfederal activities in Alaska in defining the scope of the EIS and as otherwise appropriate in the EIS process.	Section 1.10 of the SEIS describes the requirement to consult with Native American Tribal Governments (EO 13175) and explains that USACE invited 22 potentially affected, federal recognized tribes to consult on the SEIS. Specific government-to-government activities are also described in Section 1.10. USACE also recognizes that compliance with ANCSA and ANILCA are required as indicated in Table 1.10-1 of the SEIS.	No change
NEPA_10	The project area, with respect to ESA-listed and candidate species as well as designated critical habitat, is not limited to the Port of Seward and Prudhoe Bay; it also includes all routes of vessel transit through the Gulf of Alaska and the Bering, Chukchi, and Beaufort Seas.	Following U.S. Environmental Protection Agency (EPA) Guidance (1999), "To avoid extending data and analytical requirements beyond those relevant to decision making, a practical delineation of the spatial and temporal scales" was determined. Project activities do include shipping modules by barge through portions of the Gulf of Alaska, Bearing, Chukchi and Beaufort seas as described in Chapter 2. Barges would use established shipping lanes which is also described in Chapter 4. EPA guidance also states "The spatial scope should take into consideration the geographic areas that help sustain the resource (i.e., ecoregion, watershed or species range), with an emphasis on where the proposed Project may overlap with those boundaries." Following this guidance, the spatial scope of the Project Area is focused on where proposed activities result in meaningful impacts to resources. For this reason, the spatial extent of in-water activities (i.e., vessel traffic) includes the area around the Port of Seward as well as the Beaufort Sea west of Point Barrow where barges would bring modules to shore at West Dock (see Section 4.26.2 of the Draft SEIS).	No change
NEPA_11	Although Valdez supports the general purpose of the ASAP Project, which is to "provide Alaskans with a stable, affordable, long-term supply of natural gas," the presently proposed Project poses unnecessary environmental impacts, fails to satisfy the Project's stated purpose and need, fails to provide sufficient volumes of gas to meet demand in the Fairbanks area and fails to provide access to gas for Richardson Highway communities including Valdez. The Draft SEIS does not analyze any alternatives that remedy these defects with the proposed Project. Rather, the U.S. Army Corps of Engineers (USACE) has elected to only provide analysis of the "Denali National Park and Preserve Route Variation," which is a 7.2-mile route variation that traverses Denali National Park, and the "No Action alternative." The extremely limited scope of the alternative analysis contained in the Draft SEIS is wholly inadequate and renders the DSEIS deficient under the National Environmental Policy Act (NEPA) and the Clean Water Act (CWA). USACE is required to analyze reasonable and practicable alternatives to the proposed Project. In light of this fact and the numerous comparative advantages of the Valdez AKLNG Alternative, USACE must thoroughly analyze the Valdez AKLNG Alternative in order to comply with its mandate under NEPA and CWA. USACE has failed to comply with NEPA and CWA by neglecting the evaluation of alternatives to the ASAP Project that maximize project benefits while minimizing environmental impacts. In fact the DSEIS only provides substantive analysis of one alternative project design, which would re-route approximately seven miles of the pipeline through Denali National Park. This limited alternative analysis necessarily deprives the public and USACE of the ability to make a reasoned decision between alternatives. As a reasonable and practicable alternative with substantial comparative advantages over the proposed Project, the Valdez AKLNG Alternative must be thoroughly analyzed in the SEIS.	Section 2.6 of the Final SEIS describes how the alternatives described in the Final SEIS were selected for evaluation and how the process complies with CEQ requirements for screening and prioritizing potential alternatives in the SEIS process. As described in Section 2.1, any alternative that failed to meet the proposed purpose and need (Section 1.2) or federal environmental statutes and regulations, was carried forward for further consideration in the SEIS. Both alternative 1 and 2 would satisfy the Project purpose and need. Please see the response to comment ALT_3 regarding the Fairbanks lateral.	No change

Issue Code	Description	Final Response	Section #s of Change
NEPA_12	USACE has failed to comply with CWA and NEPA by neglecting to evaluate alternatives to the Minto Flats Route. In doing so, USACE has eliminated any possibility that the ASAP Project will avoid significant impacts on subsistence, wildlife, fish, wetlands, and other resources within the Minto Flats Refuge. USACE's alternative analysis fails to thoroughly consider any alternatives that avoid construction of 53 miles of pipeline within the Minto Flats Refuge conservation area ("Minto Flats Route"). The environmentally sensitive nature of the Minto Flats Refuge, combined with the scale of environmental damage attributable to the Minto Flats Route, renders the Minto Flats Route one of the most environmentally damaging aspects of the ASAP Project. Under the present circumstances, USACE must thoroughly analyze practicable route alternatives that avoid the Minto Flats Refuge in order to comply with the requirements of the NEPA and CWA. A route variation avoiding the Minto Flats Refuge is required for USACE to comply with its obligation to permit only the least environmentally damaging "practicable alternative."	The primary reason to modify the ASAP alignment in the Minto Flats area was to reduce construction and operation activities in wetlands and reduce the associated impact to wetlands. From version 6.1 milepost (MP) 413 to 435 the alignment shifted significantly to the east to access uplands. From MP 455 to 465 the alignment did move to the west although it was not a large shift. Overall, the biggest change in the Minto Flats area was an alignment shift to the east to reduce wetland impacts. The potential impacts to Minto Flats wetlands are discussed in Section 4.9.4 of the SEIS.	No change
NEPA_13	[illegible] not a new concept. The history of proposed gas pipeline projects designed to deliver North Slope natural gas to market goes back to the late 1970s and early 1980s. Two major projects, the Alaska Natural Gas Transportation System and the Trans Alaska Gas System completed the NEPA process, and both were designed as belowground natural gas pipelines. There were several additional attempts to commercialize North Slope natural gas that did not complete the NEPA process but which were consistent in that they were designed as belowground pipelines. The Alaska Gasline Development Corporation has provided a design consistent with previously approved designs evaluated under the NEPA process. Belowground natural gas pipelines are not a new concept for areas underlain by permafrost. There are several buried cold-temperature natural gas pipelines operating in the Arctic today, including several miles of the Nuiqsut gasline in Alaska, local gas delivery infrastructure pipeline systems in Nuiqsut and Barrow, Alaska, the IKHIL gasline in Inuvik, Canada, and multiple larger diameter natural gas pipelines in Russia. Russia's state owned gas company, Gazprom, recently began operating a second buried 786 mile-long buried gas pipeline, Bovanenkovo-Ukhta-2, that was constructed parallel to an existing gas pipeline. The pipelines stretch from the frozen Bovanenkovskoye gas field of the Yamal Peninsula in the Russian Arctic the Russian city of Ukhta, with the new pipeline doubling the capacity of gas flowing from Russia to Europe (Bennet 2017). Two additional newly constructed buried gas pipelines, known as Zapolyarye-Purpe and Kuyumba-Taishet, also began operating in arctic Russia in early 2017 (Bennet 2017). In addition to the operating cold temperature natural gas pipelines discussed above, there are several buried oil pipelines in arctic and subarctic regions that have operated for years at warmer temperatures, with crews working to implement mitigation to impacts and ensuring stability of the right-of-way (ROW). Several of these buried arctic or subarctic oil pipelines exist	The ASAP Project was assessed based on the details proposed in the Project documents. The comment cites at least 11 other pipelines or proposed versions of pipelines. Each was proposed differently, using different construction techniques and in different areas. For those built, each had different environmental impacts. If AGDC is aware of a pipeline that has been constructed using similar techniques to those proposed, in similar conditions (continuous and discontinuous permafrost), operated in a similar manner, and that had acceptable environmental impacts, such data would be incorporated into the analysis. Based on the Final EIS (March 1976), NEPA analysis of the proposed Alaska Natural Gas Transportation System raised the same substantive issues as have been laid out in the ASAP SEIS. The IKHIL gas line in Inuvik, Canada cited in the comment serves as an example of the types of issues expected. Note that it is much smaller than the ASAP pipeline, approximately 5.5 inches in diameter, so impacts are expected to be proportionally smaller. As constructed, a large mound was left over the pipeline. Upon summer thaw, the mound collapsed into the trench. Due to issues, Inuvik Gas Pipeline Lessons Learned were published https://apps.neb-one.gc.ca/REGDOCS/File/Download/408782 . Figure 48 of the lessons learned document shows what would be expected for portions of the ASAP pipeline as currently proposed: thaw of the backfill material and a significant depression along the pipeline length. IKHIL used a more robust restoration method than has been proposed for ASAP; restoration was planned following the first summer thaw, requiring a second access period along the entire pipeline corridor. The comment also references the Norman Wells pipeline. As the SEIS documents, this pipeline experienced permafrost thaw and frost heave at various points along its length (Williams, 1986). Parts of the (12 inch diameter) pipeline sunk as much as 1 meter. As recently as 2016, portions of the pipeline had to be shut down to investigate and address slope instability. Concerning TAPS, it was designed and constructed with a flexible approach driven by site conditions that vary along its length. The pipeline was built on Vamps where needed, buried where appropriate, and chilled in some areas. If AGDC were to follow a similar flexible approach with a design driven by local conditions (and accounting for the difference in fluid being carried) similar environmental impacts would be expected.	4.6.4
NEPA_14	Why is it assumed an EIS is required for renewal of the proposed Project ROW? The decision will be made by the appropriate jurisdictional agency at the time of renewal.	Section 4.1 of the SEIS does not state an EIS would be required. Rather, the language in the Draft SEIS states "Analysis beyond 2036 is considered speculative given the dynamic nature of the environment. In addition, future Project-related activities, such as permit renewals or decommissioning of the pipeline, would warrant a new evaluation under the National Environmental Policy Act (NEPA), providing an opportunity for agencies and the public to review and evaluate the proposed activities."	No change
NEPA_2	How does the SEIS process work, what is the Project history, and why are there alternatives?	Section 1.1 of the SEIS provides a description of the Project background while Sections 1.2 and 1.3 provide information on the purpose of the Project and the SEIS process. Finally, Section 1.13 of the Draft SEIS summarized next steps in the NEPA process at the time the Draft document was published on June 30, 2017.	No change
NEPA_3	The public meeting presentation was well done. It emphasized the importance of the human environment not only the natural environment.	Comment acknowledged.	No change
NEPA_4	Commenter requested a question and answer session during the meeting.	Comment acknowledged. Representatives from USACE and the Project proponent (AGDC) were available for questions during each of the public meetings on the Draft SEIS.	No change
NEPA_5	The State of Alaska has no experience being in the pipe line building business, has incomplete data on this proposal and based on other failures of big project ideas, has no business building this or any other pipeline. The facilitators, engineers and other staff that have presented the information to the public up to this point, primarily in public meetings, have been unable to answer critical design questions regarding the construction, operation and decommissioning of this pipe line proposal. There have never been follow up meetings or documents to specific questions and concerns brought up by members of the public including our own questions and this SEIS does little to provide answers too.	Comment acknowledged. The ASAP Project is being pursued at the direction of the Alaska Legislature. AGDC has a Board of Directors, appointed by the Governor, and is comprised of Alaskans that oversee the ASAP Project to ensure the mandates of the Legislature are being fulfilled. The ASAP Project has been referred to as "Plan B" because, from an economic perspective, the larger Alaska LNG Project would deliver gas at a lower cost per unit due to the higher throughput volume. The Alaska LNG Project is preferred by the State, but If it is unable to move forward, ASAP provides a viable method to commercialize North Slope natural gas through in-state delivery. The costs to existing natural gas users in the Fairbanks area would be less than the current LNG truck delivered price and would encourage additional distribution in the area. The costs to existing Southcentral users may be slightly higher than current costs, however, the ASAP pipeline would ensure the long-term reliability of supply that Cook Inlet natural gas cannot provide. Additionally, the ASAP Project is a mega-Project in size and would provide a significant boost to the State economy as a whole and many of the communities along the corridor in particular. The ASAP Project is solely funded by the State of Alaska. The Alaska Legislature controls the AGDC budget through the appropriation process and will make decisions concerning the Project in the best interest of the State.	No change
NEPA_6	The pipeline process should work more closely with the community of Trapper Creek in identifying the pipeline corridor.	USACE appreciates your comment. As described in Section 1.11 of the SEIS, a public scoping meeting was held in Trapper Creek on September 15, 2014 to provide the community an opportunity to review the proposed Project route and view Project-specific aerial maps of the alignment. Route maps are also available on the Project website (www.asapeis.com). Any specific comments regarding the alignment have been provided to the Project proponent for their consideration in developing the alignment presented in the Final SEIS.	No change
NEPA_7	Nuiqsut would like to get more feedback as the Project progresses rather than waiting until the next public meeting.	The Project website (www.asapeis.com) has been continually updated with Project information is available throughout the SEIS process. The website provides detailed information on the Project as well as contact information for USACE for specific questions outside of the public comment period or meetings.	No change
NEPA_8	There should be more public meetings before the Project is constructed. The community of Nuiqsut has stated our concerns in many meetings but our voices are not heard because of the EIS.	USACE appreciates your comment. Following NEPA guidelines, potentially affected communities were engaged during the scoping period August - October 2014 as well as during the public meetings held in 2017. In addition, as described in Section 1.10, potentially affected, federally recognized tribal governments were also consulted throughout the SEIS process.	No change
NEPA_9	To the extent that the latest draft of the draft violates this principle as to including the Denali Park alternative with two wildly disparate alternatives. By bundling these various independent components together in its alternative analysis and comparing the operative {alternatives' on the basis of the aggregate impacts, rather than comparing the effects of the various independent components, the comparison is misleading, and would it would violate NEPA.	Alternative 2 includes different options for specific aspects of the proposed action than those presented in Alternative 1. The elements of Alternative 2 are not disparate. Rather, the various aspects of Alternative 2 provide options "that are practical or feasible from the technical and economic standpoint and using common sense constitute[s] a reasonable alternative", following CEQ regulations (40 CFR 1502.14).	No change
NOI_1	The Yukon Aerial Crossing would probably require piling to provide foundation support for the towers, main cable anchors and wind cable anchors. Driving of pile would produce more noise than the HDD drilling equipment, thus probably making the noise level higher than a moderate impact.	The SEIS has been revised to reflect the use of piles for the bridge foundation systems (Alternative 2), which produce higher noise than the HDD equipment (Alternative 1). The impact rating for the Yukon Aerial Crossing in Alternative 2 has also been revised.	4.23.5.1.3 and Table 4.23-7

Issue Code	Description	Final Response	Section #s of Change
NOI_2	Another component of Alternative 2 that warrants reconsideration is the noise impact analysis of the Yukon River crossing. The impact of Alternative 2 versus Alternative 1 with respect to noise seems incorrect. It appears an assumption was made that the duration of construction for HDD and the suspension bridge is the same. That assumption is incorrect; the suspension bridge will take significantly more time to construct than HDD (perhaps multiple years). There is also the issue of the hundreds of piles which would be required for the bridge foundation systems (two main cable anchors and four wind cable anchors, in addition to the foundations for the two cable towers, assuming the Yukon River suspension bridge would be similar to the TAPS crossing of the Tanana River). The construction of a suspension bridge will take considerably longer than HDD and will have a much greater impact to noise receptors because of the number of piles required for the foundations.	The SEIS has been revised to reflect the longer duration for the suspension bridge construction and increased noise magnitudes from piling. The impact rating for the Yukon Aerial Crossing in Alternative 2 has also been revised.	4.23.5.1.3 and Table 4.23-7
NOI_3	Page: 4-660: The Dalton Highway does not experience rail traffic. Suggest rewording sentence.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.21.4.1.2 and 4.23.5.2.3
NOI_4	In Table 4.23-7, remove the receptor type and receptor sensitivity columns as they are not related to the comparison of alternatives. The information can be provided in the text discussion of the impact summary.	The receptor type (residential vs recreational) shows the difference in impact ratings for the two receptor types. Similarly the sensitivity of the receptor types (low, medium or high) is also important as it provides a rationale for changes in impact ratings for the two receptor types (i.e. separate rows as the ratings sometimes vary by receptor type). No change made.	No change
NOI_5	Figure 4.23-1, like the other context figures, is an inaccurate generalization of the whole project.	The context figures were developed with input from AGDC and are intended to summarize the Project's overall impacts at a larger scale at a quick glance. The context figures are only a component of the complete description of potential impacts provided throughout Chapter 4. The intent of the context figures is clearly stated and references to more detailed discussion of potential impacts are included where context figures are referenced.	No change
NOI_6	Yukon river HDD is listed as moderate for noise impacts, which is overstated.	USACE appreciates the suggestion to modify the referenced impact rating; however, justification or references to support the modification have not been provided, so no changes have been made to the SEIS related to this comment.	No change
NOI_7	Tanana river HDD is listed as moderate for noise impacts, which is overstated.	USACE appreciates the suggestion to modify the referenced impact rating; however, justification or references to support the modification have not been provided, so no changes have been made to the SEIS related to this comment.	No change
NOI_8	Kashwitna river HDD is listed as moderate for noise impacts, which is overstated.	USACE appreciates the suggestion to modify the referenced impact rating; however, justification or references to support the modification have not been provided, so no changes have been made to the SEIS related to this comment.	No change
NOI_9	This statement is untrue "Under Alternative 2, the elimination of the Yukon River HDD and use of an aerial bridge crossing would reduce noise impacts in the area from moderate to minor". Many piles will be required for the foundation systems for the suspension bridge. There would probably be more noise with Alternate 2 than with Alternate 1.	That statement in the SEIS has been revised and the impact rating for residential receptors near the Yukon Aerial Crossing in Alternative 2 has been changed from minor to major.	4.23.5.1.3 and Table 4.23-7
NOTE_1	Commenter requests a public meeting to be held in Willow.	USACE appreciates the suggestion for a public meeting in Willow. An additional public meeting was held at the Willow Community Center on August 18, 2017 to accommodate the request. A flier was provided to the community center representatives as well as the local post office to be distributed around the community.	Chapter 1
PER_1	Alyeska requests that the ASAP Right-of-Way Grant to be issued by U.S. BLM include a provision requiring ASAP to utilize the established processes for determining compatibility with TAPS operations. Alyeska will review each segment of ASAP or any related facility proposed to be built in the vicinity of TAPS ("Infringing Facility") and determine the conditions under which the Infringing Facility would be compatible with the rights held by the TAPS Owners. Further note that BLM has developed TAPS compatibility and coordination language for the rights-of-way of two other, former Alaska gas transmission pipeline projects known as ANGTS and TAGS.	AGDC intends to comply with PHMSA pipeline locaiton requirements including proximity to other pipelines, pipeline crossings and highway crossings. The ASAP, TAPS and Dalton Highway alignments are all within a utility corridor with several pinch points that minimize alignment options. Landowners have commented that use of previously disturbed areas is preferred to consolidate infrastructure into a smaller footprint. The ASAP alignment considers all of these factors, including the requirement to minimize wetland impacts. For most of the length that ASAP parallels TAPS, the land is managed by either the State of Alaska or BLM. The TAPS owners have a right-of-way agreement with both the State and Federal governments and although the agreements are not exclusive, ADNR (State) and BLM (Federal) must consider or have a mechanism to consider existing authorized uses prior to issuing a right-of-way for ASAP. This would include existing water sources used by Alyeska. The air shed is regulated by the Alaska Department of Environmental Conservation and prior to construction, ASAP must undergo a rigorous permitting process to ensure air quality standards can be maintained. This issue may be considered under an existing MOA between AGDC and Alyeska Pipeline Company.	No change
PER_2	The National Park Service wouldn't allow the pipeline through the National Park.	Comment acknowledged. Agency participation is discussed in Chapter 1 and the National Parks Service's roles and responsibilities included in Section 1.9.2.3 of that chapter.	No change
PER_3	Crossings of mapped Special Flood Hazard Areas (SFHA's) including floodways require permitting through the Mat-Su Borough for floodplain development in accordance with MSB 17.29. Additionally, Hydrology and Hydraulic analysis are required to show the impacts to the floodplain. In some areas, a Conditional Letter of Map Revision (CLOMR) and Letter of Map Revision (LOMR) may be required at permitting. Please make sure you are using the latest data for your planning. For example, any development that includes fill, dredging, grading or excavation in the Special Flood Hazard Area or in the Regulatory Floodway requires a Floodplain Permit.	Comment acknowledged. AGDC is aware of the requirement and will work with the Borough to obtain a Floodplain permit, if required.	No change
PER_4	Pursuant to Section 401 of the Clean Water Act, a federal agency cannot issue a permit or license for an activity that may result in a discharge to waters of the U.S., until the state where the discharge originates has granted or waived a 401 Certification. This review and certification process is generally initiated as a part of the federal permitting process and results in conditions placed on the federal permit to satisfy Water Quality Standards. The Alaska Department of Environmental Conservation, Division of Water is the issuing authority.	The USACE appreciates the comment. It is assumed that the author is referencing Table 3.3-1, Federal, State, and Local Water Regulations. The discussion of Section 401 Certification has been updated to reflect ADEC's comment.	Table 3.3-1
PER_5	The SEIS does not provide a map comparing the project to FNSB zoning maps. It appears the majority of the land this pipeline will cross is zoned GU-1, and other zoning districts only as it nears the Fairbanks area. Public utility uses are conditional uses in many zoning districts, except where they are designated permitted uses (such as the SF zone, FNSBC 18.44.020(B)(8)). Larger substations or areas where natural gas is being stored in bulk may also require a conditional use, particularly if it involves the storage of hazardous substances (FNSBC 18.96.120). This project would involve installation of utility lines that would likely not require a conditional use, however; larger substations and the storage of hazardous materials may require conditional uses in certain zoning districts.	USACE appreciates the comment. The comment has been shared with AGDC and AGDC appreciates the helpful information from the FNSB Community Planning Office regarding the possibility that conditional uses may be required for certain ASAP Project infrastructure. AGDC also understands that this may need further review. AGDC is ready to work with the FNSB Community Planning Office to secure any and all necessary FNSB authorizations at the appropriate time.	No change
PER_6	The proposed pipeline does not require strain-based design, thus a PHMSA Special Permit is not required. If the maximum strain is mitigated to below 0.5 percent (through utilizing heavier wall thickness pipe, or other means to prevent movement of the pipe) a PHMSA Special Permit is no longer required. The Alaska Gasline Development Corporation has elected to utilize this methodology.	Based on further geotechnical analysis and a decision by AGDC to use thicker wall pipe, AGDC has determined that there is no need for a SBD Special Permit. In a letter from PHMSA, dated 16 January, 2018, PHMSA is no longer considering the request for a special permit understanding that the pipeline would comply with Part 192, which requires the pipeline be able to "maintain the structural integrity of the pipeline under temperature and other environmental conditions that may be anticipated: and "withstand anticipated external pressures and loads that will be imposed on the pipe after installation" to include strains imposed by permafrost and discontinuous permafrost soils.	Executive Summary, Sections 2.2.5.3, 4.25.9.3, 4.25.12, 4.6.4.2, 4.7.4.2.5, and 4.25.2
PER_7	The University of Alaska and the State Mental Health Trust may issue land use permits for easements.	Table 1.10-1 has been revised to include legal authority, authorization, and regulatory intent for University of Alaska and the State Mental Health Trust land use permits.	Table 1.10-1

Issue Code	Description	Final Response	Section #s of Change
PER_8	The text should be changed to reflect that the General Permit was issued on June 14, 2017 and becomes effective January 1, 2018: "ADEC Division of Water, Wastewater Discharge Authorization Program has developed a General Permit (GP) AKG320000 - Statewide Pipelines GP, which authorizes which authorizes discharges to freshwaters and certain land disposals associated with the gas pipeline construction, operations, and maintenance. The GP combines several discharge authorizations to eliminate the need to apply for several GP authorizations or individual permits. The Statewide Pipeline GP does not apply to areas of Alaska where EPA maintains federal jurisdiction for Discharges to Waters of the US (e.g. Denali National Park, Metlakatla, Facilities with 301 (h) waivers, etc.). However, under Section 401 of the CWA, a federal agency cannot issue a permit or license for an activity that may result in a discharge to waters of the U.S. until the state where the discharge originates has granted or waived 401 certification. The central feature of Clean Water Act Section 401 is the state's ability to grant, grant with conditions, deny, or waive certification."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Table 3.3-1
PER_9	All temporary and permanent crossings of fish bearing streams (including access roads, pipeline crossings, material sites, or any other project component) would require a Title 16 permit if anadromous fish are present or if passage of resident fish may be impacted. The Alaska Department of Fish and Game requires a Title 16 permit for water withdrawals in all fish-bearing waterways regardless of season or habitat type.	Comment acknowledged. AGDC understands that a Alaska Department of Fish and Game Fish Habitat Permit Application will be required for all proposed activities in fish bearing streams.	No change
PUR_1	Why is natural gas being sought out as a source of energy in Alaska as opposed to other forms of energy?	USACE appreciates the question. The Purpose and Need for the proposed Project is discussed in Chapter 1 of the SEIS.	No change
PUR_2	The Cook Inlet region has ample natural gas deposits that are much better suited for development with less impact on the state as a whole and the environment in general.	The Purpose and Need of the ASAP Project is to provide Alaskans with a stable, affordable, long-term supply of natural gas for heating and powering their homes and businesses. Alaska's North Slope has more than 30 trillion cubic feet of conventional natural gas reserves. AGDC's proposed action meets the goal of providing a stable, long-term supply of clean, affordable energy to both developed and developing markets within Alaska, including Southcentral, Fairbanks, and the Railbelt. While the Cook Inlet Basin has historically been an important source of natural gas to Southcentral Alaska, Cook Inlet production has been on decline and is not generally considered stable as a long-term source of energy security for the State.	No change
PUR_3	The concern regarding gas shortages in southcentral Alaska has been reduced by gas discoveries in Cook Inlet, making the expense and impacts of building the entire ASAP pipeline unnecessary and unwarranted.	The Purpose and Need of the ASAP Project is to provide Alaskans with a stable, affordable, long-term supply of natural gas for heating and powering their homes and businesses. Alaska's North Slope has more than 30 trillion cubic feet of conventional natural gas reserves. AGDC's proposed action meets the goal of providing a stable, long-term supply of clean, affordable energy to both developed and developing markets within Alaska, including Southcentral, Fairbanks, and the Railbelt. While the Cook Inlet Basin has historically been an important source of natural gas to Southcentral Alaska, Cook Inlet production has been on decline and is not generally considered stable as a long-term source of energy security for the State.	No change
PUR_4	The capacity of the Fairbanks Lateral is not capable of meeting the estimated future demand of the Fairbanks area which is 41-50 MMscfd for consumer use and 15-17 MMscfd for Interior power generation. Thus, the proposed Project results in a supply shortfall to the Fairbanks area and Interior power generation facilities up to 37 MMscfd. This supply shortfall renders the proposed Project in discord with the underlying purpose and need of the Project and fails to satisfy the Alaska Gasline Development Corporation's duty to maximize the benefit of the Project for Alaskans.	As noted in Chapter 1 (Page 1-4), future natural gas demand is Projected as 41 to 50 MMscfd for the Fairbanks area, and 15 to 17 MMscfd for Interior power generation. The Fairbanks Lateral is a 12-inch, 30-mile-long, 1,480-psig, lateral line connecting the Mainline to Fairbanks and is expected to support a throughput in excess of 67 MMscfd. The notation indicated in Chapter 2 (Page 2-21) that "The Fairbanks Lateral would transport up to 30 MMscfd" is intended to indicate the initial flow rate based on Projected demand at the time of ASAP startup, not a throughput limitation of the Fairbanks Lateral. Fairbanks Lateral throughput is expected to gradually increase over time to accommodate the future natural gas demand noted in Chapter 1 (Page 1-4).	No change
REC_1	Comment opposed to the proposed Facility Pad location at UAF at the corner of Miller Hill Rd and Yankovich Rd. This is an area of tremendous recreational value to thousands of Interior Alaskans and there are many other areas much better suited for this kind of purpose.	USACE appreciates the comment. AGDC has discussed this issue with UA Lands staff. The Fairbanks Operations and Maintenance Base that was originally proposed to be located on University of Alaska Fairbanks property at the corner of Yankovich Road and Miller Hill Road. The new proposed location is a University of Alaska property which is available for development at the corner of Geist Road and the George Parks Highway. This is a change only in the project footprint. The alignment for the pipeline has not been impacted by this change.	Section 2.2.9, Appendix M Part II: Rationale ASAP Pipeline Route Refinement
REC_10	A mitigation measure states "Where requested by the landowner, restrict public access to the ROW for hunting, trapping, shooting, camping, and other recreation activities in areas where a lease is required from the SPCS [State Pipeline Coordinator's Section]." This statement should be rephrased and clarify that physical barriers would be placed along the ROW where requested by the landowner.	Comment acknowledged. This phrase has been revised to state "Where requested by the landowner, restrict public access to the ROW for hunting, trapping, shooting, camping, and other recreational activities. " The State right-of-way lease issued to AGDC describes the stipulation concerning public access as well as Project employees hunting and fishing activities while working on the Project. AGDC has agreed to restrict Project employees from hunting, fishing, trapping and camping within the leasehold. The proposed mitigation provided the landowner the option of restricting public access for specific land management and fish and wildlife management needs. AGDC is hopeful that the BLM grant of right-of-way will contain similar stipulations.	Throughout Chapter 4, Appendix M
REC_11	In Section 4.16.4.1.1, the mitigation techniques should specify the time of day that materials are transported along the Dalton Corridor to minimize impacts to tourism (i.e. aurora tours) in the area.	Comment acknowledged. AGDC does not intend to restrict travel on the Dalton Highway. The Dalton Highway is a public highway that is regulated by the SOA DOT&PF, not AGDC.	No change
REC_12	Dust suppression practices, as identified in mitigation measure 36, would not only affect the health and safety of workers and travelers, but could have a significant impact on visitor experience quality.	USACE appreciates the comment. As stated in the SEIS, only approved dust suppression techniques would be used during the Project	No change
REC_13	The SEIS should include discussion on the effect of workers on the availability of campground facilities and potential displacement of lodging opportunities for tourists.	USACE appreciates the comment. The Project intends to construct construction camps at periodic distances along the alignment. Causal use of commercial facilities may occur (agency monitors, Project visitors, etc.), however, the intent is to house construction staff in the Project camps.	No change
REC_2	Troublesome Creek is a popular trailhead/rest stop, used by hikers and fishermen. The pipeline, therefore, should cross the Chulitna River upstream of its confluence with Troublesome Creek.	USACE appreciates the comment. AGDC has worked with the Department of Natural Resources, Division of Parks and Recreation to identify a natural gas pipeline corridor through State Parks and Recreational areas, including Denali State Park. The proposed Project minimizes the footprint to the extent possible and crosses through Denali State Park for a distance of approximately 38 pipeline miles. The State Legislature approved this footprint and it is codified in AS 41.21 Park and Recreational Facilities and AS 38.35 the Right-of-Way Leasing Act. The referenced crossing is located within this legislatively approved right-of-way. The Project intends to cross the Chulitna River as proposed.	No change
REC_3	North of Trapper Creek, in Denali State Park, the pipeline corridor should also be designed to be a winter trail if completed, as this is in fact what It will become. The entire pipeline corridor, located on public lands should be designed to accommodate winter travel by recreational trail users where possible.	USACE appreciates the comment. AGDC will comply with ROW Lease stipulations and the wishes of the individual land owners.	No change
REC_4	The man camp proposed at the Lucky Shot Connector Trail (near Willow) has been changed to a pipe storage yard in the current Draft SEIS. This pipe storage yard will still negatively impact recreation at this trail. The Junior Iditarod and lots of local races use this trail.	Comment acknowledged. The PSY in question does not actually bisect the trail, but the trail is on the eastern side of the PSY. The PSY will be moved 150' to the west of the north-south feeder to Lucky Shot Trail from Willow Creek Parkway. This will provide a 150' vegetative buffer from the eastern edge of the PSY and the feeder trail. The access road for the PSY will not move.	Appendix M, Part II: Rationale ASAP Pipeline Route Refinement
REC_5	Many Alaskans would disagree with the broad categorization that Wildland recreation is typically resource oriented and based on fishing and hunting. Hiking, camping, backcountry skiing, snow machining, ATV use, dog mushing, mountain biking, mountaineering, boating including canoeing, rafting and kayaking are also common wildland recreational activities enjoyed by many Alaskans. 3.12.4.3 correctly identifies many of these activities. Recommend editing 3.12.4.1 consistent with 3.12.4.3.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.12.4.1
REC_6	The impact rating for Alternative 2 operations and maintenance provided in Table 4.16.3 should be moderate at a minimum due to the impact of the above-ground supports and pipeline from MP 0-62 that present access restrictions and impediments to recreational users.	USACE appreciates the comment. Impacts to recreation from Alternative 2 were determined based on the criteria outlined in Table 4.16-1. A minor impact was determined due to the limited portion of the pipeline that would be present above-ground, the relative remoteness of this portion of the alternative, and the likelihood that recreation experience would be decreased or limited as a result of the Alternative. Additionally, increased accesses as a result of more infrastructure and added human presence ultimately may lead to increased recreational opportunity.	No change

Issue Code	Description	Final Response	Section #s of Change
REC_7	In regards to increased competition in locations with limited recreation facilities/resources, workers would have an imbalanced work to time off ratio, meaning they spend more weeks working than have time off. This would limits the impact to other recreational users.	Comment acknowledged.	No change
REC_8	Depending upon the type of recreational user, management plans can have major negative impacts to recreation if they restrict or eliminate access to certain types of recreational uses (such as snowmobiles having restricted or denied access to lands because they are motorized).	Comment acknowledged.	No change
REC_9	The map image on the document cover portrays the boundaries of many refuges and state and national parks. Given the proximity of the proposed project to the congressionally established White Mountains National Recreation Area, BLM recommends that it be also portrayed in the map.	The document cover map has been updated to include the White Mountains National Recreation Area.	Cover map
RFI_1	Provide detailed maps around specific affected communities.	At the July 25, 2017 USACE public meeting in Evansville maps of the Project ROW where left with Naomi Costello and Noel Swanson. If additional maps are requested please contact lparker@agdc.us.	No change
RFI_2	Provide details about how the existing pipeline corridor will be changed/widened.	USACE appreciates the comment. The reference to the "corridor" for the northern segment of the pipeline (north of Livengood) is with respect to the area already designated as a utility corridor by the Bureau of Land Management (BLM). This does not imply that the ASAP Project is immediately adjacent to TAPS. For a number of reasons including access, topography, safety, etc., ASAP has not been placed adjacent to TAPS, but ASAP is within the general corridor of TAPS, the Dalton Highway, and other existing utilities. ASAP diverges from the BLM corridor south of Livengood, and does not reconnect with the highway transportation corridor until just north of Nenana, AK. The typical construction width of ASAP is 120-feet, plus any additional space required for construction. The permanent right of way (ROW) will be 53-feet. This 53-foot ROW will be kept clear of trees and high shrubs as is required by 49 CFR Part 192 (much like the area underneath a power transmission line is kept clear).	No change
RFI_3	The maps/figures and information in the appendices of the Application for Permit submitted to the US Army Corps of Engineers are not included in the pdf document.	The referenced information is included in Appendix D.	No change
SPILL_1	Comments expressing general concern about pipeline leaks/spills, spill response time, etc.	USACE appreciates the comment. The gas composition for the ASAP pipeline is considered lean gas, as described in Section 2.2.2 of the SEIS. There are no appreciable liquids at any point in the pipeline. As such, it will not have large volumes of liquids as described by the commenter.	No change
SPILL_2	The text, "Examples of allowable discharges related to mobile spill response include monitoring well purge water, drip pan water, hydrocarbons from shop melt water and equipment, and small spills on snow or ice during winter operations.; Comment: Contaminated water is not an allowable discharge under AKG320000 - Statewide Pipelines GP. The listed discharges are either uncontaminated or they must be treated to remove hydrocarbons." should instead read, "Examples of allowable discharges related to mobile spill response include treated or uncontaminated: monitoring well purge water, drip pan water, shop melt water, and melted snow and ice collected in small drums due to small vehicle drips or spills while mobilized during winter operations."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.3.3
SUB_1	Project construction/operations timing may impact the Cantwell area's customary and traditional use of resources. Please coordinate with local governments to time activities appropriately to avoid impacts to subsistence resources.	As described in Appendix M (Mitigation Measures), AGDC would time activities to minimize impacts to subsistence activities, where possible. In accordance with ANILCA Section 810, a subsistence hearing was held in Cantwell during the public comment period on the Draft SEIS. Potential impacts to subsistence activites are described in detail in Section 4.20 as well as Appendix P to the Final SEIS.	No change
SUB_10	The potential impact to subsistence users of the elevated portion of the pipeline considered under Alternative 2 should be considered more than "slightly" greater than the belowground alternative. This is consistent with Mayor Ahmaogak's comment in 2002 (page 4-230).For Alternative 2, consider the potential for collision related impacts for flying birds (possible ESA species) that are unfamiliar with an obstruction on the landscape (page 4-230). Furthermore, the ANILCA Section 810 analysis echoes those same concerns as follows: The presence of an aboveground pipeline would cause greater impacts to wildlife (specifically caribou) than burial of the pipeline. Multiple studies, summarized by Lawhead et al. (2006), have demonstrated that linear infrastructure features impact caribou movement. The Effects and Impacts on subsistence for operations of the above-ground pipeline in Alternative 2 described in Section 4.20 is grossly understated in the ranking presented, and runs counter to the information provided from subsistence users summarized in Section 4.20.5.3. Higher ranking should be applied for Alternative 2. In Table 4.20-5, the Effects and Impacts on Subsistence for Operations of the above-ground pipeline in Alternative 2 is grossly understated in the ranking presented in the table, and runs counter to the information provided from subsistence users summarized in Section 4.20.5.3. Higher ranking should be applied for Alternative 2.	While a buried pipeline is more conducive to natural caribou movement than an elevated pipeline, the elevated pipeline is located on the periphery of Nuiqsut use areas near the Dalton Highway. The great distance of the elevated pipeline from Nuiqsut's core hunting areas lessens the certainty of the elevated pipelines effect on caribou by the time they travel closer to Nuiqsut. Resource availability impacts would be possible but not necessarily probable. The word "slightly" has been removed from the referenced sentence.	4.20.5.3
SUB_11	The subsistence sections of the Affected Environment chapter that deal with the Arctic and Interior regions are generally correct.	Comment acknowledged.	No change
SUB_12	The flow of Section 3.17.6.2.3 is confusing. Specific data for the communities is available and should be discussed (maybe just presented in a table). Seems like a minimal amount of information considering the amount of community concern regarding subsistence resources.	The potential impacts of increased populations within study communities and associated increase in pressure to traditionally hunting activities are addressed in Section 4.20.4.1.1.4 "Competition, Costs and Time, and Culture"	No change
SUB_13	In Section 3.17.6.2.3, in addition to the Alaska Traditional Diet Project (ATDP), Alaska Department of Fish and Game data from harvest surveys should be discussed for relevant PACs. Harvest data is well correlated with consumption of subsistence foods and this data may be more current and specific than the ATDP for most potentially affected communities (PACs).	Thank you for the comment. The ADF&G's Community Subsistence Information System (CSIS) was used, along with many other sources, to generate the subsistence resource section (3.16) of the SEIS. The subsistence patterns of 51 PACs are described in subsections 3.16.5 through 3.16.7 of the SEIS.	No change
SUB_14	Comments addressing grammar	Grammar suggestions have been reviewed and incorporated into the Final SEIS.	No change
SUB_15	The info from Alaska Traditional Diet Project (ATDP) discussed in Section 3.17.6.2.3 is too broad to be considered representative of the potentially affected communities (PACs) in this SEIS. It is not clear which communities are discussed in these finding.	Thank you for the comment. We agree with the commenter that some of the information is not representative of the PACs in the proposed Project area and this text has been removed from the SEIS. The remaining text has been revised to indicate that "Results reported by the Tanana Chiefs Conference (TCC) are applicable for several villages of Interior Alaska for which subsistence resources may be affected by the proposed Project including the PAC, Nenana." Information from the ATDP specific to the TCC remains in the Final SEIS.	3.17.6.2.3
SUB_2	An increase in people to the Cantwell area due to job opportunities from the natural gas pipeline will add pressure to traditional hunting activities in the area (Game Mgmt Unit 13E and 20A).	Thank you for your comment. Impacts to subsistence are discussed in Section 4.20 of the SEIS. Specifically, there is a subsection dedicated to the impacts from competition, costs and time, and culture during both the construction and the operation and maintenance phases of the Project. As stated in the SEIS, construction related impacts are expected to be temporary and in many areas would only occur during one season. AGDC is committed to notifying workers that subsistence activities are ongoing and direct them to avoid activities that may affect subsistence. Long-term impacts from operation and maintenance activities for the region described by the commenter are discussed in subsection 40.20.7.1.4.2 of the SEIS. The impact analysis has taken into account the observation of the commenter.	No Change
SUB_3	Subsistence resources should be protected to the highest degree.	Comment acknowledged.	No Change
SUB_4	Nuiqsut's subsistence whaling may be impacted near Cross Island and Prudhoe Bay.	Section 4.20.3 Applicant-Proposed Design Features, Mitigation Measures, Best Management Practices, and Project Management Plans, includes applicant proposed mitigation measures to reduce potential impacts to whaling activities.	No Change
SUB_5	Activities related to studies, such as helicopter activity, impact the caribou that we depend on.	Impacts from helicopters and fixed-wing aircraft are discussed in Sections 4.20.4.1.1.2 "Resource Availability" and 4.20.4.2.1.2 "Resource Availability"	No Change

Issue Code	Description	Final Response	Section #s of Change
SUB_6	Subsistence whaling will be impacted because Cross Island is just northeast of West Dock. There are many offshore vessels that don't sign the CIA with the Alaska Eskimo Whaling Commission and many vessels related to industry.	Section 4.20.3 "4.20.3. Applicant-Proposed Design Features, Mitigation Measures, Best Management Practices, and Project Management Plans" includes applicant proposed mitigation measures to reduce potential impacts to whaling activities.	No Change
SUB_7	More pipelines mean we have to be more careful when we hunt so that we don't shoot the pipeline. We have to hunt farther away to avoid pipelines.	Avoidance of traditional use areas due to the presence of elevated pipelines is discussed in Section 4.20.5.3. "Use of Vertical and Horizontal Support Members."	No Change
SUB_8	Which communities would receive the most impacts (e.g. why would Minto receive more than Cantwell)?	Table 4.20-4 "Subsistence Impact Criteria Assessment – Alternative 1" and Table 4.20-5 "Types of Effects and Impacts on Subsistence – Alternative 2" provide a breakdown of the assessment of impacts by community followed by an explanation of the types and levels of impacts for the various study communities. Long-term changes to user access and resource availability during operations due to the development of undisturbed habitat and new access to the Minto Flats is the rationale for a greater impact ranking for Minto than Cantwell. The Project is not creating new access to Cantwell.	No Change
SUB_9	Section ES-18 implies that the pipeline alignment goes right through the communities listed. For Wiseman and Nenana, the alignment is on the opposite side of a significant river from each location. Minto is over 18 miles from the alignment. The subsistence impact during the operational phase should not be categorized as major.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. The text has been revised to state, "concentrated in rural communities with subsistence use areas that lie directly along the proposed Project." The text indicates that Minto is major due to the development in large portions of undisturbed habitat and not that the community lies directly along the Project. Long-term changes to user access and resource availability are the rationale for major impacts during operations.	4.20.7.4, ES-18
VIS_1	The Project would negatively impact the viewshed in Denali State Park.	USACE appreciates the comment. AGDC worked with the Department of Natural Resources, Division of Parks and Recreation to identify a natural gas pipeline corridor through State Parks and Recreational areas, including Denali State Park. The Project minimized the footprint to the extent possible and crosses through Denali State Park for a distance of approximately 38 pipeline miles. The Legislature approved this footprint and it is codified in AS 41.21 Park and Recreational Facilities and 38.35 the Right-of-Way Leasing Act. The referenced facilities are located outside of the DSP boundaries on public land within a utility corridor directly adjacent to the Parks Highway. The Project will retain these sites as proposed.	No change
VIS_2	The discussion on visual resources' should include the major access road construction from the Glitter Gulch commercial area near milepost 539 going across the subsequent hillsides separate from the pipeline route, across the Yanert river, and then exiting the Mainline route through the residential Village View Subdivision, near McKinley Village. The discussion should also include the visual effects of the entirely separate major access road, the extensive material sites on the banks of the Nenana (MP 535-536) and Yanert (MP538-539) Rivers, and the vantage point(s) of tens of thousands of Park and area visitors floating that section of the Nenana River system from the McKinley Village launching site.	USACE appreciates the comment. There is no access road from the proposed alignment when leaving Glitter Gulch to the south (approximately MP 535.8 for the current alignment). The Project proposes horizontal directional drilling (HDD) instead of open trenching at this location. There will be no visual impact for the distance HDD is used for pipe installation. The pipe will exit at about Lynx Creek, approximately MP 536.7. This will reduce the amount of visual impact identified in the 2012 FEIS. The access road from the south will generally parallel the pipeline right-of-way and, from a visual perspective blend into the right-of-way maintained for operations. The material site is located at about MP 538.2 on the current alignment and well outside of the zone where the FEIS indicated visual impacts were considered strongly affected by the Project.	No change
VIS_3	General concern regarding the scenic resources of the Denali area between Healy and Cantwell, upon the socio-economic landscape in this area, and on the lifestyles of residents.	Section 4.17 describes the methodology for evaluating visual impacts. Visual impacts in the area near Healy are discussed in Section 4.17.4.2.3, while the area south of Healy, including Denali NPP and Cantwell, is discussed in section 4.17.4.2.4. Section 4.17.5.1.3 discusses the visual impacts of the Denali NPP Route Alternative. These analyses include AGDC simulations, discussion of the contrast between pre- and post-construction visual conditions, and analysis of resulting visual impacts.	No change
VIS_4	The Impact Rating (Mainline Segment 1a) for Alternative 2 operations and maintenance described in Table 4.17.4 should be major due to the visual impact of above-ground supports and pipeline from MP 0-62.	While the aboveground supports and pipeline would alter the scenery, this change does not meet the criteria for "major" impact, as defined in Table 4.17-2.	No change
VIS_5	In Table 4.17-4, remove the scenic quality and viewer sensitivity columns as they are not related to the comparison of alternatives.	These attributes, along with impact rating, provide the basis for overall visual impacts of each alternative, and are thus directly relevant to the comparison of alternatives.	Table 4.17-4
VIS_6	It appears that the summary statement of Alternative 2 [in the visual analysis] has incorrect MP values, please update with correct MP's.	The mileposts listed in this summary statement are correct per Table 4.17-4.	No change
VIS_7	Viewing the history of fire activity in Alaska (see https://fire.ak.blm.gov/content/maps/aicc/Alaska_Fire_History.pdf), there have been numerous fires along the proposed route since 2000. Please expand on Section 4.6.9.12 to indicate how a conclusion of "unlikely" was reached.	USACE appreciates the suggested changes regarding the presentation of information in the SEIS. Text has been added to address this suggestion: "Natural occurrences such as a forest fire in an area of high scenic quality could result in a major visual impact, with or without the presence of the Project. The Project's contributions to such major visual impacts would be incremental. In general, the geographic extent of the combined impact of the pipeline, RFFAs, and natural occurrences would affect site-specific locations along the pipeline."	4.26.9.12
WAS_1	There must be appropriate facilities for construction workers' human waste. In the past construction crews did not have portable toilets and the pullouts and other easy access areas were full of human waste and toilet paper.	Comment acknowledged. AGDC intends to have contractors provide mobile sanitation facilities for the crews working on pipeline. It would be AGDC's intent that the contractors would require the workers to use the provided sanitation facilities.	No change
WAS_2	Open garbage pits should not be allowed. Construction workers leave garbage in open pits then bait animals then want only kill them when they come for food.	USACE appreciates the comment. Waste management, its impacts to wildlife, and proposed mitigation measures are discussed in Section 4.10, Wildlife.	No change
WAS_3	Where will wastes from conditioning the gas be disposed?	USACE appreciates the comment. The GCF and connecting lines are discussed in Section 2.2.4. Natural gas would be transported from the Central Gas Facility from the Central Compression Plant in Prudhoe Bay to the GCF. Waste from the GCF would then be transported back to the CGF.	No change
WAS_4	Operations and maintenance activities will not exert stress on existing solid waste infrastructure since they are limited to an operational facility within the PBU industrial complex, a small facility located within Fairbanks, a small facility located within the Mat-Su Borough, and a corporate office located within Anchorage.	Comment acknowledged.	No change
WAS_5	3.11.2.3 State ; Text: BULLET SECTION - "ADEC"; Comment: ADD: Wastewater Disposal Regulations in accordance with 18 AAC 72 and AS 46.03, AS 44.46.020, AS 44.46.025, AS 37.10.052	USACE appreciates the comment and the referenced regulations have been included in Section 3.11.2.3 of the SEIS.	3.11.2.3
WET_1	Please make data sheets available for public review so that the data can be groundtruthed. Data available on the project website show that distances between data points are large (up to 75-100 miles).	The ASAP project data sheets have been made available on the project website. The wetlands impact areas included in the Final SEIS have been revised based on additional wetlands data collected for the AKLNG project.	Project website
WET_10	The EPA believes that such extensive, unmitigated destruction and degradation of wetlands and aquatic resources, particularly in aquatic resources underlain by permafrost, may not comply with the Guidelines.	The USACE appreciates the comment. Project changes related to construction techniques, the relocation or elimination of infrastructure, avoidance, minimization and additional mitigation measures have occurred as a result of public comment and discussions with the Project proponent. The USACE is continuing its evaluation of the Project for adherence to the CWA 404(b)(1) Guidelines.	Chapter 4
WET_11	Does ES-11 indicate that the entire alignment is wetlands broken into segments by ecoregion (Beaufort Coastal Plain), or by type of permafrost predicted by other mapping (Other Ecoregions with Permafrost, or Ecoregions Lacking Permafrost)? Where on this map are the uplands located? The entire project is not to be constructed on wetlands as would be indicated by the map.	The context figures are intended to summarize the Project's overall impacts at a larger scale at a quick glance. The context figures are only a component of the complete description of potential impacts provided in Chapter 4. Additional context for this figure is provided in Section 4.9.7.	No change
WET_12	The statement that the Nenana River watershed is entirely in the Denali Borough does not appear to be correct. Please revise statement. The northern boundary of the Denali Borough is just north of Anderson Alaska as indicated here: https://www.maptechnica.com/county-map/Denali/AK/02068 The boundary of the Nenana River watershed according to the EPA is between Anderson AK and Nenana AK as shown here: https://cfpub.epa.gov/surf/huc.cfm?huc_code=19040508	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.3.6.2.2
WET_13	ADNR makes navigability determinations for streambed ownership purposes. The USCG makes navigability determinations to establish jurisdiction and requires a permit for bridges crossing navigable rivers. The State Department of Transportation and Public Facilities has a bridge section that is responsible for the design and use of bridges under ADOT&PF jurisdiction.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.20.4
WET_14	The Alaska Gasline Development Corporation does not believe that it has stated it will locate any aboveground facilities within 100 feet of a stream bank.	Further discussion with AGDC resulted in the identification of one facility pad within 100 feet of USACE-defined riverine wetland/waterbody (Happy Creek).	No change
WET_15	The Alaska Gasline Development Corporation does not believe it has stated it will be storing sand and gravel materials within a floodplain during operations.	Further discussion with AGDC determined that materials may be stored within a floodplain.	No change

Issue Code	Description	Final Response	Section #s of Change
WET_16	In Table 4.7-2, under Proposed Action Causing Potential Impact for Operations and Maintenance for Surface Water Quality, the identified "Use of herbicides/pesticides near surface waters" is not a proposed action by the ASAP Project and should be removed.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Table 4.7-2
WET_17	Disturbance to ground cover in relation to streams would occur within the mainline 120-foot construction ROW.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.7.4.1.3
WET_18	Cottonwood Creek is located near Wasilla in the Matanuska-Susitna Borough. Suggest giving additional information as to where it is located so the reader does not mistake this creek as being located near Fairbanks about 300 miles farther north.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.7.4.1.4.5
WET_19	Pipeline construction is not expected to impact the fecal coliform content of Cottonwood Creek, which is listed as an impaired waterbody for fecal coliform.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Table 4.7-10
WET_2	Concerns regarding the Project causing siltation in the Koyukuk River which would impact salmon runs and people downstream.	USACE appreciates the comment. Excavation and resulting wastewater discharge within fish streams will require permits from ADEC and ADF&G. ADEC regulates water quality and the sediment content of the wastewater discharge and ADF&G issues site specific stipulations designed to protect fish and fish habitat. AGDC will work with these agencies to minimize impacts to water quality, fish, and fish habitat. In addition, AGDC has proposed mitigation measures to protect water quality (Draft SEIS Section 4.7.3) and fish (Draft SEIS Section 4.11.3).	No change
WET_20	Figures 4.7-1 and 4.8.1 and other context maps are an inaccurate generalization of the whole project.	The context figures were developed with input from AGDC and are intended to summarize the Project's overall impacts at a larger scale at a quick glance. The context figures are only a component of the complete description of potential impacts provided throughout Chapter 4. The intent of the context figures is clearly stated and references to more detailed discussion of potential impacts are included where context figures are referenced.	No change
WET_21	The SEIS implies that there will not be proper design and installation of access roads during construction or maintenance of access roads during operations, which is not true.	USACE recognizes that the project Propnent does not intend to improperly design and install access roads. Corrections have been made to the sentence in question to clarify, "If roads were constructed without proper drainage (culverts) or without proper maintenance of culverts, the hydrology would be altered and could conceivably result in habitat fragmentation. BMPs for culvert placement are discussed in the Water and Fish sections of the SIES (Sections 4.7.3 and 4.11.3, respectively)."	4.8.4.2.1.2
WET_22	Construction Impacts - avoidance are where the project has avoided an impact due to existing features, such as an existing road. These impacts should not be assessed against the project because they already exist.	Tables 4.8-3 and 4.8-4 have been updated to omit the impact category "Construction Impact - Avoidance."	Tables 4.8-3 and 4.8-4
WET_23	The project will use mats in the areas designated in the footprint as matted regions.	USACE appreciates the additional information. This list of "matted regions" will be included in the list of mitigation measures (Appendix M) of the Final SEIS.	Appendix M
WET_24	There will be no clearing, grubbing, or grading during operations. Clearing, grubbing and grading will have been completed during construction. Mowing will be the only maintenance of the ROW, and mowing will preclude any necessity for clearing. All references to clearing, grubbing, or grading need to be removed from the section. Mowing will not be required on the Beaufort Coastal Plain.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Section 4.8.4.2.1.1 has been edited to remove discussion of clearing, grubbing, and grading during operations.	4.8.4.2.1.1
WET_25	Transport and use of construction equipment and personnel from the continental U.S. where non-native, invasive, and noxious plants are common is a very unlikely scenario with respect to operations due to the high logistical cost of bringing in outside equipment or personnel.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.8.4.1.1.7, 4.8.4.1.2.3, 4.8.4.2.1.5, 4.8.4.2.2.2, 4.9.4.1.1.8, and 4.9.4.2.1.5
WET_26	Table 4.8-5 should be corrected to reflect both Alternatives 1 and 2 have the same impact on habitat fragmentation.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Impacts to vegetation are different for habitat fragmentation in Alternatives 1 and 2 for the first 62 miles of the route. In Alternative 2, impacts to vegetation due to habitat fragmentation along the pipeline ROW mainline and Fairbanks lateral during construction are the same as those discussed in Alternative 1 for the pipeline route, except for the first 62 miles where the pipeline would be suspended on VSMs in this alternative. There would be substantially fewer impacts to wetland habitats, vegetation, and hydrology especially during breakup over these first 62 miles.	No change
WET_27	The proposed discharges may result in substantial and unacceptable impacts to aquatic resources of national importance, including the wetlands and waters of the Yukon River basin. Notably, many of the aquatic resources along the proposed pipeline route are of outstanding natural resource value and occur in systems whose ecological functions are intact. In pat1icular, the EPA concludes that the Yukon River basin, with its associated tributaries and wetlands, and adjacent wetland systems, is an aquatic resource of national importance according to the criteria identified in the Section 404(q) MOA. Aquatic resources that are underlain by permafrost are of particular concern, since these resources provide unique functions in addition to the general functions that wetlands provide. They are fragile, easily damaged, and do not recover from damage in less than one generation, if at all. Furthermore, the wetlands and streams of the Yukon basin provide important functions that help to maintain the basin's ability to support and maintain anadromous fish, particularly salmonids, which are of both commercial and subsistence importance.	Comment acknowledged. AGDC has indicated that they have avoided wetlands wherever possible and where wetlands cannot be avoided, the Project has been designed to minimize wetlands impacts. The project proponent has committed to minimizing impacts to watersheds according to the mitigation the mitigation measures proposed in Appendix M. In addition, the discussion of wetlands impacts in Chapter 4 has been revised to compare how impacts to the resource would differ if the Corps' permit conditions were implemented.	Appendix M, 4.9.3, 4.9.8
WET_28	The Alaska Gasline Development Corporation reviewed the entire alignment and made site specific changes to avoid and minimize impacts to wetlands, including stream crossings. The changes are reflected in alignment version 6.1.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	4.9.3
WET_29	Page 4-16 states that "fragmentation of wetlands would be major in the Beaufort Coastal Plain and moderate elsewhere" while section 4.8.5.2.1.2. states that "habitat fragmentation is the same for all areas."	The document context indicates that the first statement states that the occurrence of wetland habitat fragmentation in the Beaufort Coastal plain is expected to be greater thatn in other areas of the throughout the project footprint, while the latter statement communicates that the habitat fragmentation due to vegetation impacts overall are expected to be the same Alternative 1 and Alternative 2 for all areas.	No change
WET_3	An aboveground pipeline would have less impact on vegetation than a buried pipeline.	Impacts to vegetation by the proposed Project are discussed in Section 4.8 of the SEIS. Section 4.8.7 compares Alternative 1 and Alternative 2 impacts to vegetation. The VSMs for the first 62 miles of the proposed Mainline in Alternative 2 would be constructed within the operations ROW. These VSMs would be a permanent physical feature on the tundra; however, the impacts of their very small footprints (0.46 acres total) would be substantially less than the potential issues involved with trenching and backfilling in permafrost soils.	No change
WET_30	Listing Habitat and Wetland Fragmentation as a major impact for the Beaufort Coastal Plain is overstated.	USACE appreciates the suggestion to modify the referenced impact rating. Suffucient justification in support of this statement is needed in order to consider revisions to the impact rating.	No change
WET_31	The Alaska Gasline Development Corporation has proposed scarifying work pads and revegetating, but has not defined a depth or specifics regarding "de-compaction".	Further discussion with AGDC identified that the text in question (Section 4.8.3, Proposed Measure 6) was generated based on the ASAP Revegetation Plan. The plan describes site de-compaction activities and states that identified areas will "be ripped to a minimum depth of 8-20in (20-50cm) prior to surface soil replacement.	No change
WET_32	The U.S. Environmental Protection Agency's attachment 1 "The Wetlands and Streams of the Yukon River Basin are an Aquatic Resource of National Importance" may be used as a reference for the SEIS.	USACE appreciates the suggested additional reference provided in EPA's comment. A discussion has been added in Section 4.9.4.1.1.3 regarding the Yukon River Basin as an Aquatic Resource of National Importance.	4.9.4.1.1.3
WET_33	Several active USGS stream gages are near the proposed pipeline alignment as shown on Draft SEIS Figure ES-2. The Department recommends that the Final SEIS list USGS structures as sites to be safeguarded. The USGS Alaska Science Center (ASC) should be contacted before construction near active USGS stream gages. Efforts should be made to both preserve the stream gages and minimize impacts to the data integrity collected at those sites.	The USACE appreciates the comment. The ASAP footprint does not intersect any USGS stream gauge locations based on the following dataset: https://water.usgs.gov/GIS/metadata/usgswrd/XML/gagesII_Sept2011.xml#stdorder	No change

Issue Code	Description	Final Response	Section #s of Change
WET_34	The Department has concerns regarding the proposed project's potential impacts on reclamation revegetation, invasive species, and cumulative impacts. The USFWS and BLM offer recommendations on reclamation measures, including salvaging and stockpiling organic soils (particularly the active layer) and vegetative materials to facilitate effective revegetation and minimize the threats of erosion and invasive species introduction, thereby reducing impacts to fish and wildlife habitat.	AGDC worked with the DNR Plant Materials Center to develop reclamation procedures and mile-by-mile seed mixtures designed to utilize native seed and limit introduction of invasive species. AGDC indicates that the DNR Plant Materials Center has participated in reclamation and revegetation of large resource development Projects in Alaska, including the Red Dog and Usibelli Coal mines, and North Slope oil and gas Projects. AGDC indicates that while every effort will be made to segregate and reuse the topsoil and active layer, this will not be possible in all locations, especially if winter construction is required. With the help of the DNR Plant Materials Center, appropriate procedures will be utilized to ensure proper revegetation in these areas.	Appendix E, Part I
WET_35	The USFWS raises important issues regarding the net effect of other projects planned in the vicinity of the action area, cumulative impacts to wetlands, and the adequacy of the cumulative impact assessment.	The cumulative impact assessment presented in Section 4.26 follows Council on Environmental Quality (CEQ) guidelines as described on pages 4-717 and 4-718. Specific data gaps for the analysis are acknowledged in Section 4.26.5 and assumptions are provided in Section 4.26.5.1 including specific limitations of the analysis due to the variability of external Projects and natural events. The analysis begins with a summary of potential direct and indirect effects of the proposed alternatives (Table 4.26-2) which is the basis for the cumulative effects analysis. In compliance with NEPA regulations, Table 4.26-3 provides a detailed list of past, present , and reasonably foreseeable future actions and natural events considered in the assessment and is accompanied by a series of maps that demonstrate the proximity of many existing and future activities described in Table 4.26-3. Descriptive information on major activities and natural events are provided beginning in Section 4.26.7. Each resource section provides a subset of past, present and future actions and events that support the assessment of that specific resource which includes information on the specific types of cumulative effects that could occur and whether cumulative effects could be adverse or beneficial. In conclusion, the cumulative effects assessment follows CEQ guidelines, provides a discussion of what information may be lacking or limiting, discusses past, present and future actions and events that may contribute to a cumulative effect and provides a conclusion for each resource on whether the proposed action could also contribute to potential cumulative effects.	No change
WET_36	Vegetation loss or disturbance in permafrost areas typically has a significant impact on the ground thermal regime. In discontinuous warm permafrost areas, studies have shown that the deepening of the active layer may continue several years after clearing or stripping the vegetation. Therefore, the Department recommends minimizing vegetation loss or disturbance to reduce the risk of permafrost degradation along the pipeline alignment.	USACE appreciates the comment. AGDC indicates that "Project engineering aims to avoid and minimize impacts to permafrost to the extent practicable. AGDC's intended revegetation efforts will be are characterized in their Revegetation Plan, developed by the ADNR Plant Materials Center. Mitigation measures intended to limit or reduce impacts to permafrost are described in Appendix M of the SEIS and in the ASAP Belowground Pipeline Mode: Selection, Construction, Operation, and Maintenance on Alaska's North Slope (Appendix A)." Additionally, Sections 4.8.3.2 and 4.8.8 have been added to consider how impacts to vegetation would differ if the Corps' permit conditions were to be implemented.	4.8.3.2, 4.8.8
WET_37	Construction in winter will typically minimize the disturbance of the vegetation cover and subsequently the underlying natural ground thermal regime (Table 2.2-6).	Comment acknowledged.	No change
WET_38	In Section 4.11.3, BLM suggests defining the parameters to be used for determining "wherever possible" as they pertain to restoration with native plant species.	AGDC indicates that "Revegetation of riparian habitat with native plant species is the Project's preferred method, assuming a reasonable possibility of success. For example, high gradient floodplains and areas where sufficient water might not be available have a low chance of success and in these instances alternative revegetation methods needs to be considered for functional reasons such as erosion control. " Section 4.11.3.1 has been revised accordingly	4.11.3.1
WET_39	In Section 4.11.3, BLM suggests delineating the locations where material sites would occur in floodplains or presenting the criteria to be used for determining when sites would need to be located in the floodplain.	USACE appreciates the comment. Outside of the North Slope, the Project does not propose to create material sites within the active channel of a river or within the riparian zone. However, material sites may be developed within a river floodplain.	No change
WET_4	The pipeline will cause irreversible damage to clean water and fish habitat.	USACE recognizes that the proposed Project may impact water resources and fish habitat. These are discussed in Sections 4.7 and 4.11 in the SEIS, respectively. Alternative 1 and 2 are compared for water resources and fish habitat in Sections 4.7.7 and 4.11.7, respectively.	No change
WET_40	Some non-committal language remains, for example "to the extent practicable," and "where conditions allow." From a terrestrial biology/ecology standpoint, BLM suggests revisiting the following measures: VEGETATION 37 - remove or clarify the language "to the extent practicable," and VEGETATION 43 - remove the language or clarify "where conditions allow."	Examples have been added to the text to describe the instances of "to the extent practicable" and "where conditions allow" mentioned in the comment. Mitigation measure numbner 37 in Appendix M has been updated to state "Re-contouring would be done in a way to emphasize the use of existing drainage patterns and landform types to blend with and be compatible with the surrounding landscape to the extent practicable (e.g., where vertical cuts or other features cannot be physically re-contoured to the original contours due to factors such as blasting or the natural angle of repose of the native fill material after it has been excavated). Re-contouring disturbed areas would be done with site complexity in mind. Generally, revegetation of disturbed areas is planned for long-term stabilization." Mitigation measure number 43 in Appendix M has been updated to "For riparian vegetation clearing, vegetation would be cut off at ground level to leave the existing root systems in place to provide streambank stability. In riparian areas, the pulling of tree stumps and rooting for grading activities would be limited to the area directly over the trench line. Riparian vegetation would be restored with native plant species where conditions allow (e.g., riparian species planting is only successful where enough water is present)."	Appendix M, Section 4.8.3
WET_41	BLM notes the lack of a definitive Invasive Plant Management Plan. The species identified in Appendix O is a good start, but it appears to simply list potential species in the project area. There is only cursory mention of how this project will be designed to mitigate the potential for introduction and spread of invasive plants. It is important to note that the applicant will be required to provide an Invasive Plant Management Plan to the BLM prior to project approval on BLM-managed lands.	This comment has been shared with the Project proponent. AGDC understands that BLM and the Alaska Department of Natural Resources (ADNR) will require an invasive species management plan as a condition of the State right-of-way lease and the federal grant of right-of-way. Both BLM and ADNR have developed guidelines for invasive plants and the Alaska Department of Fish and Game has provided important information regarding invasive aquatic species. As stated, AGDC will develop a comprehensive invasive species plan for approval by State and Federal agencies prior to receipt of the construction notice-to-proceed.	No change
WET_42	The applicant should be aware that a Treatment Plan for each application of chemicals will be reviewed separately by the BLM (which currently does not allow herbicide treatment in floodplains on CYFO lands); the plan must be approved prior to treatment implementation on federally-managed lands.	Commetn acknowledged. If chemical application is proposed by AGDC on BLM managed land, BLM will require a Treatment Plan as mandated by regulation. AGDC intends comply with the requirement.	No change
WET_43	Since the last column of the table in Appendix K defines the crossing as either a stream crossing or HPOI, there does not seem to be a need to have the table provided in Appendix I (StreamCrossings-noHPOIs)	Thank you for your comment. The table shown in Draft SEIS Appendix I (Final SEIS Appendix J) includes additional information specific to stream crossings for waterbodies that meet the Corps' definition of a stream. The additional information includes: NHD stream type, whether the stream is anadromous, and the anticipated impact volume.	No change
WET_44	There are a few rows (access road crossings) that are blank in Appendix K.	USACE appreciates the comment. The following was provided by AGDC to address the comment: "Stream ID/Access Road MP, Stream Name, Crossing Mode, Type, Longitude, Latitude, Stream Type" 0466-01/MP181.8, Unnamed, Bridge, Temp., -149.5326, 68.1153, Xing 1321-05/MP540.7, Unnamed, Culvert Perm., -148.7773, 63.6949, Xing 1695-09/MP721.7, Little Susitna River, Bridge, Perm., -150.0977, 61.5642, Xing	No change, Draft SEIS Appendix K is not included in the Final SEIS
WET_45	Many large rivers are listed as Artificial Path; why are these listed as such?	This comment has been shared with the Project proponent. AGDC indicates that "Artificial Path" is a metadata designator within the National Hydrography Dataset in the GIS.	No change
WET_46	Regarding Section 3.3.5.4 Surface Water Quality, ADEC cooperates with other agencies to maintain a significant collection of water quality data using the Water Quality Portal. Water Quality Portal access can be found at https://www.waterqualitydata.us/. In addition, EPA has not yet approved the report, however ADEC has published "Alaska's Final 2012 Integrated Water Quality Monitoring and Assessment Report."	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	3.3.5.4
WET_47	The Service recommends the cumulative impacts analysis for wetlands include an assessment of the difference between baseline and post-impact wetland function, based on a defined length of recovery and considering any temporary loss in wetland function after three full growing seasons a permanent loss, as suggested for in lieu fee providers in 33 CFR § 332.8(n)(4).	For the ASAP Project Final SEIS, USACE describes wetland impacts based on wetland loss through fill, wetland fragmentation, and the general change in function, value, or water type code rather than by comparing the specific functions and values ratings (i.e., using the wetland functional categories rating system) before and after Project construction. Based on CEQ guidance, the impact criteria should be based on regulatory guidelines and/or best available scientific information. The criteria must be measurable and comparable along a scale. The impact criteria for wetlands has been reviewed and revised as necessary based on new literature provided by AGDC on recovery of wetlands using their proposed restoration measures. The SEIS reflects best scientific information and reasonable regulatory guidelines.	4.8
WET_48	Based on the climate change impacts described in the SEIS, we believe the cumulative impacts to habitat associated with changes in permafrost and vegetation are more than minor.	Since publication of the Draft SEIS, the conclusions presented on potential cumulative effects have been reviewed and the Final SEIS reflects revisions to these conclusions as necessary based on the best available science as required under NEPA.	4.26.9.5

Issue Code	Description	Final Response	Section #s of Change
WET_49	The modeling of permafrost thaw is not currently included in the calculation of total wetlands impacts. This could potentially result in hundreds of miles of frost-heave displacement and soil subsidence associated with the pipeline, leading to hydrologic impacts in drainages crossed by the proposed project, altering of hydrologic regimes of the wetland complexes along the route, and changes to the functions and type of wetlands. Impacts from permafrost thaw should be included in the quantification of total wetlands impacts.	USACE appreciates the comment. USACE's authority under CWA 404 regulates the direct discharge of dredged or fill material into waters of the United States, including wetlands. Under NEPA this SEIS discloses the reasonable extent of wetland impacts that could occur as a result of the Project and identifies potential reduced functions of adjacent, fragmented or isolated wetlands due to secondary or cumulative impacts. Measures to avoid and minimize these secondary impacts are included in BMPs and mitigation measures for maintaining surface hydrologic regimes, stabilize vegetation type and diversity based upon reference conditions, etc.	No change
WET_5	The "Jigsaw Puzzle Lakes" between MP 641.5 and 642, just south of the potential Material Source Site (4B-G) are fragile wetlands, a biologically rich and sensitive area, which could be quickly transformed into mud bogs by ATVs, causing wetland destruction and sedimentation of our streams. During construction, care should be taken to not disturb the lakes. Develop and implement restrictions and construction guidance to ensure that the equipment and the workers stay away from the lakes and that no sediment gets to the lakes.	Comment acknowledged. AGDC indicates that Material Site 4B-G is an expansion of an existing site located roughly between MP 645 and 646. Federal, State, and Borough permits, and other land manager agreements would be required for developing new or existing material extraction sites. Additional authorizations may be necessary for associated activities, such as the construction of temporary access roads. AGDC indicates that prior to permitting the Project, individual sites would be reviewed on a case-by-case basis to identify the site-specific authorizations required for each location.	No change
WET_50	We recommend that the Final SEIS include a revised revegetation plan to restore disturbed wetlands as well as a compensatory mitigation plan to compensate for unavoidable loss of wetlands.	AGDC has developed a revised revegetation plan in cooperation with ADNR's Plant Materials Center. The plan is included in the Final SEIS Appendix E, along with additional literature provided by AGDC that describes soil segregation plans and a discussion of wetlands revegetation compared to existing projects. USACE will evaluate the suitablilty of the Project proponent's proposed compensatory mitigation based upon the content of the Compensatory Mitigation Plan, as well as, consider incorporating additional General and Reginal conditions approprate for use when evaluating pontential DA authorizations which establish standard best management practices and revegetation standards.	Appendix E
WET_51	Text: "Excavated materials would not be stockpiled in rivers, streams, floodplains, or wetlands unless approved by the SPCS/BLM regulatory agencies and designated as an appropriate storage or disposal location by the terms of the lease."; Comment: Suggest adding the word "active" to describe "floodplains" to avoid confusion. Floodplains can also be classified as abandoned or inactive, and the modified wording would help clarify the meaning. ---> "active floodplains"	USACE appreciates the suggested changes regarding the presentation of information in the SEIS. The word 'active' has been added as per the suggestion.	4.6.3
WET_6	The current Denali alternative under consideration is inadequate and doesn't satisfy the agency's 404 obligations because it leaves the highway right of way too soon to rejoin the original route. The agency should consider an alternative that follows the highway further through the Yanert Valley, avoiding wetlands and other impacts of the currently proposed route.	USACE requires additional information to identify the location in question.	No change
WET_7	For a project of this scale, the proposed compensation for wetland losses (104.97 acres) is inadequate for 7,573.17 acres of permeant wetland losses. As a cooperating agency, the Service requests that the U.S. Army Corps of Engineers and the Alaska Gasline Development Corporation work with us to develop more appropriate compensation.	USACE appreciates the comment. USACE will evaluate the suitablilty of AGDC's proposed compensatory mitigation based upon the content of the Compensatory Mitigation Plan, as well as, consider incorporating additional General and Reginal conditions approprate for use when evaluating pontential DA authorizations which establish standard best management practices and revegetation standards. AGDC is continuing to work with the USACE to discuss appropriate and practicable mitigation for the ASAP Project.	No change
WET_8	Are Figures ES-9, -10, and -11 for Alternate 1 or Alternate 2? Should there be 2 figures on Vegetation Impacts, one for each alternative, as the impacts are different between the two Alternatives?	Figure ES-9 for Water, shows impacts for both Alternative 1 and Alternative 2, because the impacts are not expected to differ significantly between the two alternatives. An additional figure has been added for both Vegetation and Wetlands context to show the differences between the two alternatives, particularly the differences in impacts to the Beaufort Coastal Plain ecoregion. Vegetation context figures are now ES-10 and ES-11 and Wetlands context figures are now ES-12 and ES-13.	Figures ES-10, ES-11, ES-12, and ES-13
WET_9	Although the project would adversely impact wetlands, streams, and other aquatic resources in all 60 watersheds, the Draft CMP uses a novel approach to summarily dismiss potential impacts on the aquatic ecosystem in all but two of these watersheds as "insignificant." This conclusion is particularly remarkable since the Draft SEIS assigns some of these same wetland impacts (e.g. wetland loss and fragmentation) a "major" or "moderate" negative effects rating. The Draft CMP argues that the only ecologically significant impacts to wetlands would be those that occur in watersheds that have experienced greater than 7.5 percent anthropogenic disturbance. Thus, of the approximately 8,907 acres of potential direct wetland impacts estimated for ASAP, the Draft CMP identifies only 104.97 acres as ecologically significant, and does not consider the indirect losses from permafrost degradation at all. All of the impacts to the remaining 8,802 acres of wetlands are dismissed as insignificant regardless of the existing quality of these wetlands, the functions they provide in the landscape, the degree to which those functions would be impacted, the duration of those impacts, or the likely ecological consequences.	USACE appreciates the comment. USACE will evaluate the suitablilty of AGDC's proposed compensatory mitigation based upon the content of the Compensatory Mitigation Plan, as well as, consider incorporating additional General and Reginal conditions approprate for use when evaluating pontential DA authorizations which establish standard best management practices and revegetation standards. AGDC is continuing to work with the USACE to discuss appropriate and practicable mitigation for the ASAP Project.	No change
WLD_1	Comments concerned with Project construction workers using their free time to carelessly hunt wildlife. Construction workers should be excluded from hunting and fishing opportunities along the pipeline.	Appendix M of the Final SEIS indicates that in areas where a lease is required from SPCS or a federal grant of ROW is required from BLM, with respect to AGDC's agent, employees, contractors, and the contractors' employees, AGDC would prohibit hunting, trapping, shooting, and camping within the leased area. The agents, employees, contractors of AGDC would not use project equipment, including transportation to and from the job site, for the purpose of hunting, fishing, shooting, and trapping.	No change
WLD_10	It is highly unlikely there will be changes to distribution at the species level from the project. It is more reasonable to assume a possible individual animal behavioral change if management of food waste is not consistent with the proposed mitigation measures.	USACE appreciates the suggested changes regarding the presentation of information in the SEIS. The SEIS Section in reference, 4.10.2.1.4, also discusses changes in predator distribution and their impacts on prey populations in relationship to anthropogenic practices.	No change
WLD_11	Is there an assumption that no hunting occurs in areas without road access?	There is no assumption that hunting only occurs in areas with roads. The sentence in question was slightly misleading and has been edited to say, "Construction and maintenance of access roads provide easier access to hunters and other recreational users. Due to the lack of experience with previous hunting pressure, game species in newly opened geographical areas are more susceptible to disturbance as well as greater mortality as a result of harvesting."	4.10.2.1.5
WLD_12	The Alaska Department of Fish and Game (ADF&G) typically manages take of wildlife based on a sustained yield principle. The take in any given game management area (or sub-area) is usually managed based on the take of a specific number of animals and closed when the maximum take has been achieved. If this is true, the hunting mortality associated with increased access from the Project still will be within the approved number of animals as determined by ADF&G. The geographic area of harvest may change, however, the impact to the population should not be negative if properly managed by ADF&G.	USACE appreciates the suggested changes regarding the presentation of information in the SEIS. Text has been added to address this suggestion: "However, ADF&G manages take of wildlife on a sustained yield principle. The take in any given Game Management Unit (GMU) is managed based on the take of a specific number of animals and closed when the maximum take has been achieved. Hunting mortality associated with increased access from the Project will be sufficiently managed by ADF&G."	4.10.2.1.5
WLD_13	Remove subjective statements. The number of acres in Alaska disturbed vs undisturbed is more appropriate.	This statement has been revised to "Although Alaska is a very large state and there is available habitat for many species, the continued development and activity in the state contributes to habitat reduction and fragmentation. Cumulative impacts from both anthropogenic and natural loss of habitat, due to development, fire, and climate change should be considered."	4.10.4
WLD_14	It is possible that the elevated pipeline will cause shifts in migration that, while not necessarily causing impact to caribou, impact subsistence users in the area.	USACE recognizes that the aboveground pipeline segment in Alternative 2 may affect caribou migration and subsistence harvest of the caribou. This is discussed in Section 4.10.5.2.3 of the SEIS. Recognizing the influence of compounding factors, such as proximity to roads, it is possible for the aboveground section of pipeline to negatively impact caribou movement and migration patterns, particularly if snow is drifted under the elevated pipeline, reducing pipeline height above the snow surface.	No change
WLD_15	The text regarding collision risk to eider species should be changed to reflect a higher potential for impacts with Alternative 2.	The impact to eider species regarding collision risk in Alternative 2 is already rated at moderate adverse, which is also discussed in text as higher than Alternative 1. The potential direct and indirect effects of Alternative 2 during operations would likely be greater than Alternative 1 given that an aboveground pipeline may alter wildlife movement through the area or could be a collision hazard for certain bird species. However, the overall direct and indirect effect of Alternative 2 are still considered moderate adverse.	No change
WLD_16	It is highly unlikely that there will be changes to distribution at the species' population level from the project.	USACE appreciates the suggested changes regarding the presentation of information in the SEIS. The SEIS Section in reference, 4.10.2.1.4, also discusses changes in predator distribution and their impacts on prey populations in relationship to anthropogenic practices.	No change

Issue Code	Description	Final Response	Section #s of Change
WLD_17	The Alaska Gasline Development Corporation does not recall proposing escape ramps for wildlife.	This mitigation measure has been revised and the following text has been removed, "(*e.g.,* escape ramps).	4.10.3 and Appendix V
WLD_18	We strongly recommend that the Final SEIS include the entire route of the sealift in the project area, which is an integral part of this project, and could potentially impact species managed by the U.S. Fish and Wildlife Service.	Please see the response to comment NEPA_10.	No change
WLD_19	The Department recommends that the Alaska Gasline Development Corporation develop, in coordination with the U.S. Fish and Wildlife Service, a comprehensive Migratory Bird Conservation Plan (MBCP), which should be incorporated into the Final SEIS.	AGDC will follow measures outlined in a Migratory Bird Mitigation Plan that will be prepared with input from USFWS.	No change
WLD_2	Construction of a natural gas line through the Cantwell community area would negatively affect the seasonal migratory patterns and behavior of caribou.	In Sections 4.10.4.1.4.1, 4.10.4.2.1, 4.10.4.2.2, and 4.20.4.1.1.2 of the SEIS, USACE recognizes that the proposed Project construction and facilities may affect migratory patterns or behavior of caribou. However, construction impacts to caribou would be considered minor, as construction would cause periodic, temporary, or short-term changes to individuals or groups, which are reversed over one reproductive season (1 year).	No change
WLD_20	Some non-committal language remains. For example “as soon as possible” and “where possible.”	Comment acknowledged. AGDC has reviewed the language for both referenced mitigation measures and has concluded no change is necessary, as site-specific conditions could be variable.	No change
WLD_21	Provide a Sensitive Species List for BLM-managed lands and the required spatial buffers and timing restrictions for sensitive species.	A Sensitive Species List for BLM-managed lands and the required spatial buffers and timing restrictions for sensitive species have not been provided by the Project proponent to date. The Project proponent would develop these buffers and restrictions as part of the BLM lease stipulations.	No change
WLD_22	When new access roads/airstrips are created on public land, the Alaska Gasline Development Corporation will consult with the Alaska Department of Fish and Game when considering whether to allow for public access for hunting.	USACE appreciates the comment. AGDC would like to consult with ADF&G on access related issues for state and federal land. AGDC requests that ADF&G provide the AGDC Environmental, Regulatory and Land Manager a single point of contact for these discussions.	No change
WLD_23	The SEIS should address impacts to migratory birds associated with marine vessel traffic, as well as collision risks to migratory birds associated with elevated transmission structures.	The SEIS has been updated to include the potential mortality and/or injury effects on both T&E birds and other migratory birds associated with collision with vessels or proposed infrastructure associated with the Project.	4.10.4.1 and 4.10.4.1.4.7
WLD_24	The SEIS (Section 4.10.4.3, page 4-226) should acknowledge impacts to populations or species could rise to moderate or greater under some circumstances. Examples include: a) loss or degradation of limited, important habitats; b) poor placement or design of aerial/elevated lines or towers resulting in a significant, continuous collision hazard; c) marine vessel-associated fuel spills affecting a significant proportion of a population or species or a particularly important habitat; and/or d) populations of rats or other non-native species becoming established following accidental introduction.	USACE appreciates the suggested changes regarding the presentation of information in the SEIS. Text has been added to address this suggestion: "Under some specific circumstances, impacts to populations or species could increase to moderate or greater. Examples include: • Loss or degradation of limited, important habitats; • Poor placement or design of aerial/elevated lines or towers resulting in a significant, continuous collision hazard; • Marine vessel-associated fuel spills affecting a significant proportion of a population or species or a particularly important habitat; and/or • Populations of non-native species becoming established following accidental introduction."	4.10.2, 4.10.4.1, and 4.10.4.3
WLD_25	The visual impacts of the aboveground pipe to wildlife may deter their use of the area.	USACE recognizes that the proposed Project and past, present, and reasonably foreseeable future actions may affect wildlife. These cumulative impacts of the proposed Project, existing development, and other proposed Projects are discussed in Section 4.26 of the SEIS. The aboveground pipeline segment in Alternative 2 and its potential affects to wildlife, caribou specifically, are discussed in Section 4.10.5.2.3 of the SEIS.	No change
WLD_26	The Draft SEIS does not emphasize bird strikes related to 62 miles of aboveground pipeline and vertical support members (VSMs). Predatory birds are likely to use the VSMs and pipeline for perching.	USACE recognizes that the SIES was lacking information regarding the new perching sites for predatory birds. Discussion has been added throughout Section 4.10 to address this topic.	4.10
WLD_27	The negative impacts of a 10+ ft. tall perch for 62 miles should be discussed in terms of impacts to populations of small mammals, such as brown and collared lemmings, which have volatile and changing population cycles. Reductions in small mammal populations contribute to higher levels of predation on secondary food sources, such as duck and eider eggs by other North Slope predators.	USACE recognizes that the SIES was lacking information regarding the new perching sites for predatory birds. Discussion has been added throughout Section 4.10 to address this topic.	4.10
WLD_28	The 2011 Biological Opinion cannot be ignored and should be emphasized.	While the Biological Opinion from 2011 may provide useful background information, the agencies (NMFS and USFWS) will develop new Biological Opinions with conclusions based on the updated Project design and the best available, recent scientific data since the 2012 Final EIS was published.	No change
WLD_3	Above ground sections of the pipeline must be high enough so that it does not impede movement of wildlife and hunters. A minimum of seven feet of clearance from the bottom of the vertical support members is required to allow free passage to hunters and wildlife.	Additional information on the proposed height of the pipeline elevated on VSMs under Alternative 2 has been added to Section 2.4.	2.4
WLD_4	Comments expressing concern about the Project negatively affecting caribou migration. Caribou will stay away if there is project activity during their migration.	USACE appreciates these comments. Potential impacts to caribou migration are discussed in Section 4.10.4 of the SEIS.	No change
WLD_5	Collision risk to birds from an aboveground pipeline is low given the size and visibility of such a pipeline compared to risks associated with habitat modifications expected from burying the pipeline in thaw-unstable permafrost in the Arctic Coastal Plain.	Comment acknowledged.	No change
WLD_6	Aboveground linear features, such as pipelines and roads, are impacting the distribution of caribou and their ability to successfully hunt caribou.	USACE recognizes that the proposed Project and past, present, and reasonably foreseeable future actions may affect wildlife resources and subsistence hunting. These cumulative impacts of the proposed Project, existing development, and other proposed Projects are discussed in Section 4.26 of the SEIS. The aboveground pipeline segment in Alternative 2 and its potential affects to caribou are discussed in Section 4.10.5.2.3 of the SEIS. Recognizing the influence of compounding factors, such as proximity to roads, it is possible for the aboveground section of pipeline to negatively impact caribou movement and migration patterns, particularly if snow is drifted under the elevated pipeline, reducing pipeline height above the snow surface.	No change
WLD_7	As there are no regulatory requirements associated with Audubon listed species, they should be removed from Table 3.6-2.	USACE appreciates the suggested editorial changes regarding the presentation of information in the SEIS. Where USACE agrees with the suggestions, your comments have been incorporated.	Table 3.6-2
WLD_8	Recommend that the sensitive calving periods be described as seasonal life phases and not sensitive periods. A good example to follow is in Section 3.6.5, Birds.	USACE appreciates the suggested changes regarding the presentation of information in the SEIS. Text has been added to address this suggestion: "The most sensitive of these periods are calving (May to June) and rutting (September to October)."	3.6.4.2
WLD_9	I would recommend that the language from the polar bear section be used when describing construction activities in the threatened and endangered species section: As winter activities have the potential to disturb denning polar bears or ice seals, the Alaska Gasline Development Corporation would consult with the U.S. Fish and Wildlife Services to mitigate impacts appropriately and would obtain the needed permits and authorizations.	USACE appreciates the suggested changes regarding the presentation of information in the SEIS. Text has been added to address this suggestion: "As winter activities at West Dock have the potential to disturb denning polar bears or ice seals, AGDC would consult with NMFS and USFWS to mitigate impacts appropriately and would obtain the needed permits and authorizations."	3.10.4.1

- Page Intentionally Left Blank -

ATTACHMENT E

Meeting Transcripts

- Page Intentionally Left Blank -

ALASKA STAND ALONE PIPELINE, ASAP

PUBLIC SCOPING MEETING

Anchorage, Alaska
August 1, 2017

P R O C E E D I N G S

(Anchorage, Alaska - 8/1/2017)

(On record)

MS. JOHNSON: Hello, everybody. Good evening. Welcome to the public meeting for the Alaska Stand Alone Pipeline project. My name is Kate and I work for the company Environmental Resources Management. We are responsible for preparing the supplemental environmental impact statement on behalf of the Army Corps of Engineers.

The purpose of our meeting tonight is to tell you a little bit about what is included in this document and then also to provide you an opportunity to comment on the document and on the project itself.

So we're going to start out by introducing some of the people involved in the project. We're going to talk to you about the steps that are involved in the National Environmental Policy Act or NEPA process, which is the process that requires that the EIS be written. We're also going to talk about the project and background.

I do want to point out that this meeting is about the Alaska Stand Alone Pipeline project, which is the State's instate gas pipeline option. It's different than the AK LNG pipeline project, which would bring natural gas to international markets.

We're going to talk about the contents of the draft SEIS. I'll refer to the supplemental environmental impact statement as the SEIS. And then we're going to talk about the different ways that you can provide comment. I know that some of you might have questions. If you wouldn't mind holding those questions until after the presentation and comment period are finished, we'll stick around and we can use some of the materials that we've brought to answer your questions at that time.

With that I'd like to introduce Sandy Gibson with the Army Corps of Engineers and she's going to tell you a little bit about their role in the project.

MS. GIBSON: Thanks, Kate. Good evening. The U.S. Army Corps of Engineers is the lead Federal agency for development of the Alaska Stand Alone Pipeline project supplemental EIS. The responsibility of the lead agency is to ensure compliance with applicable environmental review processes.

USACE is responsible for managing the EIS process and the final content of the EIS, identifying and selecting cooperating agencies, and involving the public in the environmental review process. These tasks are accomplished at the direction of the Corps of Engineers and prepared using an independent third-party contractor. The third-party contractor selected by the Corps for this undertaking is Environmental Resources Management.

Thanks again for everyone coming. At this time ERM will provide a brief overview of where we are in the current EIS development process. Afterwards we'd welcome all comments from the public.

Thank you.

MS. JOHNSON: Thank you, Sandy. So here we have the steps in the NEPA process. As you can see, we are currently conducting the public meeting on the draft EIS. I've highlighted in orange here the opportunities that the public has to comment on the EIS or on the project. The first one was in 2014 during the scoping period and the comments that were received during that period have been summarized in a comment analysis report, which can be viewed online at asapeis.com.

We are currently in the 45-day public review period for the SEIS that began on June 30th and it will continue until August 14th. Finally, once the final EIS is published, there will be a third opportunity for the public to comment at that time.

So many of you may be aware that there was a final EIS written for this project in 2012 and since then there have been some project changes and refinements that have required a supplemental EIS to be written. As a result of those changes, some of the environmental impacts have changed a bit, which is the reason that this new document is required.

This slide shows five of the main differences between 2012 and now. The first difference is that the pipeline is now designed to carry utility grade natural gas. As a result, fewer support facilities will be required along the pipeline. Only one compressor station will be required at Prudhoe Bay.

Another change is that both the mainline and the Fairbanks Lateral pipelines have been rerouted in some locations. For the most part those changes have been made to decrease the environmental impacts. If you want to see exactly where those are, you can look either in the appendix of the SEIS, which is online at our project website, or you can also look actually online. The maps are just posted under the maps tab there so they're easy to find.

And then finally plans for the gas conditioning facility have been refined. The modules to construct that facility would be imported. Some modifications would be required at Dock Head 3 up on the North Slope in order for those barges to bring in those materials. It would also require some dredging and then disposal of those dredged materials around that area.

Here we have the four main chapters of the SEIS. Chapter 1, the project purpose and need. Chapter 2 is the proposed action and the alternatives. The NEPA process that I mentioned earlier requires us to analyze the environmental impacts of alternatives to the proposed action. Chapter 3 is the affected environment, so it describes the existing conditions within and around the project area. Then Chapter 4 is environmental consequences, so what could the potential environmental impacts of the project be.

Here we have the Alaska Gasline Development Corporation, who is the project proponent, also known as the project applicant. Their proposed purpose and need for the project is to make North Slope natural gas available to residents in Fairbanks, the Southcentral region and other communities in the state as directed by the Alaska State Legislature. It's also to provide access to a stable, affordable and long-term supply of natural gas for heating and powering homes and businesses.

Here we have a map showing the proposed

pipeline route. It would begin at Prudhoe Bay at Milepost 0. It would then follow the Trans-Alaska Pipeline System down to right around Livengood. At that point it would continue south. It would stay on the west side of Fairbanks and Nenana and then on the east side of Denali National Park before connecting to ENSTAR's existing distribution system just southwest of Big Lake.

So this is the proposed Fairbanks Lateral that would connect to the mainline at Milepost 440. It would continue along Murphy Dome and Old Murphy Dome Roads and then southeast into Fairbanks.

This figure shows an example of what the project construction right-of-way might look like. As you can see, the pipeline would be buried with the exception of fault crossings and some stream crossings. The construction right-of-way would be used to store trench spoils as well as for construction equipment to install the pipeline.

This would be anywhere between 120 feet wide to 350 feet wide and then there would be some additional temporary work spaces within an 800-foot corridor used to store equipment and materials. During pipeline operations, that pipeline right-of-way would be reduced to a minimum of 53 feet and in places it would still be as wide as 350 feet.

In addition to that buried pipeline, there would be some above ground facilities. Those would include mobile camps. Here's a picture of some mobile camps, permanent camps, pipe storage yards as well as gravel material sites.

As I mentioned earlier, a gas conditioning facility would be constructed near Prudhoe Bay. This figure here shows the existing central gas facility at Prudhoe Bay. The gas conditioning facility is proposed to be constructed about a mile west of that central gas facility.

Also, as I mentioned earlier, there would be some modifications to Dock Head 3 at West Dock in order for those 23 barges to access the dock head and import those modules to construct this gas conditioning facility. In order for those barges to access the dock, a channel would be dredged. It would

be about 500 feet wide by about a mile long. Those sediments would be disposed of at a nearshore location within Prudhoe Bay. I'll show you an image of that location in the next few slides here.

So as I mentioned the NEPA process requires that we analyze alternatives. This slide shows the main differences between Alternative 1, which is the proposed action that I just went over, and Alternative 2. Alternative 3 is the no action alternative, so what would the impacts of the pipeline not being constructed be.

So under Alternative 2 the route -- I mentioned that the proposed action stays to the east of Denali National Park. Under Alternative 2 the route would enter the Park, it would cross the Nenana River at a pedestrian footbridge, it would go seven miles through the Park, it would cross the Nenana River again and then it would resume along the mainline pipeline. I didn't point out that this pink line is the proposed pipeline route, green is Denali National Park and then this blue line is the Alternative 2 consideration.

Another difference would be that in the EIS we consider the impacts of offloading at Dock Head 2 rather than Dock Head 3. We consider disposing of those dredged materials that I mentioned earlier at a different location. So this is the proposed location in Prudhoe Bay at Milepost 0 and this is the Alternative 2 proposed location further out in the Beaufort Sea.

Additionally under Alternative 2 we consider the impacts of an above ground pipeline from Milepost 0 to 62, so in the Beaufort Coastal Plain area. Just to give you a frame of reference the pipeline would be 733 miles long, so that's a little less than 10 percent of the pipeline route. Finally we consider using an aerial suspension bridge at the Yukon River rather horizontal directional drilling.

Chapter 3, as I mentioned, goes over the existing environment in terms of these 21 resources. We're not going to talk about that in detail today because we don't have time, but if you're interested in existing environment, we brought a copy of the EIS out there on the table for you to reference. It's also available online at asapeis.com.

We are going to talk in a little bit more detail about Chapter 4 or the environmental impacts. So we're going to focus on these seven resources that I have listed here. We've chosen to talk about these today because these are resources either that are expected to see greater impacts or have received additional attention from stakeholders.

If you're interested in impacts to the other resources that were on the last slide, we've brought some figures that are laminated 11x17 out on the back table. There's one figure for each resource and it gives a nice overview of where the minor, moderate and major impacts would be expected to occur. You can also look in the executive summary for a nice summary or you can look in the EIS Chapter 4 for a detail assessment.

The impact analysis in Chapter 4 does take into account AGDC's proposed mitigation measures. It also discusses cumulative effects, so what the effects would be of other potential projects in the area occurring and impacting the same resources that this project could impact.

So I'm going to start by talking about three of these resources all together and I put them on the same slide because the greatest potential impacts to these resources would be related to the potential for permafrost thaw. These resources are soils and geology, water and wetlands.

There is some potential for permafrost thaw from vegetation removal along that construction right-of-way as well as from pipeline operation itself. If that did occur, there is potential for soil subsidence, which could result in altered water drainage as well as altered wetland hydrology.

So where could that occur. First of all it would be limited to areas of continuous or discontinuous permafrost. This figure generally shows where those types of permafrost occur. So blue is where continuous could occur and green is where discontinuous generally occurs. Within those areas it would be limited to areas where the soil is less stable. So like a clay or peat rather than a gravel. Gravel would be more stable and less likely to subside.

AGDC has proposed some mitigation to help minimize these impacts. The first thing is that they would construct an ambient temperature pipeline. So the pipeline would acclimate to the surrounding temperature as it travels through the soil. So that would further limit the impacts to locations where the pipeline may be traveling from a warmer soil into a colder soil where it takes a little bit of time to acclimate. AGDC would also consider revegetation and consider replacing those unstable soils that I mentioned earlier.

So for socioeconomics there could be both positive and negative impacts. Some of the positive impacts that we could see are employment opportunities, increased natural gas supply, as well as local and state tax revenues. Negative impact could be the upfront local and state expenditures associated with infrastructure or construction as well as increased pressure on government services.

For cultural resources there is potential at some sites for physical destruction or damage or changes in character, setting or access. These impacts could occur specifically at 26 of the 72 sites that have been identified within the area of direct effects and that's based on the currently available survey results.

I do want to point out that mitigation measures have not been finalized yet. They would be finalized in the programmatic agreement. If additional mitigation measures are identified in the programmatic agreement, these impacts at these 26 sites could be reduced to moderate or if in the programmatic agreement it's decided that they'll be avoided, they could be reduced to minor or negligible.

For subsistence resources there's potential for displacement of subsistence resources as well as changes to access to subsistence resources. Where this would occur at the greatest extent are communities located directly along the pipeline route or communities with increased use of subsistence areas that intersect the pipeline. This figure shows the communities in pink which would be most greatly affected, which are Wiseman, Coldfoot, Minto and Nenana.

Finally, there could be some impacts due to noise. The greatest impacts expected to occur would be associated with horizontal directional drilling locations. Of those locations, the greatest impacts are limited to areas where receptors are located within a tenth of a mile of that activity. So the horizontal directional drilling could occur over a 24-hour period. It would occur intermittently and probably for about a third of that time. It would also occur for 10 to 25 weeks at each location.

So the two locations that are near to proposed drilling sites are at the Kashwitna River HDD just north of Willow. There are a few residences located within a tenth of a mile and then at the Denali National Park commercial area, so by McKinley Park the Denali Cabins are located within a tenth of a mile. However, AGDC would minimize activity in tourist areas during the tourist season.

So if you're interested in providing a comment, there are many ways that you can do that. The first is that you can provide a comment tonight verbally. Just make sure that you've signed in on the sign-in forms. If you haven't, if you could do that as you leave that would be great. You can use one of those written comment forms that we've got out front or you can also mail your comments to Sandy at the Army Corps of Engineers. Make sure that your comments tare postmarked by August 14th. You can also send an email to asapeiscomments@erm.com and I'll put up the project website at the end of the presentation here.

When we start our comment period, we'll start out by allowing each person five minutes to comment. We just want to make sure that everyone has an opportunity to comment. If you've got more to say, you're welcome to come back up again and comment more.

We do have a court reporter present here today, so if you'd like to comment, please do come up to the podium and speak into the microphone. Also please state your name, first and last, before you speak.

We won't be making any decisions about the project today. I mentioned earlier if you've got questions, you're welcome to state the questions during

the public comment period, but we won't be responding to those or making any decisions during the public comment period or today. Your comments will be reviewed and incorporated into the final EIS as well as a public comment analysis report, which will also be made publicly available.

So, with that, is Earl doing his subsistence hearing tonight? No subsistence hearing tonight, okay.

All right. So with that if anyone would like to make a comment we would love to hear from you today. Please go ahead and come up to the podium and we'll turn it around for you.

(No comments)

MS. JOHNSON: I'll just give it a minute to see if anyone wants to come up and comment. We'd love to hear from you. Any commentors tonight?

(No comments)

MS. JOHNSON: Nobody. Okay. Well, then we will close the public comment period and we will stick around out in the hallway here and we're happy to show you the materials that we've brought and help answer any questions that you might have. Thanks for joining us tonight.

(Off record)

(END OF PROCEEDINGS)

TRANSCRIBER'S CERTIFICATE

I, Salena A. Hile, hereby certify that the foregoing pages numbered 02 through 11 are a true, accurate, and complete transcript of Anchorage Scoping Meeting on August 1, 2017, transcribed under my direction from a copy of an electronic sound recording to the best of our knowledge and ability.

_____ _____

DATE SALENA A. HILE

ALASKA STAND ALONE PIPELINE, ASAP

PUBLIC SCOPING MEETING

Barrow, Alaska
July 17, 2017

P R O C E E D I N G S

(Barrow, Alaska - 7/17/2017)

(On record)

MS. JOHNSON: Thank you for coming. My name is Kate and I work for the company Environmental Resources Management. We are responsible for writing the draft supplemental environmental impact statement for the Alaska Stand Alone Pipeline Project. The purpose of this public meeting is to tell you a little bit about the supplemental environmental impact statement, which we'll call the SEIS for short. Then also to provide you an opportunity to comment on the document or on the project.

So this slide is an overview of what we'll be talking about tonight. We're going to start out with welcome and introductions to some of the people that are involved in the project. We are going to talk about the steps in the National Environmental Policy Act process or the NEPA process. We'll also talk about the project description and background.

I want to just say that this is the Alaska Stand Alone Pipeline. It's an instate natural gas pipeline. It's different than the AK LNG pipeline that you might have heard of. That pipeline is intended for exporting natural gas, international market, so that's a different project.

We're going to talk about the contents of the draft EIS and we're going to talk about different ways that you can provide comment on the document as well.

With that I'll introduce Sandy Gibson with Army Corps of Engineers and she's going to tell you a little bit about the people involved in the project.

MS. GIBSON: Thanks, Kate. Good evening. My name is Sandy Gibson. I'm with the Army Corps of Engineers. The Army Corps of Engineers is the lead Federal agency for development of the Alaska Stand Alone Pipeline project supplement EIS. The responsibility of the lead agency is to ensure compliance with applicable environmental review

processes.

The Army Corps of Engineers is responsible for managing the EIS process and the final content of the EIS, identifying and selecting cooperating agencies, which you see here listed, and involving the public in the environmental review process. These tasks are accomplished at the direction of the Corps and prepared using an independent third-party contractor. The third-party contractor selected for this undertaking is Environmental Resources Management. This is who Kate works with.

Thank you everyone for coming. At this time ERM will provide a brief overview of where we are in the EIS development. Afterwards we'll welcome all comments from the public. Thank you.

MS. JOHNSON: All right. So this slide shows some of the steps that are in the NEPA process. As you can see in blue, we are conducting public meetings for the draft SEIS. We're in the middle of a 45-day public comment period that began June 30th and it will be open until August 14th.

MR. HUGO: Is that gas or oil?

MS. JOHNSON: Natural gas.

MR. HUGO: Natural gas?

MS. JOHNSON: Uh-huh (affirmative).

MR. HUGO: Where at?

MS. JOHNSON: I'll show you a map in the next few slides here of exactly where it will go. So there was an opportunity in 2014 to provide comments during the scoping period and there will be another opportunity in the winter of 2017 to provide comments on the final document.

MR. HUGO: Is this gas at the pump?

MS. JOHNSON: Sorry?

MR. HUGO: Is it in the land or where or where there's gas?

MS. JOHNSON: So the pipeline will start in Prudhoe Bay and it will extend down just north of Anchorage and it will connect into the existing natural gas system down there.

MR. HUGO: Oh, the natural gas pipeline?

MS. JOHNSON: Yeah. So this slide shows the differences between the 2012 design and the current design. So why do we need a supplemental EIS. There was an EIS written in 2012 and since then there have been some project changes and refinements. As a result the environmental impact changed a bit.

This slide shows the main differences between then and now. The first item on the list is that the pipeline will now carry utility-grade natural gas, so there will be less support facilities, fewer compressor stations. Only one single compressor station involved and you'll be able to access that gas directly from the pipeline. It won't require additional refinement.

MR. HUGO: What is the gas going to be used for?

MS. JOHNSON: You will have an opportunity to talk with us after the presentation, so I'm just going to go through the slides and then afterwards we're all going to stay here and you can look at the materials and we can answer any questions that you might have.

Okay. Another difference is the mainline pipeline and the Fairbanks Lateral Pipeline have both changed their alignment a little bit. If you're interested in what those changes are, you can look online at the website. It's asapeis.com and you can see where those are.

Finally the plans for constructing the gas conditioning facility have been refined. AGDC would be importing modules to construct that facility and that would result in some modifications to the Dock Head 3 at Prudhoe Bay. It would also involve some dredging and then disposal of that dredged material.

This slide shows the contents of the

EIS. This is the main four chapters of the SEIS. The first chapter describes the project purpose and need. Just so you know, the SEIS document that describes the project and all the environmental impacts is on the back table here. So if you want to take a look at that, that's what we're describing here.

Chapter 1 is the project purpose and need. Chapter 2 is the proposed action and alternatives. The NEPA process that I mentioned earlier requires us to analyze some alternatives to the project. Chapter 3 describes the existing conditions within the project area. Chapter 4 talks about the potential environmental impacts.

So the project purpose and need is to make North Slope natural gas available to residents in Fairbanks, the Southcentral region and other communities in the state as directed by the Alaska State Legislature. It's also to provide access to a stable, affordable and long-term supply of natural gas for heating and powering homes and businesses.

Here's the slide I was talking about that shows you exactly where the pipeline route will start and end. This shows Milepost 0 up at Prudhoe Bay and the line would then extend south, paralleling the Trans-Alaska Pipeline System until just northwest of Fairbanks and then it would continue south while the TAPS pipeline continues east. It would stay to the east side of Denali National Park. It wouldn't enter the Park. Then it would continue along the Parks Highway down to just southwest of Big Lake where it would connect into the existing natural gas system.

MR. HUGO: Is there infrastructure to make it available for a heating basis?

MS. JOHNSON: Is there infrastructure to make the natural gas available for heating. So it would tie into the existing natural gas pipelines in Southcentral Alaska.

So this slide just shows that there is a Fairbanks Lateral that's going to extend from Milepost 440 of the pipeline over to Fairbanks.

This slide shows an example of what the construction right-of-way might look like. As you can

see, the pipeline would be a buried pipeline. One side of the right-of-way or part of the right-of-way would be used to store that soil that comes out of the trench and then the right-of-way would also be used for equipment to access.

The right-of-way would be anywhere between 120-350 feet wide during construction and then additionally there would be some temporary work spaces within a 800-foot corridor. During operations the right-of-way would be maintained at 53 feet and in some areas out to 350 feet.

MR. HUGO: Do you know how much longer natural gas is going to happen and drilled out?

MS. JOHNSON: That I don't know. I don't know the answer to that. So this slide shows the above-ground facilities that would be constructed in addition to the pipeline. They would include temporary camps that might look something like this picture. Stationary camps that might look like this picture. It would include pipe storage yards and then material sites that would provide gravel.

Some additional above-ground facilities would be the gas conditioning facility, which would be constructed. This figure shows the outline of where the pad would be constructed. It would be in Prudhoe Bay and it's about a mile west of the existing central gas facility.

Then, as I mentioned earlier, there would be some modifications to Dock Head 3 at West Dock so that 23 barges could offload the materials to construct the gas conditioning facility. That would also require dredging of a channel so that those projects could reach the dock head. It would be about a mile long and about 500 feet wide.

MR. HUGO: Can we send the gas to Mars? Do you know that?

MS. JOHNSON: No, no. Okay. So this slide talks about the difference between Alternative 1 and 2. So I mentioned earlier that we're required to address some alternatives. So the first one is that the route would actually enter Denali National Park for about seven miles. I'm just going to go to the next

slide and show you where. So this is the Alternative 1 proposed action.

Under Alternative 2 the line would follow this blue line. It would enter Denali National Park crossing the Nenana on a pedestrian bridge, it would go through the Park and then cross the river again before connecting to the main route.

Secondly, modules would be offloaded at Dock Head 2 rather than Dock Head 3. It would also include under Alternative 2 ocean disposal of the dredge materials. So the proposed action is to dispose of the dredge materials nearshore in Prudhoe Bay and under Alternative 2 they would be disposed out in the Beaufort Sea a few miles offshore.

Another difference between Alternatives 1 and 2 is that Alternative 2 would be constructed above ground within the Beaufort Coastal Plain area. The pipeline would be 733 miles long, so that would be less than 10 percent of the pipeline length.

Finally, at the crossing of the Yukon River we consider in SEIS the impacts of an aerial suspension bridge rather than a horizontal drilling crossing at the Yukon River.

Finally, Alternative 3 is the no action alternative. So what would the impacts be if the pipeline wasn't constructed.

This slide just shows a list of all the resources that are described in the document. We won't go through all of them today, but if you're interested in reading about any of these existing environment, you can look in the EIS. It's also available online at asapeis.com.

Chapter 4 we'll spend a little bit of time on. We've selected these seven resources to talk about today because they've either been of particular interest to stakeholders or they're likely to see some greater impacts than the other resources.

If you're interested in the impacts on the other resources that we saw in the last slide, we've got a bunch of maps on the back table there and those show the pipeline route and then which areas

might see major effects and which areas might see minor effects. You can also look in the executive summary, which is in the beginning of the document and then you can also read in the EIS if you want more detail.

The analysis of the impacts also consider AGDC's proposed mitigation measures and there's also a section that talks about cumulative effects. So what would the effects be of other projects that could happen in the area when combined with this project.

There's a lot on this slide. I've combined a few resources together because the greatest impacts to these resources would be similar. Soils and geology, water and wetlands could all potentially see impacts as a result of permafrost thaw. Permafrost thaw could occur from stripping of vegetation and then also during pipeline operation.

If permafrost thaw occurs, then in some locations where the soil is less stable, the soil could see some collapsing, which could alter the surface and groundwater hydrology as well as the wetland hydrology. So those are considered indirect effects.

So where would this occur. This could occur in areas of continuous or discontinuous permafrost. So this blue area is just generally where you might see continuous permafrost and this sort of peach color is where you might be discontinuous permafrost. Then within those areas the impacts would be limited to, as I mentioned before, unstable soil. If you had like an organic soil, it could collapse, whereas if it were a gravel soil, then you wouldn't see these impacts.

So AGDC has proposed some mitigation related to this impact. The pipeline would be an ambient temperature pipeline so it would acclimate to the surrounding ground temperature. There could be sometimes when the pipeline is going from a warmer area to a colder area that it may take some time to adjust and that's where we might see these impacts. AGDC will also consider revegetation and then also replacing some of those unstable soils with more stable soils.

For socioeconomics, some of the impacts could be -- the impacts could be positive or negative.

Some of the positive impacts that we might see are increased employment opportunities during both construction and operations, increased natural gas supply during operations and then local and state tax revenues. On the opposite side, the negative impacts could be some up-front local and state expenditures related to infrastructure and government services. Might experience an increased demand during construction.

Cultural resources. Some impacts that could occur include physical destruction or damage as well as changes in character or setting. Where could this occur? The EIS identifies 26 sites of the known 72 sites within the area of direct effects and this is based on the survey results that are available to us now.

The mitigation measures will be further developed in the programmatic agreement. So when those are developed those impacts could be reduced to moderate with certain mitigation measures or they could be reduced to minor or negligible if it's determined that they'll be avoided.

A couple more slides about impacts. Subsistence resources. There could be displacement of subsistence resources or changes to access to subsistence resources and this would occur to the greatest extent in these communities that would be located right along the pipeline such as Wiseman and Coldfoot as well as Nenana and also communities that use subsistence areas that are intersected by the pipeline such as Minto. This map is also on the back table if you want to check out Barrow.

Finally, there could be some significant noise in some locations. This could occur over a 24-hour period, but it would occur intermittently, so about a third of the time over the 24 hours and then that could occur for 10 to 25 weeks.

We've identified locations where this would be a greater impact and those are locations where there's a receptor within a 10th of a mile. So at the Kashwitna River HDD, which is shown just north of Big Lake, there are some residences that are close to the horizontal directional drilling location and then near

McKinley Park, the Denali Cabins are pretty close to the drilling location. AGDC has proposed some mitigation measures. They would minimize activities near tourist-related facilities such as the Denali Cabins during high-use periods.

So if you're interested in providing a comment on the EIS, you can provide one tonight during the comment period. Make sure that you sign in. I think everyone has done that. You can fill out a comment form, which are on the back table. You can send an email to asapeiscomments@erm.com or you can send a note to Sandy at the Army Corps of Engineers. Just make sure that those are postmarked by August 14th.

We've got a court reporter here tonight, so if you make a comment on the record, please make sure that you state your name and spell it for her. We won't be making any decisions about the project today and we won't be responding to any comments or questions during the formal comment period, but your comments will be recorded and they'll be considered when we're writing the final EIS.

If you have questions about the project that you want answered tonight, we will stay and we've got lots of project materials. We can point you to where you might find that information. So please focus your comments on the ASAP EIS project. With that, Earl will make a statement about the subsistence hearing.

MR. WILLIAMS: Thank you, Kate. Good evening. My name is Earl Williams and I am a project manager with the Bureau of Land Management. I am reading this statement into the record to let you know that this public meeting is also a subsistence hearing.

Section 810 of the Alaska National Interest Lands Conservation Act, or ANILCA, requires the BLM to evaluate the effects of its actions on subsistence uses and to hold public hearings if it finds that subsistence use may be significantly restricted.

The Alaska Stand Alone Pipeline project is seeking a right-of-way from the BLM to allow for the construction and operation of a buried pipeline across public lands. In reviewing this application, the BLM

must consider the potential effects to the environment and the potential impacts to subsistence resources and uses on public lands. The ANILCA 810 evaluation done for this project assessed the potential effects of the proposed alternatives and the cumulative case on subsistence use, and is included as an appendix in the Draft SEIS.

In the evaluation, the BLM finds that the proposed project and its alternatives may result in a significant impact to subsistence uses. These potential impacts may include reductions in the availability or abundance of caribou, moose, and other wildlife. Additionally, there could be reductions in the availability of berries and other plants in some traditional harvest areas.

This hearing is being held to provide you an opportunity to make comments on the preliminary subsistence analysis for the Alaska Stand Alone Pipeline. All comments are welcome, but we especially would like to hear your thoughts regarding mitigation measures that could be applied to minimize impacts to your subsistence use.

The comments you provide will be considered in the preparation of the Final SEIS and the BLM's Record of Decision. You may provide your comments here tonight or submit them in writing. Please submit any written comments to the Corps of Engineers by the close of the comment period.

Thank you.

MS. JOHNSON: Thanks, Earl. So if you would like to make a comment, you can go ahead at this time. Just step up to the podium and don't forget to state and spell your name. We'd love to hear from you. Would anyone like to comment?

MS. STACKHOUSE: I'm Martha Stackhouse, M A-R-T-H-A S-T-A-C-K-H-O-U-S-E. I was noticing that along the pipeline there's villages like Rampart that are not directly there but are close to the pipeline. Are they going to be able to get the natural gas as well? Any of those villages that are close to the pipeline?

The other one I was wondering about is

the disposal areas in Beaufort Sea. What are they disposing? Those are the two questions that I had.

MS. JOHNSON: I can answer those briefly. So they are disposing of the dredged materials from dredging a channel to access Dock Head 3. And then regarding community access to the main pipeline, they would need to construct a line to off-take off of the main pipeline. If you've got more questions about that, we can share our project materials with you after.

Anything else?

MS. ROMERO: So I was going to say, Martha, if you think that, you know, gas should be provided to Rampart, then that's the kind of comments that we need to hear or was it just a general question?

MS. STACKHOUSE: Yeah. Well, yeah. I was just wondering -- actually the whole state, you know, they're always bringing in lots of heat, stove oils in small villages all throughout the state.

MS. ROMERO: Tina, can you hear her?

REPORTER: I can, but why don't you come on up so everybody will be able to hear you.

MS. ROMERO: Those are exactly the comments we need.

MS. STACKHOUSE: Yeah, I was just wondering if it's possible to even bring natural gas to the whole state, like in Bethel area, you know. There's so much need. Even in our areas like even Atqasuk. They don't have natural gas. Wainwright, those places, but also in other regions throughout the state. Bethel area, down Southcentral area and those.

So I was just wondering if it's possible because I'm not sure where this gas is going. I know it's somewhere down south, but there is so much need here in Alaska. That was my point.

MS. JOHNSON: Thank you. Go ahead.

MR. HUGO: I am Christopher Hugo. Is there going to have a need for a waste site for

conditioning the gas?

MS. JOHNSON: I guess I don't have an answer to that today, but we've got your comment on the record and we'll consider that.

MR. HUGO: Okay. Thank you.

MS. JOHNSON: Anything else?

(No comments)

MS. JOHNSON: Okay. I suppose we'll close the comment period and we'll stick around for a few minutes.

We really appreciate you coming tonight and listening to the presentation and commenting.

Thanks so much.

(Off record)

(END OF PROCEEDINGS)

TRANSCRIBER'S CERTIFICATE

I, Salena A. Hile, hereby certify that the foregoing pages numbered 02 through 14 are a true, accurate, and complete transcript of Barrow Scoping Meeting on July 17, 2017, transcribed under my direction from a copy of an electronic sound recording to the best of our knowledge and ability.

_____ _____

DATE SALENA A. HILE

ALASKA STAND ALONE PIPELINE, ASAP

PUBLIC SCOPING MEETING

Bettles, Alaska
July 25, 2017

P R O C E E D I N G S

(Bettles, Alaska - 7/25/2017)

(On record)

MS. JOHNSON: Hello, everybody. I think we're going to get started here so if you wouldn't mind taking a seat. Okay. My name is Kate and I'm with the company Environmental Resources Management. We are responsible for writing the draft supplemental environmental impact statement for the Alaska Stand Alone Pipeline project. We are the third-party contractor on behalf of the Army Corps of Engineers.

The purpose of the meeting tonight is just to tell you a little bit about the findings of the -- I'm going to call it the SEIS so I don't have to repeat Supplemental Environmental Impact Statement. We're going to tell you about the findings and then we're going to provide an opportunity for you to provide a public comment and then we'll stick around a little bit afterwards if you guys want to look a little more at these materials and talk to us. We'll be here.

So we're going to start out with introductions and then I'm going to talk to you a little bit about the steps that are involved in the National Environmental Policy Act process, which I'll call the NEPA process. We're also going to talk about the project description.

I do want to make it clear that this project is the Alaska Stand Alone Pipeline Project, so it's the instate gas option. It's different than the AK LNG pipeline. That is the pipeline that would distribute natural gas to international markets. This pipeline is only for instate markets.

We're going to talk a little bit about the contents of the SEIS and then we're going to talk about your opportunities to provide comments outside of tonight. I do ask that if you have questions, if you could just hold them during the presentation and public comment period and then after that we'll stick around and we're happy to help you find the information you're looking for.

With that I'd like to introduce Sandy Gibson with the Army Corps of Engineers and she's going to tell you a little bit about their role in the project.

MS. GIBSON: Thanks, Kate. Thanks again for everyone coming. The Army Corps of Engineers is the lead Federal agency for development of the Alaska Stand Alone Pipeline project supplemental EIS. The responsibility of the lead agency is to ensure compliance with applicable environmental review processes.

USACE is responsible for managing the EIS process and the final content of the EIS, identifying and selecting the cooperating agencies, which are listed here below, and involving the public in the environmental review process. These tasks are accomplished at the direction of the Corps and prepared using an independent third-party contractor. The third-party contractor selected for this undertaking is Environmental Resources Management.

At this time ERM will provide a brief overview of where we are in the EIS development processes and we welcome all comments from the public. Thank you, guys.

MS. JOHNSON: Thanks, Sandy. So here we have the steps in the NEPA process. As you can see in blue, we are at the public meeting phase. We are also currently in the public comment period for the draft SEIS. It's a 45-day comment period. It began June 30th and it will be open until August 14th.

What you see highlighted in orange here are opportunities to comment on the document. One was held during the scoping period in August of 2014. You can see the results of that period on the website asapeis.com. There's a comment analysis report that describes the comments that were received and how they're incorporated. And then finally the final EIS, when that's distributed, you'll have another opportunity to comment at that time.

So why do we need a supplemental EIS. As many of you know, there was an EIS for this project prepared in 2012 and since then there have been several project changes. With those project changes are some

differences in environmental impacts, which is what requires a supplemental EIS.

This slide summarizes the main changes between 2012 and now. The first one is that the gas composition is now proposed to be utility grade natural gas, so that would require fewer support facilities and would include only one compressor station at Prudhoe Bay rather than multiple compressor stations.

Both the mainline pipeline and the Fairbanks Lateral have been rerouted in several locations. For the most part those are to minimize environmental impacts. If you're interested in where those route changes are, you can look on the website. There's a map that shows the 2012 route and the current route compared.

Finally, plans for the gas conditioning facility have been refined, so modules to construct that gas conditioning facility would be imported and they would use Dock Head 3 at West Dock on the North Slope to import those modules. So some modifications would be required there as well as some dredging and then disposal of those dredged materials.

So there's four main chapters of the SEIS. The first chapter is the project purpose and need. We're going to talk a little bit about each of these tonight. Chapter two is the proposed action and alternatives. The NEPA process requires that we analyze the environmental impacts of alternatives in addition to the proposed action. Chapter three describes the existing conditions within and around the project area. Then chapter four describes what the potential environmental consequences might be on those resources.

The Alaska Gasline Development Corporation's proposed purpose and need for the project is to make North Slope natural gas available to residents in Fairbanks, the Southcentral region and other communities in the state as directed by the Alaska State Legislature and to provide access to a stable, affordable and long-term supply of natural gas for heating and powering homes and businesses.

This slide shows the proposed pipeline route. As you can see, it would begin at Prudhoe Bay,

Milepost 0. It would then follow basically the Trans-Alaska Pipeline System route down to Livengood, this is TAPS in green, where it would continue south. It would stay west of Fairbanks and Nenana and then under the proposed action Alternative 1 it would stay on the east side of Denali National Park. It would then continue down the Parks Highway and connect with ENSTAR's existing distribution system down there.

The project also includes the Fairbanks Lateral, so it would tie into the main line at Milepost 440 and then it will follow Murphy Dome and Old Murphy Dome Roads and then it would extend southeast into Fairbanks.

This slide shows an example of what the construction right-of-way might look like. As you can see, it would be a buried pipeline. The construction right-of-way would be used to store trench spoil as well as for equipment to access that trench and install the pipeline.

This would be between 120 and 350 feet wide during construction. In addition, there would be some temporary work spaces for storing materials and equipment that would be within an 800-foot corridor of the pipeline route. So that's during construction. During operations the right-of-way would be slightly narrower down to 53 feet wide in many locations, but still could be out to 350 feet in some places.

In addition to the pipeline itself, there would be some above-ground facilities. Those would include both mobile and stationary camps. These are just some pictures of what those might look like. It would include pipe storage yards as well as gravel material sites.

As I mentioned earlier, a gas conditioning facility would be constructed up on the Slope near Prudhoe Bay. This shows the existing central gas facility. That gas conditioning facility would be constructed about a mile west of there.

In order to construct that, as I mentioned, barges would import some modules and there would be some modifications to Dock Head 3 at West Dock. In order for those barges to access the dock, there would be dredging of a channel which would be

approximate 500 feet wide by about a mile long.

So I mentioned that there were alternatives analyzed in the EIS and this shows the differences between Alternative 1 and Alternative 2. Alternative 3 is the no action alternative. So there's five main differences between 1 and 2. The first one is that Alternative 2 considers a route that enters Denali National Park and it would go through the Park for about seven miles. Here we have the proposed action in pink.

Denali National Park is in green and then the Alternative 2 route is shown in blue. It would cross the Nenana River on a pedestrian footbridge, go seven miles through the Park and then it would cross the Nenana River again before reaching the proposed action route.

Under this alternatives the modules for constructing the DCF would be offloaded at Dock Head 2 rather than Dock Head 3. The dredge materials would be disposed of in a different location. So in Alternative 1 we consider the impacts of disposing those materials, those sediments, nearshore in Prudhoe Bay. Under Alternative 2 we consider the impacts of disposing those in the Beaufort Sea.

Under Alternative 2 the pipeline would be constructed above ground for the first 62 miles, so that's the area of it that's within the Beaufort Coastal Plain. To give you a frame of reference, the pipeline would be 733 miles long, so that's a little less than 10 percent of the route. Finally, under Alternative 2 we consider the impacts of an aerial suspension bridge crossing the Yukon River rather than horizontal directional drilling.

Chapter 3, as I mentioned earlier, talks about the affected environment. We don't have time to talk about all these resources today, but the existing environment in terms of these resources are described in detail. We've got a copy of the EIS on the table here if you want to take a look at it. There's six booklets and they all make up one EIS, so it's just for reference tonight.

Chapter 4, environmental consequences, we're going to talk in detail about a few of the

resources. The reason we selected these resources is because these are the ones that have received the most attention from stakeholders or they're the ones that are expected to see the greater impacts.

If you're interested in impacts to the other resources that I just showed on that last slide, we've got some laminated maps here on the table. There's one map for each resource and it shows you where impacts are expected to be minor, moderate and major along the pipeline route. So you can look up Bettles and see which ones could be impacted the most in the area.

There's also an executive summary at the beginning of the EIS that's got a quick bulleted summary of the impacts to each resource. And then the Chapter 4 environmental consequences does take into account AGDC's proposed mitigation measures. Then finally there is a chapter that talks about cumulative effects, which is the effects of other proposed or potential projects in the area that could have impacts on the same resources as this project.

So here I've combined together three resources, soils and geology, water and wetlands, and that is because the greatest potential impacts to these resources would be similar as they're all related to a potential for permafrost thaw. So permafrost thaw could occur due to removal of the vegetation along the project right-of-way. It could also occur during pipeline operation due to the fluctuating temperature of the pipeline.

If there is permafrost thaws, I'm sure you know there is potential for soil collapse in those areas which could result in indirect effects to groundwater surface water flow and then wetland hydrology function.

So the potential for these impacts are mostly limited to some specific areas. Those are obviously areas of continuous permafrost. This map shows generally where those are. Discontinuous permafrost is shown generally in green. Within those areas this effect would be more likely to occur in unstable soils, like organic soils or clay soils, rather than more stable soils like a gravel.

Additionally, AGDC proposes to construct the pipeline as an ambient temperature pipeline. So it wouldn't be heated and the pipeline would be designed to acclimate to the surrounding temperature. There would be some situations where the pipeline goes through a warmer soil into permafrost and that's where there is that potential for it to take a little bit of time to acclimate. So that's another situation where you might see that effect. AGDC will also consider revegetation as well as replacing those thaw unstable soils that I mentioned earlier.

MR. THORNE: Is there going to be a -- when you compress the gas to get that pressure, it's going to increase the temperature. Are they going to have a way to cool it down before it enters the pipe?

MS. JOHNSON: That would be a good question for Lisa after the presentation. We can talk to you a little bit more about that.

MR. THORNE: Okay. Sorry.

MS. JOHNSON: Okay. So on this slide we've got the greatest impacts to socioeconomics, which would be both positive and negative. There could be employment opportunities during both construction and operations of the pipeline. There could be an increased gas supply during operations, as well as local and state tax revenues. On the negative side there could be high upfront local and state expenditures associated with the infrastructure construction as well as increased demand on government services.

For cultural resources there is some potential at some locations, specifically 26 sites of the 72 non-sites in the area of direct effects, for physical damage or destruction or changes in character, setting or access to these sites. These are based on current survey results.

As we can see, the mitigation measures have not been finalized for the cultural resources. They will be finalized in the programmatic agreement. Once those are finalized, the impacts to these 26 sites could be reduced to moderate or if they're avoided, and this programmatic agreement requires that they're avoided, they could be reduced to minor or negligible.

MR. BOND: What are some examples of the cultural resources?

MS. JOHNSON: So we've got -- I could show you an EIS after the public comment period. The EIS describes all the different types of cultural resources along the pipeline route.

So impacts to subsistence could include displacement of subsistence resources and changes to access. These would occur to the greatest extent in communities that are located directly along the pipeline route as well as communities that have an increased use of the areas that intersect the pipeline route. As you can see, in this figure is an example of one of the figures that's on the table here that color codes the greatest impacts would potentially be in Wiseman, Coldfoot, Minto and Nenana.

Finally, there's a potential impact of noise during horizontal directional drilling activities. The HDD could occur for over 24-hour periods. However, it would be intermittent and the noise would occur for about a third of that time, but any time during that period. It would occur for 10 to 25 weeks for each horizontal directional drill.

There are two locations that we've identified in the SEIS where this could be a major impact and those are areas where the HDD, the drill, is located near a receptor. So the first one is at the Kashwitna River crossing just north of Willow where there are some houses located within a tenth of a mile of that location. Then, secondly, at the Denali National Park commercial area where that drill is within a tenth of a mile of the Denali Cabins. So AGDC has proposed to minimize activities near tourist-related facilities during those high use tourist periods.

So submitting comments on the EIS. We'd love to hear from you tonight during the public comment period. If you do make a comment, I think I got everyone that's here, but just make sure that you write your name on this comment form for us, please or on the sign-in sheet rather. You can also fill out a written comment form if you prefer to make your comment privately. You can also email to asapeiscomments@erm.com. There's a link to that email

on our website. You can also mail your comments to Sandy at the Army Corps of Engineers. Just make sure that your comments are received by August 14th.

So we'll start out providing each commentor with about five minutes. We just want to make sure that everyone has an opportunity to comment. If you would like to comment for a longer period of time after everyone has had an opportunity, that's fine as well. We do have a court reporter here tonight, so if you could make sure that you make your comment into the microphone and she'll pass it around while you're making comments. Before you make your comment if you could also state your first and last name that would be helpful.

We won't be making any decisions about the project and we won't be responding to any comments or questions. You're welcome to ask a question. We won't be responding to those during the public comment period. Those will be considered and they'll be addressed in the final EIS. There will also be a public comment analysis report released that will talk about how those were addressed.

As I said before, we will hang out after the public comment period if you have specific questions. So we would love to hear from you today. Oh, before we get started, sorry, this also serves as the subsistence hearing, so Earl with the BLM is going to open the subsistence hearing.

MR. WILLIAMS: Thank you, Kate. I'd like to thank the community for providing us the opportunity to come here tonight and present our environmental impact statement and hear your concerns regarding the project. I apologize for making this sound so official, but it's an official document, so I've got to be a government official.

My name is Earl Williams. I'm a project manager with the Bureau of Land Management. I am reading this statement into the record to let you know that this public meeting is also a subsistence hearing. Section 810 of the Alaska National Interest Lands Conservation Act, or ANILCA, requires the BLM to evaluate the effects of its actions on subsistence uses and to hold public hearings if it finds that subsistence use may be significantly restricted.

The Alaska Stand Alone Pipeline project is seeking a right-of-way from the BLM to allow for the construction and operation of a buried pipeline across public lands. In reviewing this application, the BLM must consider the potential effects to the environment and the potential impacts to subsistence resources and uses on public lands. The ANILCA 810 evaluation done for this project assessed the potential effects of the proposed alternatives and the cumulative case on subsistence use, and is included as an appendix in the Draft SEIS.

In the evaluation, the BLM finds that the proposed project and its alternatives may result in a significant impact to subsistence uses. These potential impacts may include reductions in the availability or abundance of caribou, moose, and other wildlife. Additionally, there could be reductions in the availability of berries and other plants in some traditional harvest areas.

This hearing is being held to provide you an opportunity to make comments on the preliminary subsistence analysis for the Alaska Stand Alone Pipeline. All comments are welcome, but we especially would like to hear your thoughts regarding mitigation measures that could be applied to minimize impacts to your subsistence use.

The comments you provide will be considered in the preparation of the Final Supplemental EIS and the BLM's Record of Decision for the right-of-way. You may provide your comments here tonight or submit them in writing. Please submit any written comments to the Corps of Engineers by the close of the comment period.

Thank you.

MS. JOHNSON: Thanks, Earl. So with that we will open up the public comment period. If anyone would like to comment, just motion to Tina and she'll bring you the microphone. We would love to hear your comments tonight.

MS. JOHNSON: The question is these are just comments, not questions. You can ask a question on the public record if you want it to be addressed in the SEIS and then we can talk a little bit more

afterwards.

MR. THOMPSON: (Away from microphone)

MS. JOHNSON: That's a good comment actually. We'd love to hear that in the microphone and get it on the record. You can use this one or that one.

MR. THOMPSON: Frank Thompson, First Chief Evansville Tribal Council. I'm just requesting that more detailed maps around affected communities that you're going to be impacting or that have the closest impact that there's more of a scale of a map for the area, whatever alignment.

MS. JOHNSON: Thank you.

MR. THORNE: I've got a big mouth. You don't have to worry about me. I'm the guy you hear on the other side of the football stadium with a whole crowd yelling.

REPORTER: Okay. And your name.

MR. THORNE: I'm Rich Thorne. I'm a 27-year resident. I happen to be a city council member currently. Bettles City Council. I have a question. You say it's going to come down the oil pipeline. If you're coming through Atigun pass, you're coming down the headwaters of the Koyukuk River and there's a great potential for siltation and disturbing the salmon runs that we have. What's going to be done to mitigate these further siltation problems in the Koyukuk valley? Because that's going to impact not just us but people all the way down the river.

MS. JOHNSON: Thank you.

MR. BOND: Hello. I'm Noel Bond. I'm just a seasonal resident here in Bettles. I have a couple questions. What cultural resources are being impacted by the pipeline? What's the science behind burying the natural gas pipeline instead of having it above ground. To me it seems like maybe it would be less impact on vegetation if you didn't bury it. You know, I do want to comment that I think it's really important that you all are having these community meetings because there's that classic Dr. Seuss story

about the Lorax and how we're the voice for the environment and we want to make smart decisions. So hopefully some smart decisions are made. All right.

MS. JOHNSON: Thank you.

MS. BRONOWSKI: My name is Anya Bronowski. I'm a seasonal Park Service employee out of Bettles. I have quite a few questions because I'm not familiar with this project. I guess, number one, how long has this proposal been going on and why are there alternative drafts being made, what's the history?

I guess, secondly, why is there a need for natural gas as opposed to other forms of energy within the state of Alaska and what those alternatives are and why this is being sought out would be another question.

And I guess after working in Denali National Park for the last three seasons, knowing that there's a park on the eastern side of the highway there, it looks like that's a proposed Alternative 2 route. I'm curious how that's going to work running that through the National Park Service land. How that's being dealt with with that land use management agency.

And I guess what communities is the natural gas being provided for? Is it primarily down in Anchorage and Fairbanks? I think that's it for now.

MR. THORNE: I'll take it again. This is Rich Thorne again. I might as well ask the rest of my comments and questions. You're proposing to compress this gas at Prudhoe Bay and the process of compression creates heat. Is the gas in the pipeline by the time you get it underground is it going to be ambient temperature or is it still going to be warm?

The next comment/question is what are going to be the economic benefits for the folks in the Bush after construction? This is a wonderful thing for Anchorage and Fairbanks and I'm in favor of building it, but you need to ask about what you're going to do for the rest of the state. They keep trying to whack off the state subsidy in the Bush electric or Power Cost Equalization Program. Sorry, I momentarily forgot the name of it. What's going to be done? You're going

to be cutting the costs in Anchorage and Fairbanks. What about the Bush?

MR. SWANSON: My name is Noel Swanson. I'm the tribal council environmental coordinator coming up on two years of doing this job. Of course the concerns that I have are environmental impact especially when it comes to subsistence and the pathway going through. I'm curious to know how fast they're planning on laying the pipe.

I'm curious about the cost of burying it versus above ground. To me it seems like above ground would be something that would be easier to get to for repairs as opposed to it being below ground and having to dig it up and fix the problem and going back and impacting the environment again after you guys have already done the work on it. So I'm kind of curious about what's going on there with that. Have they thought about that.

My other question is how fast they're going to be able to lay the pipe so they don't impact the environment and chase off all the wildlife that normally have their route through here. Yeah, pretty much that's it. I want to know how quickly it's going to be done. It sounds like this is going to go through.

And I'm just curious if they could come up with -- when I worked on the North Slope, they had a permit to drill and they had an estimated time of how long it should take us to drill that particular hole and do what they needed to do. We always come really close to meeting their requirements only we'd get that done ahead of time because time is money when it comes to doing a big project like this.

So that's a question that I have is like how fast is it going to be going by here. Let us know when it's coming by, you know. The other question is above ground versus below ground. I'd be real curious about what they want to do there.

MS. COSTELLO: My name is Naomi Costello and I'm the Evansville tribal administrator. My comment on this project initially is -- well, I saw what happened during the '70s with the building of the oil pipeline and I've seen that there was absolutely no

benefit to the rural communities entirely along that oil pipeline. So for the socioeconomic -- my comment is, you know, like what would this project do for the rural communities of Alaska.

We lucked out with the winter trail that's been going on, which is like hit and miss for opportunity to utilize the Dalton Highway to access over a winter trail for some of our supplies and materials. It's just there hasn't been any benefit from the oil pipeline in 40 years and what kind of benefit over the long term is expected for rural communities.

I'm just kind of like, well, are we going to see it happen with our resources, you know, traveling, zooming by us and here we are struggling with our energy costs here. I'm pretty sure that comment can resonate throughout most of the native villages that are along the oil pipeline that exists already.

MR. BOND: This is Noel Bond again. So my question is -- it was kind of explained, but I'd be interested in finding out some more information. So the pipeline is following the same corridor that the existing pipeline is and then it splits off. What I'm curious about is how much will that corridor be expanded upon, you know, widened with that second pipeline in that corridor. I'm curious on what will be changed.

Thanks.

MS. JOHNSON: Would anybody else like to make a comment or a follow-up comment.

(No comments)

MS. JOHNSON: Okay. So, with that, we'll close the public comment period. I really appreciate you all coming today and commenting.

Like I said, we'll stick around and help answer your questions after.

Thanks.

(Off record)

(END OF PROCEEDINGS)

TRANSCRIBER'S CERTIFICATE

I, Salena A. Hile, hereby certify that the foregoing pages numbered 02 through 16 are a true, accurate, and complete transcript of Bettles Scoping Meeting on July 25, 2017, transcribed under my direction from a copy of an electronic sound recording to the best of our knowledge and ability.

_____ _____

DATE SALENA A. HILE

ALASKA STAND ALONE PIPELINE, ASAP

PUBLIC SCOPING MEETING

Cantwell, Alaska
August 3, 2017

P R O C E E D I N G S

(Cantwell, Alaska - 8/3/2017)

(On record)

MS. JOHNSON: Good evening, everyone. Welcome to the public meeting for the Alaska Stand Alone Pipeline project. My name is Kate and I work for the company Environmental Resources Management. We are responsible for writing the draft environmental impact statement on behalf of the Army Corps of Engineers.

The purpose of this meeting tonight is to tell you a little bit about the draft supplemental EIS, environmental impact statement, which I'll refer to as the SEIS tonight. Then we'll also hold an opportunity for everyone to provide a public comment on the EIS or on the project if you'd like tonight.

So we're going to start out by introducing some of the people involved in the project. We're going to go over the steps in the National Environmental Policy Act or the NEPA process. That's the process that requires the SEIS to be written. We're also going to talk about the project description and the project background.

I do want to point out that this meeting is about the Alaska Stand Alone Pipeline project, which is the State's instate natural gas pipeline option. It's different than the AK LNG pipeline project, which would bring natural gas to international markets.

We're going to talk about the contents of the draft SEIS. I'll refer to the supplemental environmental impact statement as the SEIS. And then we're going to talk about the different ways that you can provide comment. I know that some of you might have questions. If you wouldn't mind holding those questions until after the presentation and comment period are finished, we'll stick around and we can use some of the materials that we've brought to answer your questions at that time.

With that I'd like to introduce Sandy Gibson with the Army Corps of Engineers and she's going to tell you a little bit about their role in the

project.

MS. GIBSON: Thanks, Kate. Good evening. The U.S. Army Corps of Engineers is the lead Federal agency for development of the Alaska Stand Alone Pipeline project supplemental EIS. The responsibility of the lead agency is to ensure compliance with applicable environmental review processes.

USACE is responsible for managing the EIS process and the final content of the EIS, identifying and selecting cooperating agencies, and involving the public in the environmental review process. These tasks are accomplished at the direction of the Corps of Engineers and prepared using an independent third-party contractor. The third-party contractor selected by the Corps for this undertaking is Environmental Resources Management.

Thanks again for everyone coming. At this time ERM will provide a brief overview of where we are in the current EIS development process. Afterwards we'd welcome all comments from the public.

Thank you.

MS. JOHNSON: Thank you, Sandy. So here we have the steps in the NEPA process. As you can see, we are currently conducting the public meeting on the draft EIS. I've highlighted in orange here the opportunities that the public has to comment on the EIS or on the project. The first one was in 2014 during the scoping period and the comments that were received during that period have been summarized in a comment analysis report, which can be viewed online at asapeis.com.

We are currently in the 45-day public review period for the SEIS that began on June 30th and it will continue until August 14th. There was an opportunity to provide comment during the scoping period in 2014 and there will be another opportunity once the final SEIS is issued for you to provide comment on that document as well.

So why do we need a supplemental EIS. Many of you are probably aware that there was an EIS for this project written in 2012. Since that time the

Alaska Gasline Development Corporation has identified some project changes and refinements. As a result the environmental impacts may look a little bit different and that's what requires the EIS to be written.

This slide here highlights five of the main differences between 2012 and now. The first one is that the pipeline is now designed to transport utility grade natural gas. As a result, fewer support facilities will be required. Rather than multiple compressor stations only a single compressor station is going to be required and that would be at Prudhoe Bay.

Additionally, both the mainline and the Fairbanks Lateral routes have been rerouted in some locations. This is for the most part to minimize environmental impacts. If you want to see exactly where those changes are, they're in an appendix to the SEIS, which is online. We've also got one copy here tonight. If you're looking for a specific location, we've got lots of maps and then there's also maps online.

And then finally plans for the gas conditioning facility up at Prudhoe Bay have been modified and refined and would require importing some prefabricated modules to construct. This would require some modifications at Dock Head 3 at West Dock in order to accommodate the 23 barges that would bring in those modules. It would also require some dredging in that area of the sea floor as well as disposal of those dredged materials.

The four main chapters of the SEIS that we're going to talk about tonight are the project purpose and need, the proposed action and alternatives. So the NEPA process requires that in our EIS we analyze alternatives to the proposed action. So we'll talk about those. Chapter 3 is the affected environment, so what do the existing conditions look like within the project area and around the project area. Then Chapter 4 is environmental consequences, so what are the potential environmental impacts of the project.

Here we have the Alaska Gasline Development Corporation, also known as the project proponent or as the project applicant, we might refer to them in both of those ways in the EIS. Their proposed purpose and need for the project is to make

North Slope natural gas available to residents in Fairbanks, the Southcentral region and other communities in the state as directed by the Alaska State Legislature. It's also to provide access to a stable, affordable and long-term supply of natural gas for heating and powering homes and businesses.

This slide shows generally where the pipeline is proposed to be routed. It would begin at Prudhoe Bay at Milepost 0. It would then generally follow the Trans-Alaska Pipeline System until just south of Livengood. TAPS would continue southeast and then ASAP pipeline would continue south. It would remain on the west side of Fairbanks and Nenana and then it would remain on the east side of Denali National Park. It would continue south along the Parks Highway and connect into ENSTAR's existing distribution system just southwest of Big Lake.

It would also include the Fairbanks Lateral that would connect at Milepost 440 and then it would continue on Murphy Dome and Old Murphy Dome Roads before extending southeast into Fairbanks.

This figure shows an example of what the project construction right-of-way might look like. As you can see, it would be a buried pipeline except for at fault crossings as well as at some elevated stream crossings. This right-of-way would be used to house the trench spoils as well as for construction equipment to access the pipeline for installation.

This would be during construction between 120 and 350 feet wide. There would be some additional temporary work spaces within an 800-foot corridor during construction. Those would be used to store equipment and materials. During pipeline operations that 120-foot-wide right-of-way would be reduced to a minimum of 53 feet in many locations and some locations it would still extend out to 350 feet.

In addition to the below ground pipeline, there would be a number of above ground facilities. Those would include both mobile camps and stationary camps. It would include 26 pipe storage yards as well as gravel material sites.

As I mentioned earlier, a gas conditioning facility would be constructed on the North

Slope. This figure here shows the existing central gas facility right here. The gas conditioning facility would be constructed about a mile west of that central gas facility.

In order to construct that, as I mentioned earlier, the modules would be offloaded at Dock Head 3, so some improvements would be required there. A channel would be dredged that would be approximately 500 feet wide by about a mile long. The sediments that were dredged from that channel would then be disposed at a nearshore location in Prudhoe Bay. I've got a map of that coming up in just a few slides.

So that project description is a description of the proposed project action, which we also call Alternative 1. Alternative 3 is the no action alternative, so what would the impacts be if the pipeline was not constructed. Then Alternative 2 incorporates these five main differences from Alternative 1. I'll go over those briefly.

The first differences between Alternative 2 and 1 is that the route would actually enter Denali National Park from pipeline Milepost 536 to Milepost 543. There's a map of this in the SEIS that we brought here tonight as well as up here. Here this pink line is the proposed action or Alternative 1, green is Denali National Park and then this blue line is the Alternative 2 route that's being considered and analyzed in the SEIS.

It would cross the Nenana River on a pedestrian footbridge, it would then travel seven miles through the Park, it would cross the Nenana River again and then it would connect back up to the proposed action route.

Some other differences being considered under Alternative 2 are offloading the modules at Dock Head 2 rather than Dock Head 3. Also disposing of those dredged materials at a different location. So under the proposed project under the proposed action this is the disposal location with Prudhoe Bay. Under Alternative 2 we consider disposing of those out in the Beaufort Sea.

The fourth difference between

Alternative 1 and 2 is that we consider an impacts of an above ground pipeline from Milepost 0 to 62 within the area that's the Beaufort Coastal Plain. Just to give you an idea of how far that is, the entire pipeline would be 733 miles long, so that's a little bit less than 10 percent of the pipeline route. Finally we consider the impacts of an aerial suspension bridge crossing the Yukon River rather horizontal directional drilling.

Chapter 3, as I mentioned, discusses the existing conditions in terms of these 21 resources. We don't have time to go over these existing conditions today, but if you are interested, please take a look in the SEIS either here or online.

We are going to spend a little time over the next few slides discussing the potential environmental consequences to a few select resources. There are seven resources listed that we're going to talk about and the reason these have been selected is because either they have received additional attention from project stakeholders or they are expected to potentially have greater impacts than the other resources. So we'll talk about those.

If you're interested in the impacts to the other resources that were on the last slide, we've brought some figures along with us. There's laminated figures on the table, one for each resource, that give a good overview of where the impacts might occur. The executive summary has a nice bulleted list of potential impacts associated with each resource. That's a quick way to get a good overview. Of course, in Chapter 4 there's an in-depth description of why those impacts are expected to occur to the extent that's described in the EIS.

The impact analysis in Chapter 4 does take into account AGDC's proposed mitigation measures and then it also discusses potential cumulative effects. So what are the effects of other projects that could impact the same resources that the project is impacting and then what would those look like if they were both to occur.

So here on this slide I have combined three of those resources listed on the last slide; soils and geology, water and wetlands. The reason that

I did that is because the greatest expected potential impacts to these resources could be similar and they could be related to permafrost thaw.

There's potential for permafrost thaw due to either vegetation removal along the project right-of-way or due to pipeline operations. As a result of permafrost thaw in some locations where the soils are less stable, you could see results such as soil collapse or subsidence and as a result you could have some altered surface or groundwater flow or altered wetland hydrology.

So where would this occur. This could occur in areas of continuous permafrost, which was shown generally in blue. The green areas represent generally locations of discontinuous permafrost. So within those areas areas of unstable soils.

Additionally, AGDC has proposed to construct the pipeline at an ambient temperature in order to mitigate some of those impacts. So in addition the impact to permafrost thaw due to the pipeline operation would occur mostly in areas where the pipeline was going from a warmer temperature into a cooler temperature where it could take a little time to acclimate. AGDC will also consider revegetation and then they'll also consider replacing those thaw unstable soils.

For socioeconomics there could be both positive and negative impacts. Some of the positive impacts that we could expect to see are employment opportunities as well as increased natural gas supply, as well as local and state tax revenues. A negative impact that could occur is increases in upfront local and state expenditures resulting from improvements to infrastructure as well as increased demand on government services.

For cultural resources we have identified 26 sites of the 72 known sites within the area of direct effects where there is potential for these impacts to occur. These impacts are physical destruction or damage as well as changes in character, setting or access. So those 26 sites that have been identified are based on the currently available survey results.

I also want to point out that the mitigation measures to cultural resources are going to be finalized in the programmatic agreement. If in the programmatic agreement additional mitigation measures are required, then the impacts to these 26 sites could be reduced to moderate. If these sites are avoided, then the impacts to these sites would be reduced to minor or negligible.

For subsistence resources potential impacts include displacement of subsistence resources as well as changes to access to those subsistence resources. This would be expected to occur to the greatest extent in communities that are located directly along the pipeline route, such as Wiseman, Coldfoot and Nenana, as well as the community of Minto because they have an increased use of subsistence areas that cross that pipeline proposed project route.

Finally, there could be some impacts resulting from construction noise. These would be associated with horizontal directional drilling. The locations that the impacts are expected to occur to the greatest extent are areas where this drilling would occur within a tenth of a mile of a receptor.

So the two locations that I want to point out are, one, the Kashwitna River HDD just north of Willow. There are some residences within a tenth of a mile. As well as McKinley Park. There's a horizontal directional drilling there that would be near some lodging and cabins.

AGDC also proposes to minimize activities near tourist-related facilities during high use periods to help minimize some of the impacts related to that noise.

So there are several ways that you can comment on the EIS or the project. The first way is to provide verbal comments tonight. We would be really happy to hear from you tonight. You could also fill out a comment form on the table or you can mail a comment to Sandy at the Army Corps of Engineers. That address is on the form over there on the table. You can also send an email to asapeiscomments@erm.com. There's a link to that on our project website asapeis.com. Just make sure that if you do submit comments, that you submit them by August 14th, which is

the close of the comment period.

We do have a court reporter here tonight. So if you would like to make a comment, if you want to put your hand up or something, we'll bring you a microphone so that we make sure we get your comment on record. If you could also please state your name, your first and last name, and then make sure that you've signed in on that sign-in form.

We won't be making any decisions about the project during the comment period. We won't be responding to comments during the comment period, but we will then take all the comments that we've received, we'll prepare a comment analysis report and then those comments will be incorporated when we write the final EIS. That comment analysis report will also be made available to the public.

As I mentioned before, we will be happy if you want to have your comments on record, but we'll hang out after the comment period and we can help you find some answers if you'd like.

So, with that, Earl with the BLM is going to open the subsistence hearing.

MR. WILLIAMS: Thank you, Kate. I'd like to thank the community for giving us the opportunity tonight to come here and present some information on the project and hear your concerns. If you would please bear with me for a moment, I need to read a statement into the record.

My name is Earl Williams. I'm a project manager with the Bureau of Land Management. I am reading this statement into the record to let you know that this public meeting is also a subsistence hearing. Section 810 of the Alaska National Interest Lands Conservation Act, or ANILCA, requires the BLM to evaluate the effects of its actions on subsistence uses and to hold public hearings if it finds that subsistence use may be significantly restricted.

The Alaska Stand Alone Pipeline project is seeking a right-of-way from the BLM to allow for the construction and operation of a buried pipeline across public lands. In reviewing this application, the BLM must consider the potential effects to the environment

and the potential impacts to subsistence resources and uses on public lands. The ANILCA 810 evaluation done for this project assessed the potential effects of the proposed alternatives and the cumulative case on subsistence use, and it is included as an appendix in the Draft SEIS.

In the evaluation, the BLM finds that the proposed project and its alternatives may result in a significant impact to subsistence uses. These potential impacts may include reductions in the availability or abundance of caribou, moose, and other wildlife. Additionally, there could be reductions in the availability of berries and other plants in some traditional harvest areas.

This hearing is being held to provide you an opportunity to make comments on the preliminary subsistence analysis for the Alaska Stand Alone Pipeline. All comments are welcome, but we especially would like to hear your thoughts regarding mitigation measures that could be applied to minimize impacts to your subsistence use.

The comments you provide will be considered in the preparation of the Final SEIS and the BLM's Record of Decision. You may provide your comments here tonight or submit them in writing. Please submit any written comments to the Corps of Engineers by the close of the comment period.

Thank you.

MS. JOHNSON: Thank you, Earl. So that will open the public comment period. We are interested in hearing your thoughts on both the project as well as the environmental impact statement. Is there anyone that would like to make a comment.

MS. GEORGE: I have a question more than a comment.

MS. JOHNSON: Would you like it to be on the record so that it's considered for the final?

MS. GEORGE: Okay.

MS. JOHNSON: Okay. That would be great. Don't forget to just state your name for the

record.

MS. GEORGE: Tami George from Cantwell. My question is in your subsistence study that you just presented you only mentioned like Minto and I forget the other places that you mentioned, but why was that significantly more impacted than it would be in Cantwell?

MS. JOHNSON: Thank you for your comment. So that is described in Chapter 4 of the SEIS and I can show you that and we can talk a little bit more about it after. Thanks for your question.

Does anyone else have a question or a comment that they'd like to have on the record?

MR. TANSY: Roy Tansy. I live in Cantwell -- well, my family lives in Cantwell, so I grew up here. My question is in regards to the Ahtna, Incorporated land. Since Cantwell as a village corporation merged with Ahtna in 1980 Ahtna basically oversees the land here, the former village lands. I understand that a great deal of the pipeline right-of-way will be on Ahtna or former village lands.

My concern is in regards to the landowner Ahtna and wanting to make sure that for the record that we'd like to see a little bit more communication and discussion regarding the potential compensation for crossing Ahtna properties.

MS. JOHNSON: Thank you very much for your comment. So no comments?

MR. TANSY: Roy Tansy again. This actually is a comment regarding the fault line, the Denali fault, and my understanding is that there is going to be a sizeable amount of the pipe is going to be above ground or the fault.

I just have concerns regarding that because of the winter activities, other activities that are going to be done especially in that area, Windy Creek area, Panorama Mountain. I guess my concerns revolve around some of the restrictions that will follow with the above ground pipe.

I just wanted to get that on the record I have concerns.

MS. JOHNSON: Great. Thank you. Any other questions or concerns.

(No comments)

MS. JOHNSON: Okay. So with that we will close the public comment period.

As I mentioned before, we'll stick around.

Thank you so much for coming tonight.

(Off record)

(END OF PROCEEDINGS)

TRANSCRIBER'S CERTIFICATE

I, Salena A. Hile, hereby certify that the foregoing pages numbered 02 through 14 are a true, accurate, and complete transcript of Cantwell Scoping Meeting on August 3, 2017, transcribed under my direction from a copy of an electronic sound recording to the best of our knowledge and ability.

_____ _____

DATE SALENA A. HILE

ALASKA STAND ALONE PIPELINE, ASAP

PUBLIC SCOPING MEETING

Fairbanks, Alaska
July 20, 2017

P R O C E E D I N G S

(Fairbanks, Alaska - 7/20/2017)

(On record)

MS. JOHNSON: Good evening, everybody. Thanks for coming. I think we're going to get started with our meeting here. My name is Kate and I work for the company Environmental Resources Management. We are responsible for preparing the supplemental environmental impact statement for the Alaska Stand Alone Pipeline on behalf of the Army Corps of Engineers.

The purpose of our meeting tonight is to share with you what is included in the supplemental EIS, which I'll refer to tonight as the SEIS and then also to accept some comments for the public record.

So we're going to start out tonight with some introductions and then I'm going to talk to you a little bit about the steps that are involved in the National Environmental Policy Act or the NEPA process, which is the process that requires the SEIS to be written. We're also going to talk about the project description and background.

I do want to point out that this project is the Alaska Stand Alone Pipeline Project, which is the instate gas pipeline project. It's different than the AK LNG pipeline. That's a different project. That project would be sending natural gas to international markets, so that's the difference between the two names.

We'll also talk to you about the contents of the SEIS and then you'll have an opportunity provide comments. I'll tell you about some other ways you can provide comment as well.

With that I'd like to introduce Sandy Gibson with the Army Corps of Engineers and she's going to tell you a little bit about her role in the project.

MS. GIBSON: Thanks, Kate. Good evening. The Army Corps of Engineers is the lead Federal agency for development of the Alaska Stand Alone Pipeline project supplemental EIS. The

responsibility of the lead agency is to ensure compliance with applicable environmental review processes.

USACE is responsible for managing the EIS process and the final content of the EIS, identifying and selecting the third-party contractor and involving the public in the environmental review process. These tasks are accomplished at the direction of the Corps and prepared using an independent third-party contractor. The third-party contractor selected for this undertaking is Environmental Resources Management, Incorporated.

Thank you everyone for coming. At this time ERM will provide a brief overview of where we are in the EIS process. Afterwards we'd welcome all comments from the public. Thanks.

MS. JOHNSON: Thanks, Sandy. So this slide shows the steps that are involved in the NEPA process. As you can see we are currently conducting the public meeting on the draft SEIS. It's also currently the public comment period for the draft SEIS. It began June 30th and it will continue until August 14th.

There was an opportunity to comment during the scoping period in August of 2014. If you're interested in the comments at that time, those are available in a comment analysis report on the EIS website, which is asapeis.com. And then finally, once the final EIS is published you'll have an opportunity to comment on that as well.

So why do we need a supplemental EIS. As many of you know, there was an EIS for this project prepared in 2012 and since then there have been some project changes and refinements resulting in some changes in the environmental impacts and that's what requires a supplemental EIS.

This slide shows five of the main changes between 2012 and now. The first one is that the pipeline is now designed to carry utility-grade natural gas, so fewer support facilities will be required and only one compressor station will be required now at Prudhoe Bay.

Additionally, both the mainline and the

Fairbanks Lateral have been rerouted in some locations, in many cases to reduce the environmental impacts. You can see where those route changes are also on the asapseis.com website. There's a tab that's got maps and you can see the entire route.

Finally, plans for the gas conditioning facility have been refined and will require importing modules to construct the GCF at Dock Head 3 at West Dock. So Dock Head 3 will require some modifications as well. There will also be some dredging in order for the barges to access the dock with these modules.

I'm going to talk about the four main chapters of the SEIS and the first one is the project purpose and need. The second one is the proposed action and the NEPA process also requires that we analyze the environmental impacts of some alternatives. We'll talk about the existing conditions within the project area. We'll also talk about the environmental consequences.

AGDC's proposed purpose and need for the project is to make North Slope natural gas available to residents in Fairbanks, the Southcentral region and other communities in the state as directed by the Alaska State Legislature and to provide access to a stable, affordable and long-term supply of natural gas for heating and powering homes and businesses.

Here you can see the proposed pipeline route for Alternative 1 or the proposed action. It would begin in Prudhoe Bay and it will generally follow the Trans-Alaska Pipeline System down to Livengood and then it would continue south. It would stay on the west side of Fairbanks and Nenana and then it would stay on the east side of Denali National Park. It would then connect with ENSTAR's distribution system just southwest of Big Lake.

This slide shows the Fairbanks Lateral route which would tie into the main line at Milepost 440 and then it will follow Murphy Dome and Old Murphy Dome Roads and then it would come southeast into Fairbanks.

This shows an illustration of what the project right-of-way might look like. The pipeline would be buried. This is the pipeline trench. Then

the trench spoil would be stored within the right-of-way and then the right-of-way would also be used for equipment to access the mainline route.

The right-of-way would be during construction between 120 and 350 feet wide. In addition there would be some temporary work spaces for storing materials and that would be within an 800-foot corridor along the pipeline route. During operations that route would be reduced to between 53 feet and at a maximum 350 feet wide.

In addition to the pipeline, there would be a number of above-ground facilities. Those would include both mobile and stationary camps. Some pipeline storage yards and then also material sites for accessing gravel.

A gas conditioning facility like I mentioned before would be constructed at Prudhoe Bay. This picture here shows the existing central gas facility. The gas conditioning facility would be constructed about a mile west of that.

Additionally, I would add Dock Head 3 at West Dock. I mentioned that there would be some modifications. There would be a dredge channel about 500 feet wide by a mile long in order for those 23 barges to bring in the materials to construct the gas conditioning facility. There would also be disposal of that sediment at a nearshore disposal site in Prudhoe Bay and I'll show you a map of where that is in the next few slides here.

So this slide shows the five main differences between Alternative 1 and Alternative 2. Alternative 3 is the no action alternative, so the impacts of not constructing the pipeline. Under Alternative 2 the route would enter Denali National Park and it would go through the Park for about seven miles. I'll show you a map of that.

So the pink route is Alternative 1 or the proposed action. Green is Denali National Park and this blue is the Alternative 2 route that goes through the Park. It would cross the Nenana River on a pedestrian footbridge and then it would cross the river again before aligning with the proposed action again.

The second difference between the alternatives are that modules would be offloaded at Dock Head 2 rather than Dock Head 3. The dredge materials that I mentioned before would consider the impacts of disposing of them out into the Beaufort Sea rather than in this nearshore location in Prudhoe Bay, which is proposed under Alternative 1.

On this slide I've just listed the resources that we discuss in chapter 3, existing environment. We don't have time today to go through all of those, but if you're interested we've brought the SEIS with us today. It's on the back table so you can take a look in there. We can help you find what you're looking for. It's also available online asapeis.com. There's also one at the Fairbanks library if you want to look at a hard copy.

We will spend a little time today talking about the environmental consequences to a few selected resources. We selected these because either they have received attention from stakeholders or because they're expected to potentially see greater impacts than other resources.

The impacts described in the EIS do consider proposed mitigation measures by AGDC and then Chapter 4 also includes cumulative effects, which talks about the impacts of other potential projects or natural events that could occur within the project area that would result in effects in the same area.

On this slide I've combined soils and geology, water and wetlands because the greatest potential impacts to these resources are related to potential for permafrost thaw. So that could occur both from vegetation removal along the project right-of-way. It could also occur during pipeline operation. It wouldn't be heated, but it would be designed to acclimate to the surrounding temperature, but there would still be some potential.
The indirect effects of that could include altered surface and groundwater drainage and altered wetland hydrology if you've got any kind of soil collapsing or surface changes.

So where would those impacts occur. You can see on the map here, I'm sure most of you are familiar with this. Blue are areas generally where

continuous permafrost exists and then the green are areas where in general this continuous permafrost could exist. This impact would also occur in areas where the soil geology was less stable, such as organic soils or clays rather than a gravel, so it would be limited to those areas. It would also be more likely to occur in areas where the pipeline was traveling from a warmer ground temperature to a colder ground temperature because it could take some time to acclimate.

So AGDC has proposed some mitigation which include, as I mentioned, constructing an ambient temperature pipeline. They would also consider revegetation and they would consider replacing the thaw unstable soils that I mentioned earlier.

For socioeconomics, we've got both major positive and negative impacts. The positive impacts are potential for employment opportunities during both construction and operations, increased natural gas supply during operations as well as local and state tax revenues. A negative effect could be the upfront local and state expenditures associated with the infrastructure as well as government services that could experience increased demand during pipeline construction.

For cultural resources there is some potential for physical damage or destruction or changes in character or setting or access. If you look in the EIS, there are 26 sites identified where these could occur, 26 of the 72 that are within the area of direct effects and that's based on the currently available survey data.

The mitigation measures could be identified in the programmatic agreement which is not finalized yet. So if mitigation measures are included, these 26 sites could see moderate impacts rather than major impacts. If the programmatic agreement requires that some of these sites are avoided, then the impacts would go down to minor or negligible.

Impacts to subsistence activities could include displacement of subsistence resources and also changes to access. These would occur to the greatest extent in communities that are located directly along the pipeline route or in communities that use subsistence areas that intersect the pipeline route.

This is one of the figures that we've got on the back table there. As you can see, Wiseman and Coldfoot could see some impacts as well as Nenana and Minto. Those communities would be the greatest affected.

Finally, there could be noise impacts related to horizontal directional drilling activities. HDD would occur over a 24-hour period of 10 to 25 weeks. However, it would occur intermittently and the noise would occur for approximately a third of that time. We've identified two locations where there are receptors within about a 10th of a mile of that noise and highlighted them here. So at the Kashwitna River crossing just north of Willow there are some residences that are nearby that location and then up by McKinley Park, the Denali Cabins are nearby an HDD as well. AGDC has proposed to minimize those activities near tourist-related facilities during the high use periods.

So how can you submit comments on the SEIS. You can sign up to provide verbal comments tonight during our formal comment period, which will also serve as a subsistence 810 analysis. You can also fill out a comment form we have on the table here and you can leave them in an envelope today. You can go online to asapeiscomments@erm.com and you can email us a comment. You can also mail your comments to Sandy at the Army Corps of Engineers. Just make sure that your comments are postmarked by August 14th.

As I mentioned earlier, we'll be holding a public comment period. Everyone will have five minutes to comment. If we have more time at the end we might allow more comments. We do have a court reporter here as well, so make sure that you state and spell your name before you give your comment.

We won't be making any decisions during the comment period and we also won't be responding to any comments or questions at this time. Your comments and questions will be entered into the record and then they will be considered while we're writing the final EIS. There will also be a comment analysis summary that will be available on the website as well. So make sure you focus your comments specifically to the project and the SEIS.

If you do have questions about the project or you're looking for more information, we've

brought a lot of project materials with us tonight and we would be happy to help you find the information that you're looking for. We'll stick around after the comment period is over so we can talk.

So, with that, I will introduce Erin with the BLM and she's going to open the subsistence hearing.

MS. JULIANUS: Thank you, Kate. My name is Erin Julianus and I am a wildlife biologist with the BLM here in Fairbanks. I am actually standing in for Earl Williams, who is the project manager for BLM. He's actually stuck in Kaktovik. So I feel a little underdressed. I apologize. As Kate said, I'm going to also initiate the ANILCA 810 subsistence hearing by reading the following statement.

As I said, my name is Erin Julianus. I am reading this statement into the record to let you know that this public meeting is also a subsistence hearing. Section 810 of the Alaska National Interest Lands Conservation Act, or ANILCA, requires the BLM to evaluate the effects of its actions on subsistence uses and to hold public hearings if it finds that subsistence use may be significantly restricted.

The Alaska Stand Alone Pipeline project is seeking a right-of-way from the BLM to allow for the construction and operation of a buried pipeline across public lands. In reviewing this application, the BLM must consider the potential effects to the environment and the potential impacts to subsistence resources and uses on public lands. The ANILCA 810 evaluation done for this project assessed the potential effects of the proposed alternatives and the cumulative case on subsistence use, and is included as an appendix in the Draft SEIS.

In the evaluation, the BLM finds that the proposed project and its alternatives may result in a significant impact to subsistence uses. These potential impacts may include reductions in the availability or abundance of caribou, moose, and other wildlife. Additionally, there could be reductions in the availability of berries and other plants in some traditional harvest areas.

This hearing is being held to provide

you an opportunity to make comments on the preliminary subsistence analysis for the Alaska Stand Alone Pipeline. All comments are welcome, but we especially would like to hear your thoughts regarding mitigation measures that could be applied to minimize impacts to your subsistence use.

The comments you provide will be considered in the preparation of the Final Supplemental EIS and the BLM's Record of Decision for the right-of-way. You may provide your comments here tonight or submit them in writing. Please submit any written comments to the Corps of Engineers by the close of the comment period.

Thanks.

MS. JOHNSON: Thanks, Erin. So with that we will open up the public comment period. If anyone would like to comment, you can come up to the table here and the microphone is on.

We would love to hear from you today.

(No comments)

MS. JOHNSON: Do we have any commentors tonight.

MR. SATTLER: We're all here to hear from you.

MS. JOHNSON: Okay.

MR. SATTLER: So your format here is formal comments that are recorded and then it will be transcribed and made available, is that right?

MS. JOHNSON: There will be a comment analysis report that we'll summarize the comments.

MR. SATTLER: I'll make a few comments.

MS. JOHNSON: Okay. That would be great.

MR. SATTLER: Robert Sattler is my name and I live here in Fairbanks. I wasn't prepared to come and do this, but I've been tracking this project

for some time. I'm pretty sure I provided comments at the very beginning in the initial EIS when the NEPA review began.

I want to say that I also work with Tanana Chiefs Conference. It's the regional tribal nonprofit organization. I work in the lands program and I'm a student of NEPA, so I've been involved in many of these pipeline projects over the last 10 or 15 years. With that, I don't mean to -- in speaking here, I don't care for my comments to be considered official comments to Tanana Chiefs Conference, but I've been involved for some time and I'll just try to make a few general characterizations of things that I've heard over the years.

I know the 810 analysis is a formal thing with many of the other projects that have come through. Specifically at TCC I work in the lands program and one of the issues that we're always faced with when a new access is opened up are issues about trespass and user conflicts. So the subsistence definition is one that can be I think interpreted in many ways. So in part the increased access causes typically trespassing issues that are very difficult to deal with and the increase in users.

As I understand the routing and some of the concerns that I've heard is that the corridor especially in the eastern Minto Flats could certainly open up larger volume of traffic going through the eastern Minto Flats. From my experience, I would say that I'm certain it would create various kinds of trespass and user conflicts in that area. I could go on and talk a little further.

Beyond that in a general sense I think you gave a good presentation. In the NEPA process in Alaska, typically the natural environment is really ratcheted up and the human environment that's equal in the loss is typically not addressed in a commensurate fashion in my perspective. I haven't read the document, but I'll immerse myself. I take it that the CD is the full document, is that right?

MS. GIBSON: Uh-huh (affirmative).

MR. SATTLER: So generally I think that from what you said there's a missing component of the

human environment and that is the why. I can see the purpose and needs statement for this pipeline and so forth. It is an instate gas line. With that implication apparently it's for relief in energy and clean air. I know that's an issue in Fairbanks. The main impetus is to address some of the air quality issues in Fairbanks and there have been a lot of discussions about it.

Frankly, my perspective, I wonder why isn't this thing already built with all the discussions that have gone on in the last 10 or 15 years and other different nuances that have been proposed in the various political economy of this pipeline project.

In general, I'll likely make comments on my own. Again, I don't want my comments to be perceived as any official comments to Tanana Chiefs Conference, but as an employee coming here in part with my position I thought I'd make a few of those comments. So I'll elaborate on those further in written comments certainly by the deadline.

Beyond that I see that you are doing some village meetings. You're going to Minto and Nenana also. So I'm sure you'll hear some of those same concerns about trespass user conflicts. Those are really the official positions that should be taken from the Native community.

Then beyond that I look forward to reading the document and making formal comments. I'll certainly go back and review some of those initial scoping remarks. I believe I did have some in there. Again, I participate in so many of the pipelines I don't know which. I went to the earlier versions of the ASAP line, but I think it was called a different pipeline earlier.

Anyway, that is the conclusion of my remarks and so thank you for the opportunity.

MS. JOHNSON: Thank you very much for your comments. I'll just give a minute to see if anyone else wants to come up.

MS. GIBSON: We certainly invite you to step to the back and look at some of the presentation materials, some of the project maps. A lot of that

information is very useful. So if you think of anything later, certainly let us know.

(No comments)

MS. JOHNSON: Okay. I think we will go ahead and close the comment period then.

Thank you all very much for coming tonight and, as Sandy said, we'll stick around for a little while.

Thanks.

(Off record)

(END OF PROCEEDINGS)

TRANSCRIBER'S CERTIFICATE

I, Salena A. Hile, hereby certify that the foregoing pages numbered 02 through 14 are a true, accurate, and complete transcript of Fairbanks Scoping Meeting on July 20, 2017, transcribed under my direction from a copy of an electronic sound recording to the best of our knowledge and ability.

_____ _____

DATE SALENA A. HILE

ALASKA STAND ALONE PIPELINE, ASAP

PUBLIC SCOPING MEETING

Healy, Alaska
August 2, 2017

P R O C E E D I N G S

(Healy, Alaska - 8/2/2017)

(On record)

MS. JOHNSON: We're going to get started with our presentation here. Can you hear me okay? Welcome to the public meeting for the Alaska Stand Alone Pipeline project. My name is Kate and I work for the company Environmental Resources Management. We are responsible for writing the draft environmental impact statement on behalf of the Army Corps of Engineers.

The purpose of this meeting tonight is to tell you a little bit about the draft supplemental EIS, environmental impact statement, which I'll refer to as the SEIS tonight. Then we'll also hold an opportunity for everyone to provide a public comment on the EIS or on the project if you'd like tonight.

So we're going to start out by introducing some of the people involved in the project. We're going to go over the steps in the National Environmental Policy Act or the NEPA process. That's the process that requires the SEIS to be written. We're also going to talk about the project description and the project background.

I do want to point out that this meeting is about the Alaska Stand Alone Pipeline project, which is the State's instate natural gas option. It's a different project than the AK LNG pipeline project, which would bring natural gas to international markets.

We're going to talk about the contents of the draft SEIS. We're also going to talk about how you can provide comments on the SEIS in addition to tonight at the meeting. I know that some of you might have questions. If you could hold those questions until after the presentation and public comment period are completed, we will stick around and we can talk with you after and we can show you some of the materials that we've brought with us today.

With that I'd like to introduce Sandy Gibson with the Army Corps of Engineers and she's going

to tell you a little bit about their role in the project.

MS. GIBSON: Thanks, Kate. The U.S. Army Corps of Engineers is the lead Federal agency for development of the Alaska Stand Alone Pipeline project supplemental EIS. The responsibility of the lead Federal agency is to ensure compliance with applicable environmental review processes.

The Corps of Engineers is responsible for managing the EIS process, the content and final production of the EIS, identifying and selecting cooperating agencies, which you see listed below, and involving the public in the environmental review process. These tasks are accomplished at the direction of the Corps of Engineers and prepared using an independent third-party contractor. The third-party contractor selected for this undertaking is Environmental Resources Management.

Thanks everyone for coming. At this time ERM will provide a brief overview of where we are in the NEPA process and changes to the recent project. Afterwards we'd welcome all comments from the public.

Thanks for coming.

MS. JOHNSON: Thanks, Sandy. So this slide shows some of the steps in the NEPA process. As you can see, we are currently conducting the public meeting on the draft SEIS. We are also currently in the middle of the 45-day public comment review period that started on June 30th and will continue until August 14th. There was an opportunity to provide comment during the scoping period in 2014 and there will be another opportunity to provide comment when the final SEIS is issued later this year.

So why do we need a supplemental EIS. Many of you may be familiar with the 2012 EIS that was written for this project. Since that time there have been some project changes and project refinements that have changed the potential environmental impacts and for that reason a supplemental EIS is required.

This slide shows some of the main changes since 2012 and now. The first change is that the pipeline is now proposed to carry utility grade

natural gas. As a result, fewer support facilities will be required. So the current design is for only a single compressor station to be used at Prudhoe Bay.

Additionally, both the mainline and the Fairbanks Lateral pipelines have been rerouted in some locations. For the most part those changes have been made to decrease the environmental impacts where possible. If you're interested in where those reroutes are, they're provided as an appendix to the SEIS. They're also provided online at asapeis.com. There's lots of maps up there so you can find them there as well.

And then finally plans for the gas conditioning facility have been modified and refined. The modules would be imported at Dock Head 3 of West Dock. As a result, some modifications would be required to Dock Head 3 and also some dredging would be required as well as disposal of those dredged materials.

Here we have the four main chapters of the SEIS. Chapter 1 is the project purpose and need. Chapter 2 talks about the proposed action and the project alternatives. The NEPA process requires that we identify some alternatives to the project and include those in our environmental impact analysis. Chapter 3 is the affected environment, so it describes the existing conditions within and around the project footprint. Then Chapter 4 is environmental consequences, so what could the potential environmental impacts of the project be.

So the Alaska Gasline Development Corporation, who is also known as the project proponent or as the project applicant, we might refer to them in both of those ways. Their proposed purpose and need for the project is to make North Slope natural gas available to residents in Fairbanks, the Southcentral region and other communities in the state as directed by the Alaska State Legislature. It's also to provide access to a stable, affordable and long-term supply of natural gas for heating and powering homes and businesses.

This slide shows the proposed pipeline route. It's also up on the maps on the wall there. I know some of you might have seen these. So the project

would begin at Prudhoe Bay at Milepost 0. It would then follow generally the Trans-Alaska Pipeline System down to about Livengood. TAPS would continue east and then the ASAP pipeline would continue south. It would remain on the west side of Fairbanks and Nenana and then it would remain on the east side of Denali National Park. It would continue along the Parks Highway and it would connect to ENSTAR's existing distribution system just southwest of Big Lake.

The Fairbanks Lateral would connect at Milepost 440 and it would follow Murphy Dome and Old Murphy Dome Roads before extending into Fairbanks.

Here we have an image of what the project construction right-of-way might look like. As you can see, this would be a buried pipeline except for at fault crossings and some stream crossings. The construction right-of-way would be used to store trench spoils as well as for construction equipment to access and install the pipeline.

This would be anywhere between 120 feet wide up to 350 feet wide. It would vary along the pipeline route. In addition there would be some temporary work spaces out to an 800-foot corridor and those would be used to store equipment and materials. During pipeline operations, this right-of-way would be reduced to a minimum of 53 feet wide in some locations and out to 350 feet wide in other locations.

In addition to the below ground pipeline, there would be several above ground facilities. Those would include mobile camps, permanent camps. These are just some examples of what those might look like. As well as pipe storage yards, gravel material sites.

As I mentioned earlier, a gas conditioning facility would be constructed near Prudhoe Bay. This figure here shows the existing central gas facility at Prudhoe Bay. The gas conditioning facility is proposed to be constructed about a mile west of that central gas facility.

Also, as I mentioned earlier, there would be some modifications to Dock Head 3 at West Dock in order for those 23 barges to access the dock head and import those modules to construct this gas

conditioning facility. In order for those barges to access the dock, a channel would be dredged. It would be about 500 feet wide by about a mile long. Those dredged materials would be disposed of at a nearshore location within Prudhoe Bay. I've got a map of that. I'll show you an image of that location in the next few slides here.

So alternatives. Alternative 3 is the no action alternative. Alternative 2 incorporates these five main differences. The first differences is that the route would enter Denali National Park from Milepost 536 to Milepost 543. Here you can see this pink line is the proposed action, green is Denali National Park and then blue is the Alternative 2 route that's been analyzed in the EIS.

It would cross the Nenana River at a pedestrian footbridge, it would go seven miles through the Park and then it would cross the Nenana River again before joining with the proposed action. Also, if you want to look at it later, I opened up the EIS to the page that that route is mapped on if you want to take a closer look.

Additionally, I mentioned that modules would be offloaded at Dock Head 2. Under this alternative we consider offloading them at Dock Head 2 rather than Dock Head 3. We also consider the impacts of disposing of those dredged materials at a location out further in the Beaufort Sea. So this location here as I mentioned in Prudhoe Bay nearshore is the proposed action and then this is the Alternative 2 location.

Under Alternative 2 we also consider the impacts of an above ground pipeline from Milepost 0 to 62, so that's beginning at Prudhoe Bay at Milepost 0 within the area that's the Beaufort Coastal Plain. Just to give you a frame of reference the pipeline would be 733 miles long, so that's a little bit less than 10 percent of the pipeline route. Finally we consider the impacts of using an aerial suspension bridge crossing the Yukon River rather horizontal directional drilling.

Chapter 3, as I mentioned, describes the environment in terms of these 21 resources. We're not going to talk about that in detail today because we don't have time, but if you're interested in learning

about the existing environment, we brought a copy of the EIS. If you want to look at a certain section, we're happy to help you find what you're looking for. It's also available online at asapeis.com. We brought a few CDs with us today. If you've got trouble accessing the internet, feel free to bring one of those home with you.

We are going to talk a little bit more about environmental impacts. We're going to focus on seven of these resources and the reason that we've chosen these is because they've either received additional attention from stakeholders than the other resources or because they are expected to see greater impacts than the other resources. So we'll go over those in a little more detail on the next few slides.

If you're interested in the impacts to the other resources, we've brought a number 11/17 laminated maps. There's one figure for each resource and it's a good visual of where the minor, moderate and major impacts would be expected to occur. So you can zero in on a specific impact in an area that interests you. There's also a good summary in the executive summary. Just a bulleted list of impacts for each resource.

Chapter 4 does include AGDC's proposed mitigation measures in the impacts analysis. It also includes discussion of cumulative impacts, so what the effects would be of other potential projects in the area occurring and impacting the same resources that this project could impact.

So on this slide I have combined three of those resources that I showed on the last slide; soils and geology, water and wetlands. That's because the greatest potential impacts to these resources are expected to be related to the potential for permafrost thaw.

There's two ways that that could occur. One way is due to the vegetation removal within the construction right-of-way during construction. Another way is potentially during pipeline operation due to the temperature of the pipeline. The pipeline wouldn't be heated. I'll talk about that in a little more details in just a second.

So if permafrost thaw did occur, there would be potential for soil subsidence, specifically in soils that are less stable. Then as a result of soil subsidence, you could have some altered surface and groundwater flow as well as altered wetland hydrology. So those are some potential indirect effects.

As I mentioned, this would occur in unstable soils within areas of continuous or discontinuous permafrost. This map here, which is also in the EIS, shows in blue just generally areas where continuous permafrost exists. And then the areas in green are areas where discontinuous permafrost generally exists.

AGDC has proposed some mitigation measures to help minimize these impacts. The first is that they would construct an ambient temperature pipeline. So that would reduce the operational impacts to permafrost to areas where the pipeline is making going from a warmer temperature to a cooler temperature where it takes a little time to acclimate, but it would generally be designed to acclimate to that surrounding soil temperature. AGDC will also consider revegetation and also consider replacing those thaw unstable soils that I mentioned earlier.

For socioeconomics there is potential for both positive and negative impacts. Some of the positive impacts that could occur are employment opportunities, especially during construction as well as operations, increased natural gas supply, as well as local and state tax revenues. A negative impact that could occur is upfront local and state expenditures associated with infrastructure improvements as well as increased demand on government services.

For cultural resources we have identified 26 sites of the 72 known sites within the area of direct effects where there is potential that there could be physical destruction or damage as well as changes in character, setting or access to those resources. That is based on the currently available survey data.

I do want to point out that mitigation measures have not been finalized yet. They would be finalized in the programmatic agreement. If additional mitigation measures are applied based on the programmatic agreement, those impacts at these 26 sites

could be reduced to moderate or if some of those sites are avoided, then the impacts could be reduced to minor or negligible.

For subsistence resources there's potential for displacement of subsistence resources as well as changes to access to subsistence resources. The locations where that would be the greatest impact are communities that are located directly along the pipeline route, such as Wiseman, Coldfoot and Nenana, as well as Minto because they've got an increased use of areas that are intersecting the pipeline proposed project route.

Finally, there is potential for impacts due to noise. These would generally occur in areas where horizontal directional drilling was occurring. And to the greatest extent where there's a receptor located within a tenth of a mile of that HDD location. So the horizontal directional drilling would occur 24 hours a day. However, it would occur intermittently, so for about a third of that time over the 24-hour period, and then that would occur for a period of 10 to 25 weeks for each horizontal directional drill.

Go ahead.

CLAY: Sorry. But as I understand Alternative 1 has HDD drilling in the Denali area while Alternative 2 does not, is that correct?

MS. JOHNSON: I believe this would occur under either of the alternatives. So this isn't in Denali National Park. It's the.....

CLAY: Right outside.

MS. JOHNSON: .....Denali commercial area. Yeah. And I can show you on that map where that would be.

CLAY: So you think this is for both.

MS. JOHNSON: After the meeting I can look at the map with you and we can determine exactly where that is and whether it would occur for both alternatives.

So the location that you just

mentioned, the Denali National Park commercial area, Milepost 536, I think, is the area, and that would be within a tenth of a mile of the Denali Cabins. However, AGDC has proposed to minimize that activity during the tourist season. The other area where this could be an issue is just at the Kashwitna River HDD just north of Willow. There are a few residences located within about a tenth of a mile.

So submitting comments on the SEIS. There are several ways. One way is to provide a comment verbally tonight. Just make sure that you've signed in on the sign-in forms. I think most of you did on your way in. You can also send an email to asapeiscomments@erm.com. You can also submit a written comment forms or you can write to Sandy at the Army Corps of Engineers. Just make sure that you get your comments in by August 14th.

We'll start out tonight with providing each person five minutes to comment. If people want to comment longer than that, that's fine. You can come back up after. We just want to make sure that everyone has an opportunity to provide a comment.

We do have a court reporter here tonight, so we ask that if you provide a comment, please come up and speak into the microphone. Make sure that you first state your first and last name before you begin.

We won't be making any decisions about the project tonight and we won't be responding to comments or questions. However, if you do have questions that you want on the record, please feel free to state them. Those will be addressed along with the comments in the final EIS and a comment analysis report will be provided.

So, with that, Earl with the BLM is going to open the subsistence hearing.

MR. WILLIAMS: Thank you, Kate. I'd like to thank the community of Healy for providing us the opportunity to come here tonight to present some information on the project and hear your comments and concerns. If you would please bear with me for a moment, I'm going to read a statement into the record.

My name is Earl Williams. I'm a project manager with the Bureau of Land Management. I am reading this statement into the record to let you know that this public meeting is also a subsistence hearing. Section 810 of the Alaska National Interest Lands Conservation Act, or ANILCA, requires the BLM to evaluate the effects of its actions on subsistence uses and to hold public hearings if it finds that subsistence use may be significantly restricted.

The Alaska Stand Alone Pipeline project is seeking a right-of-way from the BLM to allow for the construction and operation of a buried pipeline across public lands. In reviewing this application, the BLM must consider the potential impacts to the environment and the potential impacts to subsistence resources and uses on public lands. The ANILCA 810 evaluation done for this project assessed the potential effects of the proposed alternatives and the cumulative case on subsistence use, and it is included as an appendix in the Draft SEIS.

In the evaluation, the BLM finds that the proposed project and its alternatives may result in a significant impact to subsistence uses. These potential impacts may include reductions in the availability or abundance of caribou, moose, and other wildlife. Additionally, there could be reductions in the availability of berries and other plants in some traditional harvest areas.

This hearing is being held to provide you an opportunity to make comments on the preliminary subsistence analysis for the Alaska Stand Alone Pipeline. All comments are welcome, but we especially would like to hear your thoughts regarding mitigation measures that could be applied to minimize impacts to your subsistence use.

The comments you provide will be considered in the preparation of the Final SEIS and the BLM's Record of Decision. You may provide your comments here tonight or submit them in writing. Please submit any written comments to the Corps of Engineers by the close of the comment period.

Thank you.

MS. JOHNSON: Thanks, Earl. So with

that we will begin our public comment period. We would love to hear from you tonight. Please come up and make a comment.

CLAY: I thought there was going to be a question and answer period. Before we even have an opportunity for commenting we should have some answers.

MS. JOHNSON: Okay. So the question is a request for a question and answer period. So we will stick around after the public comment period and talk to you if you've got some questions. And then if you have some comments you'd like to make as a result, you can take one of the comment forms there and you can submit it that way or you could send an email to us that way.

(No comments)

MS. JOHNSON: Okay. If nobody wants to make a comment, then I'll go ahead and I'll close the comment period. If you change your mind, feel free to grab a written comment form.

Thanks so much everyone for coming.

(Off record)

(END OF PROCEEDINGS)

TRANSCRIBER'S CERTIFICATE

I, Salena A. Hile, hereby certify that the foregoing pages numbered 02 through 13 are a true, accurate, and complete transcript of Healy Scoping Meeting on August 2, 2017, transcribed under my direction from a copy of an electronic sound recording to the best of our knowledge and ability.

_____ _____

DATE SALENA A. HILE

ALASKA STAND ALONE PIPELINE, ASAP

PUBLIC SCOPING MEETING

Minto, Alaska
July 21, 2017

P R O C E E D I N G S

(Minto, Alaska - 7/21/2017)

(On record)

MS. JOHNSON: We're going to get started with the presentation. Do you guys want to come have a seat over here. Okay. My name is Kate and I work for the company Environmental Resources Management. We are responsible for writing the supplemental environmental impact statement for the Alaska Stand Alone Pipeline on behalf of the Army Corps of Engineers.

The purpose of our meeting tonight is to tell you a little bit about that document and then also to provide an opportunity for you to comment on the project and the potential environmental impacts.

So we're going to start out some introductions. We're going to talk about the steps in the National Environmental Policy Act or the NEPA process, which is the process that requires the environmental impact statement be written. I'm going to refer to that draft supplemental environmental impact statement as the SEIS tonight. We're also going to talk about the project description and background.

I do want to point out that this is the Alaska Stand Alone Pipeline Project, which is an instate gas pipeline project to provide natural gas to Alaskans. It's different than the AK LNG pipeline project, which would be sending natural gas to international markets, so that's a different project.

I'm going to tell you about the contents of the draft SEIS and then we'll also talk about how you can provide comments in addition to providing comments here tonight.

With that I'll introduce Sandy Gibson with the Army Corps of Engineers and she's going to tell you a little bit about their role in the project.

MS. GIBSON: Thank you all for coming. The U.S. Army Corps of Engineers is the lead Federal agency for development of the Alaska Stand Alone Pipeline project supplemental EIS. The responsibility

of the lead agency is to ensure compliance with applicable environmental review processes.

USACE is responsible for managing the EIS process and the final content of the EIS, identifying and selecting the third-party contractor and involving the public in the environmental review process. These tasks are accomplished at the direction of the Corps and prepared using an independent third-party contractor. The third-party contractor selected for this undertaking is Environmental Resources Management.

Thank you everyone for coming. At this time ERM will provide a brief overview of where we are in the EIS process. Afterwards we'd welcome all your comments and questions. Thanks.

MS. JOHNSON: Thanks, Sandy. So this slide shows the main steps that are involved in the SEIS process. You can see in blue that we're currently conducting public meetings. We're also currently conducting the 45-day public review period. That started on June 30th and it will go until August 14th.

In 2014, there was an opportunity to comment on the project during the scoping period. There's a comment analysis report located on the project website asapeis.com where you can look at some of the things that were commented on and how those have been addressed in this EIS. And then finally there will be another opportunity to comment once the final EIS is published.

So why do we need a supplemental EIS. You might be familiar with the EIS that was written in 2012 for this project. Since that time there have been some project changes and some refinements to the project. As a result the environmental impacts might be a little bit different and that's what requires a supplemental EIS to be written.

This slide shows the five main changes to the project. The first one is the gas composition is now planned to be utility grade natural gas, so as a result there are fewer support facilities required. There will be only one compressor station at Prudhoe Bay instead of multiple compressor stations.

Additionally, both the mainline pipeline and the Fairbanks Lateral have been rerouted in some locations. For the most part those have been made to reduce the environmental impacts. You can see where those route changes are if you go to the website. There's some maps on there and you can see each of the changes.

Finally, plans for the gas conditioning facility have been refined and as a result it would require importing some modules to Dock Head 3 in West Dock at Prudhoe Bay. It will also require some dredging and disposal for the barges to access that dock.

This slide just shows the four main chapters of the EIS. I'm going to talk a little bit about each of these. So Chapter 1 is the project purpose and need. Chapter 2 is the proposed action and alternatives. The NEPA process requires that we analyze some alternatives to the proposed action. We'll talk about some of the existing conditions in the project area and then also environmental consequences.

AGDC's proposed purpose and need for the project is to make North Slope natural gas available to residents in Fairbanks, the Southcentral region and other communities in the state as directed by the Alaska State Legislature. It is also to provide access to stable, affordable and long-term supply of natural gas for heating and powering homes and businesses.

Here we've got the proposed pipeline route for Alternative 1. It would start here in Prudhoe Bay. It would generally follow TAPS until just south of Livengood and then it would continue south. It would stay west of Fairbanks and Nenana and then it would stay east side of Denali National Park. It would then continue south of Big Lake where it would tie into ENSTAR's distribution system down there.

This slide shows the Fairbanks Lateral route. It would connect at Milepost 440 of the mainline. So Milepost 0 is up in Prudhoe Bay and then it would continue on Murphy Dome and Old Murphy Dome Roads and then down into Fairbanks.

This slide shows an example of what the

right-of-way might look like. Here is a pipeline which would be buried. The right-of-way would be used to hold the soil that's coming out of the trench and then also for equipment to be able to access the trench and lay the pipe.

This right-of-way would be during construction that would be between 120 and 350 feet wide. In addition there would be some temporary work spaces used for storing equipment materials that would be within an 800-foot corridor of the pipeline. During operations that would be reduced slightly to 53 feet and then in some locations it would be as wide as 350 feet.

MS. DICK: It's following the pipeline though, right? Is it using the same corridor, the same -- yeah, same corridor as the pipeline?

MS. JOHNSON: For the most part it's along the TAPS in the northern portion, but you can look at -- there's a map back there and you can see exactly where this pipeline would be in relation to the TAPS pipeline along the entire route.

So in addition to the pipeline, there would be a number of above-ground facilities. This slide shows a picture of what mobile camps could look like as well as what a stationary camp could look like. There will also be some pipe storage yards as well as material sites for accessing gravel.

As I mentioned before, a gas conditioning facility would be constructed on the Slope. This figure shows the existing central gas facility. The gas conditioning facility would be constructed in this location that's about a mile west of that.

Additionally, Dock Head 3 at West Dock would undergo some improvements in order to accommodate 23 barges of modules to construct this gas conditioning facility. It would also require dredging a channel, which would be approximately 500 feet wide and about a mile long. Those sediments would be disposed in a nearshore location in Prudhoe Bay and I'll show you a map of where that is in the next few slides here.

MR. WEISER: What are they dredging?

MS. JOHNSON: So they're dredging the sediments so that it's deeper so that the barges can access the dock.

MR. WEISER: Does TAPS have an existing dock?

MS. JOHNSON: I'm not sure about that.

MR. WEISER: They've been barging 30 years up there.

MS. JOHNSON: Yeah, I'm not sure what they used for the materials to construct TAPS.

So this slide shows the alternatives that I mentioned earlier. Alternative 3 would be the no action alternative. Alternative 2 would have five main changes to it that are different than the proposed action. The first one is that the route would actually go through a portion of Denali National Park.

So this pink line is the proposed action. The green is Denali National Park and then the blue is the Alternative 2 route. It would enter the Park, crossing the Nenana River on a pedestrian footbridge and then it would continue through the Park, it would cross the Nenana River again and then connect with the main proposed action route.

Under Alternative 2 we consider the impacts of using Dock Head 2 rather than Dock Head 3 at West Dock. We also consider disposing of those sediments that are dredged near Dock Head 3 at a different location. So under the proposed action they would be disposed of here in Prudhoe Bay and then under Alternative 2 they'd be considered to be disposed out further into the Beaufort Sea.

MR. WEISER: I can't conceive the National Park allowing a pipeline through the National Park.

MS. JOHNSON: The Park Service is a cooperating agency, so they've been involved in the decision making for the EIS.

So another difference between Alternative 2 and Alternative 1 is that the pipeline

would be constructed from Milepost 0 to 62 above ground, so that's a little less than 10 percent of the pipeline. And then also crossing the Yukon River we consider using an area suspension bridge rather than HDD.

MS. WEISER: What's HDD?

MS. JOHNSON: Oh, I'm sorry. Thanks for asking. HDD is horizontal direction drilling, so they drill under the river.

MS. WEISER: Under the river?

MS. JOHNSON: Yeah. We're just going to briefly touch Chapter 3. We don't have time today to go through all of these resources today, but I just want to let you know that the existing environment in terms of these resources is what's described in Chapter 3. So if you're interested in reading about any of these, you can find them discussed in the SEIS, which is on our website asapeis.com. We also have one copy if you want to take a look at it after the meeting today. We can point out where any particular information is that you might want to find out a little bit more about.

MS. WEISER: What's benthic?

MS. JOHNSON: Benthic? So they're I guess organisms and communities that live underwater in the sediments.

MS. WEISER: For example?

MS. JOHNSON: So if you'd like we can take a look in the EIS afterwards and I can show you some examples of what those might be.

For environmental consequences we're going to talk about a few of the resources today. These have been selected because these are the resources that could potentially see the greatest impacts. And then also because the resources have received attention from stakeholders. So we'll talk a little bit about those. If you're interested in the other resources, we've brought some impact figures in the back that show where the potential minor versus moderate versus major impacts might be expected to

occur along the route.

The impacts analysis in Chapter 4 takes into account AGDC's proposed mitigation measures. Then finally Chapter 4 includes cumulative effects analysis, so what the impacts might look like if combined with other potential projects in the area or potential natural occurrences.

On this slide I've combined three resources because the greatest impacts to these resources could be similar. So there is potential for permafrost thaw as a result of stripping vegetation from the right-of-way as well as from the pipeline itself. In areas where permafrost thaw occurs, you could see some collapsing of soil, which could result in altered surface and groundwater drainage and altered wetland hydrology as sort of an indirect effect.

So where could this occur. First of all it is of continuous and discontinuous permafrost. In general are indicated by the blue areas on this map are continuous permafrost and then the green areas are where discontinuous permafrost may occur. So Minto is an area of discontinuous permafrost. Within that area this could in areas where the soils are less stable, so like an organic soil. A soil like a gravelly soil wouldn't see as much impact.

Another thing I wanted to mention is that AGDC would construct the pipeline at an ambient temperature, so the pipeline would acclimate to the surrounding environment. So that would result in these impacts being limited to areas where the pipeline was going from warmer ground into colder ground, those areas where you might see some permafrost thaw. So AGDC is doing that as well as considering revegetation and considering replacing thaw unstable soils.

For socioeconomics there would be potential positive and negative impacts. The positive impacts could include employment opportunities, increased gas supply, as well as local and state tax revenues. Then negative impacts could include upfront local and state expenditures resulting from infrastructure improvements or increased demand on government services during pipeline construction.

For cultural resources there would be

potential in some locations for physical damage or destruction or changes in character setting or access. There is potential for this to occur at 26 of the 72 known sites based on current survey results and those are described in the SEIS.

The mitigation measures have not yet been finalized and those will be finalized in the programmatic agreement. In that document if additional mitigation measures are identified, then these impacts could be reduced to moderate or if some of the sites are avoided, then those impacts could be reduced to minor or negligible.

There could be some impacts to subsistence. The greatest expected impacts could be displacement of subsistence resources or changes to access of those resources. So where could this occur? In communities that are located adjacent to the project such as Wiseman, Coldfoot and Nenana. Then also communities that are increased use areas of undisturbed habitat, so that community is Minto.

Finally, there could be noise impacts. So the horizontal directional drilling activities that I mentioned earlier could occur over a 24-hour period. The noise would occur intermittently during that period for approximately a third of that time. That could also occur for a 10 to 25 week period. So where the greatest impacts would occur is where that would happen nearby receptors.

There are two locations where that could occur within about a 10th of a mile of a receptor, so like a residence. That's at the Kashwitna River HDD, which is just north of Willow. There are some residences near that location and then also at the Denali National Park commercial area by McKinley Park. The Denali Cabins are in close proximity to the HDD location. AGDC has proposed to minimize those activities near tourist-related facilities during the high use periods, so near those Denali Cabins.

So how can you submit comments on the EIS. First of all we'd love to hear from you tonight. We'll open a public comment period in a few minutes. We also have some comment forms available on the back table there. If you'd like to write down your comment, you can leave it with us today or you can mail it to

us. You can mail your comments to Sandy at the Army Corps of Engineers or you can email your comments to asapeiscomments@erm.com. There's a link to that on our website as well. Just make sure that we receive your comments by August 14th. That's the close of the comment period.

During our comment period we have a court reporter present, so when you come up to make your comment, if you could state your name and spell your name as well, that would be helpful.

We won't be making any decisions about the project tonight and we won't be responding to any comments or questions during this comment period. The comments will be considered when we're finalizing the EIS.

If you do have questions, we've brought a lot of project materials with us tonight and we will stick around after the comment period and help you find the information that you're looking for.

So, with that, I am going to -- this comment period also serves as a subsistence hearing, so I'm going to read the BLM's subsistence hearing opening statement.

I am reading this statement into the record to let you know that this public meeting is also a subsistence hearing. Section 810 of the Alaska National Interest Lands Conservation Act, or ANILCA, requires the BLM to evaluate the effects of its actions on subsistence uses and to hold public hearings if it finds that subsistence use may be significantly restricted.

The Alaska Stand Alone Pipeline project is seeking a right-of-way from the BLM to allow for the construction and operation of a buried pipeline across public lands. In reviewing this application, the BLM must consider the potential effects to the environment and the potential impacts to subsistence resources and uses on public lands. The ANILCA 810 evaluation done for this project assessed the potential effects of the proposed alternatives and the cumulative case on subsistence use, and is included as an appendix in the Draft SEIS.

In the evaluation, the BLM finds that the proposed project and its alternatives may result in a significant impact to subsistence uses. These potential impacts may include reductions in the availability or abundance of caribou, moose, and other wildlife. Additionally, there could be reductions in the availability of berries and other plants in some traditional harvest areas.

This hearing is being held to provide you an opportunity to make comments on the preliminary subsistence analysis for the Alaska Stand Alone Pipeline. All comments are welcome, but we especially would like to hear your thoughts regarding mitigation measures that could be applied to minimize impacts to your subsistence use.

The comments you provide will be considered in the preparation of the Final Supplemental EIS and the BLM's Record of Decision for the right-of-way. You may provide your comments here tonight or submit them in writing. Please submit any written comments to the Corps of Engineers by the close of the comment period.

So with that we will open up the public comment period. If you'd like to comment, if you could step up to the table here and speak into the microphone. I'll turn it on for you.

MS. WEISER: What kind of comments have people made?

MS. GIBSON: So I would say some of the comments that we're hearing some have been positive. Some people realize the value in increased economics within the communities, increased job opportunities. With that increase in population, there also comes competition for roadways, transportation, restaurants, hotels. There's a lot of training opportunities out there to help people kind of get a jump on some of these opportunities.

There's some concerns about access to traditional hunting areas, trapline areas, some of the stream crossings. People want to ensure that any anadromous fish or salmon aren't cut off from being able to fully make their runs. That any access roads that are currently in place that people may utilize for

snowmachining or dog mushing or to access other areas for hunting aren't restricted.

Let's see here. Some of the other concerns or questions. Mary, can you think of any others? Largely that's what it's been is really just around subsistence. Use of equipment, how loud equipment may influence wildlife behavior. How use of helicopters and things like that may affect caribou migration, just spooking them in one direction or another. They may not follow their natural progression from east to west or around the Colville River areas. So questions about how that might be reduced.

I think that's probably largely about it. We've just been in three other communities so far, but I think that's probably the biggest part is what's going to be beneficial for our community and then making sure that I can continue to reach the areas that I currently reach for recreation, fishing, hunting.

MR. WEISER: I'd say that would be one of my biggest concerns is you're opening up access with the different roads and trails you have to build.

MS. JOHNSON: Do you want to come up and speak into the microphone, please.

MR. WEISER: All right. Listen to me, goddamn it! I've got something to say here.

MS. JOHNSON: We need your name.

MR. WEISER: My name is Josh Weiser. My Social Security Number is -- I'm wanted by the law. I'm a known felon. I've come in from the woods because I wanted grapes. I'm mad because there's no submarine sandwiches. Last time we had subs. You don't edit this.

REPORTER: No editing.

MR. WEISER: I'm on stage. Yay! God, that's right, I'm the only man here. Okay, let me add that I'm the only real man in Minto. I'm the last real man because I come up here and I talk. Cowards.

Now what the hell am I going to say here. Oh, access. Okay. That's a big concern because

you're going to bring in outside people from cities that have greater access to the country for hunting and that has an effect on Native people and their ability to hunt some places that game is scarce. So that added impact of outsiders with fancy snowmachines is definitely an issue. Not to mention their increased access to villages with their snowmachines and lack of sensitivity for rural people.

Based on that I want this project stopped right away. No. But that is a real important concern. Of course I would hope Minto would have a spur. It seems like we'd be pretty close to it, relatively, from Livengood.

MS. WEISER: Can't hear you.

MR. WEISER: I'm talking to mic not you. While I'm here I just want to say hello to my mother and my father and happy birthday dad. Oh, this isn't broadcast. So anyway. Yeah, thank you for this opportunity and pastrami would be really good next time for the final comment period.

(Discussion away from microphone)

MR. WEISER: The studies that they did for the -- what they had to do for the pipeline, a lot of those studies are relevant. So it's almost overkill because the data used on what the effect of wildlife has been from that pipeline is just as relevant to this project too.

MS. JOHNSON: Exactly.

MR. WEISER: So we're asking questions that have pretty much been asked and answered.....

MS. WEISER: A long time ago.

MR. WEISER: .....by the effects of this pipeline.

MS. GIBSON: Right. And the concern is still there and that is what we want to capture.

MR. WEISER: Well, it's the same concern as building a pipeline. So why is the money being spent to do all over again when it's the same

basically. The process of destruction that you used in changing the landscape to build the pipeline is the same although on a smaller scale.

MS. GIBSON: Yeah, there's been some changes, but yeah.

MARY: It's the National Environmental Policy Act that's required.

MR. WEISER: I know.

MARY: When you do the EIS, you'll have public.....

MR. WEISER: It's a duplication of information.

MARY: .....meetings. Yeah. So that people can.....

MR. WEISER: Wasting millions of dollars. Yeah.

MARY: .....can express their concerns and comment on the project.

MS. WEISER: When they did the EPAs, what kind of information did they take down.

MARY: When they did what?

MS. WEISER: The EPAs or.....

MR. WEISER: What did they collect for information?

MS. WEISER: .....the environmental whatever you were writing.

MARY: So the environmental studies on it?

MS. WEISER: Uh-huh (affirmative).

MARY: What kind of information.

MS. GILBERT: So they look at water quality. Or EPA looks at water quality. They look at

impacts on wetlands, on groundwater hydrology. They're looking at air quality. Because all of those things fall under the EPA's jurisdiction. So dust emissions, flaring, all of those type of things EPA would require to be within.....

MS. JOHNSON: Do you want to use the microphone.

MS. GILBERT: I can if you want me to.

MS. JOHNSON: Just so that we make sure we get everything on the record.

MS. GILBERT: Oh, okay. All right. Gotcha. Sorry. Okay, I'll start over. So basically the EPA's jurisdiction is focused around clean air and clean water. So they'll be looking into impacts to wetlands, impacts to streams, water quality, habitat, habitat quality, air, impacts to air from construction, from -- climate change also falls within their jurisdiction. So a lot of that information they have commented on on this environmental review and we've worked with the applicant to try to fulfill some of that information and get that available to the public.

So EPA has several permitting avenues that they delegated to the State, such as storm water permits, implementing best management practices to prevent any type of unauthorized movement of materials, sediments. They have jurisdiction over hazardous materials such as gasoline, diesel, how those are stockpiled and protected onsite to avoid spills. So that's primarily the EPA's jurisdiction.

Then of course the Corps, because we're lead for this effort, we look at all those public interest factors that we had listed above. But our agency jurisdiction is focused on navigable waterways, streams, wetlands and any other waters of the state. Ponds, lakes that are jurisdictional and have a jurisdictional tie to other waters that support navigable waterway capacities.

MR. WEISER: You listed adverse effects up there possible, but what about -- I don't know what a pipeline break -- a gasline break, what effects does that have? I know what an oil would, but gas, how does

that affect the environment?

MS. GIBSON: I guess I'm kind of talking off the cuff here a little bit, but with it being a pressurized gas, instead of the traditional spill where it would be on the ground, it would actually be a release to the air.

MR. WEISER: So it's air pollution.

MS. GIBSON: Right. They're actually a break. There are several sections of the pipeline that can be tied off and there's also pressurized inline testing that's maintained. So if there were to be some type of a break, then most of that material is going to volatilize and they can isolate sections of that pipeline to avoid continuous spills.

MR. WEISER: The impacts are not going to be really visual. Some birds might pass out flying through it.

MS. GIBSON: Maybe. Hopefully, yeah. Depending upon -- there's several classes and I'm probably getting me way over my head because I'm not a pipeline engineer.

MR. WEISER: For greenhouse gas increase.

MS. GIBSON: Yeah, there's several classes of pipeline codes that have to be met based upon the density of residential neighborhoods, the number of buildings and then other infrastructure that's in close proximity to the lines.

MR. WEISER: Which would be nil because we're in the wilderness.

MS. GIBSON: Well, it depends on where you are though along that pipeline chain. That's things that the applicant has to look at. There's another Federal agency. PHMSA is their acronym. It's the Pipeline Hazardous Materials Safety Association. They have a rigorous engineering standard that must be met before they will authorize a pipeline construction as being safe for the human environment. So that's actually not in the Corps' jurisdiction, but we would not issue a permit without receiving PHMSA's permit

saying that this pipeline construction is deemed safe for the human environment.

MS. JOHNSON: You can also look in the section of the EIS that's called reliability and safety and there will be some information there about that.

MS. WEISER: When you're coming up over the ridge you see all the flats, you're at one of the most prettiest places in Alaska. We know we're going to get an influx of people all along that corridor there because we know it's just going to follow that foothills of the mountains here. We already have a lot of people coming in to our land and fishing and hunting and picking berries and killing moose and taking just the hindquarters or even just taking the horns. So we have a lot of people coming in that are playing in our front yard without asking us.

MS. GIBSON: I'm sorry. What was your name again? I want to make sure we catch that comment.

MS. WEISER: Vera.

MS. GIBSON: Is it okay if we use that comment?

MS. WEISER: Yeah.

MS. GIBSON: That was Vera's comment.

MS. WEISER: Vera Weiser, W-E-I-S-E-R. Do you want me to repeat what I said? Can you hear it?

REPORTER: I got it.

MS. GIBSON: Yeah, I think we got it.

MS. WEISER: I mean just a lot of stuff that -- because we get people coming and hunting and fishing and ruining our land by riding over -- the four-wheelers on the tundra that's going to be scarred for eternity and they don't care. So it's like opening up our kitchen, our food source and supply to the whole world to come see. Oh, I want to buy this land. It's just me that's talking.

MS. GIBSON: Yeah, it's very valid points.

MS. WEISER: Thank you.

MR. WEISER: Like the statement about the submarine sandwiches.

MS. WEISER: Stop it.

MR. TITUS: I have a comment.

MS. GIBSON: Sure. If you could just state your name.

MR. TITUS: My name is Charlie Titus, Second Chief of Minto. I don't have any -- no, I do. I do have some problems with pipelines. I'm still reeling over the Land Claims Act and what the pipeline did to Alaska and to the Native people. I'm not pleased with it. After reading about it, I was a young man when the Alaska Native Claims Settlement Act came through and I was just beginning to understand what it was doing.

The last few years I understand more of what Ichuk(ph) was saying from Barrow about what it does to us. The Land Claims Act and the Statehood Act really impacted Alaska Natives very much because we didn't get any land at all because of the pipeline. I said it before and I'll say it again tribes do not have any land. They formed corporations that don't benefit anybody. It can't sustain any one of us. Doyon gave us $500 a year and truthfully we don't have any title to any land at all, the Native people of Alaska, the tribes. The corporations do. Even the corporations for that matter are under the State of Alaska.

There's a misconception between pipelines and me and myself. I really don't trust them for that matter because of what happened to the Alyeska Pipeline, Alyeska Service, all the things they promised and did and never came true. They never held up their part of the promise. As soon as the pipeline was over they just wiped -- they said, okay, you five villages, they had an agreement between the five villages along the corridor. What they didn't do is -- during the life of the pipeline we'll hire your people. As soon as the pipeline was over they shut us all out. No, we're not hiring you anymore. Those kind of things.

Maybe I would have felt a little bit

better if that happened, but today I can't really support a pipeline because one of the things -- there would be a lot of benefit to the Interior, the corridor, but I don't see where it's going to benefit those people on the west coast. Maybe through the Permanent Fund or revenue sharing. I have no idea how the hell that's going to work. You already see from the Alyeska Pipeline, Fairbanks and everybody else, the rest of the state. So that's my say on it.

To say there's just a bitter feeling. I think a lot of people my age understand what history -- the pipeline history did to us. So I'm not too pleased with pipelines. I don't know how the State of Alaska -- there was still a little bit of animosity between tribes and the State of Alaska. I never see where (indiscernible). Now maybe become real between both of us.

That's how I feel about it. I don't know. I think a lot of Native people, men, women feel the same way I do. I know I talked to quite a few of them. Some of them do. Some of them see they need a change and I said, well, if that change ever come, maybe I'll be wrong. That's my statement.

MS. GIBSON: Thank you, Chief. Appreciate your comments.
Did anyone else have anything?

MR. TITUS: I don't know if you have anybody -- it's bad timing.

MS. GIBSON: No, it's -- that's the thing. The Corps is neither a proponent or an opponent of the project. Our goal is to assess the environmental impacts.

MR. TITUS: I meant for having a hearing or having a meeting. Fridays is no good in the villages.

MS. GIBSON: Hey, you all showed up.

MR. TITUS: I was kind of forced to. A lot of your young people that are starting to -- there's no history. No history on -- a lot of our young people that are young men, young men and women -- I'd say young people, in their 20's, 30's, late 20's

and 30's, they're just starting to understand what the pipeline was about, the Land Claims Settlement Act, because of the oil. A lot of things were forced on us.

So I think they're really -- for me it's been a -- I lived it. So the good thing about the Alyeska Pipeline is I worked on it. Never really knowing, understanding what it would do, the impacts, the social changes. I think the pipeline -- a lot of people died because of it. A lot of young men. There was a change. A lot of alcoholism and it still has an effect. It's all part of the change in Alaska. It's kind of hard to understand for other people, but me I could see it. I lived it.

MS. GIBSON: Thank you.

MR. FRANK: Hopefully there won't be any leaks.

MR. TITUS: What's the funding now? I know they cut the funding of exploration. What they call the tax -- tax credit? The Legislature cut the other exploration on the North Slope. Did you hear about or know about that?

MS. GIBSON: I've been following a little bit in the news. But, you know, honestly as far as the economics on funding the project that's going to be solely up to the applicant. So we assumed that whenever they put forth an application that.....

MR. TITUS: Did you get any funding from the State this year?

MS. GIBSON: Did I get any funding?

MR. TITUS: No, the whole.....

MS. GIBSON: That would actually be a question for the State. They're the applicant on the project, so we don't really get involved in how they get their money together.

MR. TITUS: Well, like I said, if it benefitted the State in any way maybe that's a plus to help our school system, our government. Just things that the State needs. Our children aren't getting the

education that they need, especially out here in the rural areas. We don't have the same benefits that they do in the city and it's costing us our children's education.

For example, a lot of our children have to take remedial courses just to catch up when they get into college. It's sad to say and that's not because they can't learn. It's a lack of good teachers or the curriculum how they teach it. I think that's a problem there. We suffer because of funding. If that helps, I don't know. I have no idea how the pipeline will help us in that area. That's a sad thing for the Native people in rural areas.

MS. GIBSON: Yes, ma'am.

MS. WILDER: So the question in my mind right now is what kind of companies are funding this and how much money is going to be taken away like from the profits and all that? His concern is money for.....

MS. GIBSON: Sure.

MS. WILDER: You know what I mean? If it's a bunch of Lower 48 companies backing it and it's all going to go back to Lower 48 or is Alaska going to be in there with some of that money coming into Alaska revenue?

MS. GIBSON: So as the Corps I'm not privy to that information. Lisa, would you like to comment one way or the other?

MS. PARKER: This is Lisa Parker with Alaska Gasline Development Corporation. The question was what companies are funding and how much. Currently we are still just working on completing the environmental impact statement and getting the permits in order to be able to construct. At this time there are no companies and there is no funding for the actual construction. The work associated with obtaining and doing the work that is going on right now is coming from the State of Alaska.

MS. WEISER: So we don't even know if there's going to be a pipeline.

MS. PARKER: We need to get that permitted.

MS. GIBSON: Okay. If you like, we can go ahead and stop the public comment period and just have a Q&A and just talk about the project if you like.

(Off record)

(END OF PROCEEDINGS)

TRANSCRIBER'S CERTIFICATE

I, Salena A. Hile, hereby certify that the foregoing pages numbered 02 through 23 are a true, accurate, and complete transcript of Minto Scoping Meeting on July 21, 2017, transcribed under my direction from a copy of an electronic sound recording to the best of our knowledge and ability.

_____ _____

DATE SALENA A. HILE

ALASKA STAND ALONE PIPELINE, ASAP

PUBLIC SCOPING MEETING

Nuiqsut, Alaska
July 18, 2017

P R O C E E D I N G S

(Nuiqsut, Alaska - 7/18/2017)

(On record)

MS. JOHNSON: Welcome to the public meeting for the Alaska Stand Alone Pipeline Project. My name is Kate and I work for the company Environmental Resources Management. We are responsible for writing the draft supplemental environmental impact statement for the project on behalf of the Army Corps of Engineers.

Our purpose tonight is to share with you the information that is included in the supplemental environmental impact statement, which I'll call the SEIS for short. Then also to provide you an opportunity to comment on the document and on the project.

PUBLIC: Ma'am, can you introduce your staff?

MS. JOHNSON: Yeah. So we'll do introductions. I'm going to talk to you a little bit about what we're going to talk about tonight and then we'll do introductions to the people that are here.

Next we'll talk about the steps in the National Environmental Policy Act process after we do introductions. I'll call that the NEPA process and that's what requires the SEIS to be written. We're also going to talk about the project description and background.

Just to be clear, this project is the Alaska Stand Alone Pipeline Project. It's the instate gas pipeline project. It's a different project than the AK LNG, which many of you may have heard of. That project is bringing natural gas to international markets, so we won't be talking about that one today.

We'll also talk about what's included in the draft EIS and then we'll talk about how you can provide comments.

With that I'll introduce Sandy Gibson with the Army Corps of Engineers and she's going to

tell you a little bit about who's involved in the project.

MS. GIBSON: Thanks, Kate. Yes, I'm Sandy Gibson. I'm the project manager for the Corps of Engineers for the ASAP Pipeline Project. The Army Corps of Engineers is the lead Federal agency for development of the Alaska Stand Alone Pipeline project supplement EIS. The responsibility of the lead agency is to ensure compliance with applicable environmental review processes.

The Army Corps of Engineers is responsible for managing the EIS process and the final content of the EIS, identifying and selecting cooperating agencies. Those cooperating agencies are listed below here. These tasks are accomplished at the direction of the Corps and prepared using an independent third-party contractor. The third-party contractor selected for this undertaking is Environmental Resources Management, so Kate Johnson here.

Thank you everyone for coming. At this time ERM is going to continue with a brief overview of where we are in the EIS process. Afterwards we'd welcome all comments and input from the public. So thank you for coming.

MS. JOHNSON: Thanks, Sandy. So this slide shows the steps that are involved in the NEPA process. As you can see in we are currently in the public meeting phase of the draft EIS. This figure highlights opportunities where the public has an opportunity to comment on the project. We're currently in the Draft SEIS 45-day public comment review period. That started on June 30th and it will go until August 14th.

Previously we held a scoping period. We had a meeting here in Nuiqsut and those comments have been reviewed and there's a comment analysis report located online at asapeis.com. And then finally there will be an opportunity to comment on the final EIS once that's developed.

So why do we need a supplemental EIS. As many of you know, there was an EIS written for the project in 2012 and since then there have been some

project changes and some project refinements. Those have potential to affect the environmental impact, so that's what requires a supplemental EIS.

This slide shows five of the main changes since 2012. The first one is that the pipeline is now designed to transport utility-grade natural gas, so fewer support facilities will be required, fewer compressor stations. Only one compressor station will be required now at Prudhoe Bay.

Additionally, both the mainline and the Fairbanks Lateral have been rerouted in some locations, mostly to lessen environmental impacts. If you'd like to see where those locations are, you can look on the website that I mentioned before and I'll put it up on the screen at the end as well.

Finally, in order to construct the gas conditioning facility near Prudhoe Bay, AGDC will need to import some modules. So there will be some modifications made to Dock Head 3. It would also include some dredging of a channel so that the barges can access that dock and then disposal of those dredged materials.

Here we have the four main chapters of the EIS that I'm going to talk about tonight. The first is the project purpose and need. The second one is the proposed action and the alternatives. The NEPA process requires that we evaluate alternatives to the proposed project. Chapter 3 is existing conditions within the project right-of-way. Chapter 4 is the environmental consequences, so potential impacts from the project.

I'll just read to you the project purpose and need. AGDC's proposed purpose and need for the project is to make North Slope natural gas available to residents in Fairbanks, the Southcentral region and other communities in the state as directed by the Alaska State Legislature and to provide access to a stable, affordable and long-term supply of natural gas for heating and powering homes and businesses.

I realize that I didn't mention that AGDC, Alaska Gasline Development Corporation, is the project proponent.

Here we have a map of the pipeline route. We also have a lot of maps around the room here, so at the end of the presentation if you want to take a look at a close-up of where the pipeline will go, there's maps on the tables here as well as up here.

So it will start in Prudhoe Bay and it will generally follow the Trans-Alaska Pipeline System down to just north of Fairbanks. At that point it will continue south. It would stay on the east side of Denali National Park. It wouldn't enter the Park. Then it would continue south along the Parks Highway and it will connect with ENSTAR's existing distribution system just southwest of Big Lake.

This slide shows a picture of the Fairbanks Lateral which will connect to the main line at Milepost 440 and then it will extend along Murphy Dome and Old Murphy Dome Roads into Fairbanks.

Here we have an example of what the pipeline right-of-way might look like during construction. So we can see it would be a buried pipeline. This is the pipeline trench. Then the material from inside the trench would be stored within the right-of-way and right-of-way would also be used for construction equipment to access.

That right-of-way would be anywhere between 120-350 feet wide during construction and then additionally there would be some temporary work spaces for storing materials within an 800-foot corridor of the pipeline. During operations the pipeline right-of-way would be between 53 feet wide and in some cases would extend out to 350 feet wide.

In addition to the pipeline, the project includes several above-ground facilities. Those include both temporary -- this is an example of a temporary camp, permanent camp, pipe storage yards and gravel material sites, as well as a gas conditioning facility. This figure shows the where the gas conditioning facility is planned to go. It's in Prudhoe Bay and it's approximately a mile from the existing central gas facility.

In addition, there would be some modifications to Dock Head 3 at West Dock like I mentioned before. There would be a dredge channel

about 500 feet wide by a mile long in order for those 23 barges to bring in the materials to construct the gas conditioning facility. Those materials would be disposed of at a nearshore disposal site in Prudhoe Bay and I'll show you a map of where that is in the next few slides here.

So this slide shows -- as I mentioned NEPA requires that we analyze alternatives to the proposed action. This slide shows the five main differences that we analyzed in Alternative 2. In Alternative 2 we consider the route entering Denali National Park and going through the Park for seven miles. I'll show you a map of that on the next slide.

We also consider using Dock Head 2 rather than Dock Head 3 to import those materials. Ocean disposal location would be further out into the Beaufort Sea rather than in Prudhoe Bay.

A portion of the pipeline would be constructed above ground. The portion that's in the Beaufort Coastal Plain. That's the first 62 miles, so less than 10 percent of the pipeline total length, which is 733 miles.

Finally, we consider constructing an aerial suspension bridge across the Yukon River rather than horizontal directional drilling, which is proposed under Alternative 1.

Finally, Alternative 3 is where we consider what would happen, what the impacts would be if the pipeline wasn't constructed, so it's called the no action alternative.

I mentioned I'd show you some maps. This shows a map of the proposed action in pink staying outside of Denali National Park. The blue line shows Alternative 2 going through the Park. It would cross the Nenana River at a pedestrian footbridge. It would go seven miles and then cross the river again and then match up to the Alternative 1 proposed action route.

Over here we have the dredge disposal proposed location and the Alternative 2 proposed location.

Chapter 3 of the SEIS just describes

the affected environment within the project area. I'm not going to go through each of these today. That would take a long time. So if you're interested in reading about the affected environment, we've got a copy of the EIS up on the table here. You can look at what's in there. It's also available online. You can look at any of those resources if you're looking for more information.

Chapter 4 talks about the potential environmental impacts from the project. We're going to focus today on just a few of the resources. If you are interested in understanding what the impacts might be to other resources, those are also described in the EIS and we've also got these figures up here. We've got one for each resource and it shows the approximate impacts along the route of the pipeline. So you can look up where Nuiqsut is and it's a nice summary.

These have been chosen to talk about today because either they have received attention from stakeholders or they're expected to see greater impacts than other resources.

The impacts described in the EIS do consider proposed mitigation measures by AGDC and then Chapter 4 also includes cumulative effects, which talks about the impacts of other potential projects or natural events that could occur within the project area that would result in effects in the same area.

ON this slide I've combined impacts to three different resources; soils and geology, water and wetlands. That's because the greatest impacts to these resources could be similar and they're related to potential for permafrost thaw. So that potential occurs because vegetation would be removed within the project right-of-way and also because of the temperature of the pipeline during operation. It wouldn't be heated, but the temperature would fluctuate along the route.

When you do have permafrost thaw, there's potential for soil to collapse causing altered surface and groundwater drainage and altered wetland hydrology. So those impacts could occur. There are some areas where those would be more likely to occur.

As you can see on this figure we show

in blue the general area where continuous permafrost exists. This green area shows in general where discontinuous permafrost might exist. So within those areas there are some areas where the soils are more stable like gravel. There are some areas where the soils are less stable, such as the organic soils or clays, and those are the soils that you could see more effects to if the permafrost were to thaw.

So AGDC has proposed some mitigation measures to help minimize these impacts. The first one is that they would construct an ambient temperature pipeline, so the pipeline is intended to acclimate to the surrounding ground temperature. So those impacts would really occur mostly in locations where the pipeline was moving from maybe a warmer soil into a permafrost or maybe it would take some time to acclimate to that freezing temperature. AGDC would also consider revegetation and then also replacing some of those unstable soils.

For socioeconomics, we've got both positive and negative impacts. The positive impacts would be employment opportunities during both construction and operation, increased natural gas supply during operation and then also increased local and state tax revenues. As a negative effect, there would be local and state expenditures both for infrastructure improvements and then also for government services, which could experience increased demand during construction.

For cultural resources there are 26 sites that have been identified in the EIS that could experience impacts such as physical damage or destruction or changes in character or setting. There are 26 of the 72 known sites within the area of direct effects and that's based on the currently available survey results.

The mitigation measures will be further developed in the programmatic agreement which has not yet been written. So with additional mitigation measures these impacts could be reduced to moderate and then with avoidance these impacts could be reduced to minor or negligible.

Subsistence resources. There are two main impacts that have the greatest potential to occur,

which are displacement of subsistence resources and also changes to access. These would be expected to occur to the greatest extent in communities that are located directly along the pipeline such as Wiseman and Coldfoot as well as Nenana. This map is included up on the table here if you're interested in looking at the entire map that shows Nuiqsut. Additionally, in the community of Minto it might have an increased use of subsistence areas that intersect the pipeline project.

Finally, noise impacts could occur during horizontal directional drilling activities and two locations have been identified where these could be the greatest. They are at the Kashwitna River HDD, which is located just north of Willow where there are some residences located within a 10th of a mile of that proposed site.

Then also the Denali National Park commercial area where the Denali Cabins are located within a 10th of a mile. So in those locations horizontal directional drilling would occur intermittently for 24 hours a day, approximately one-third of the time the noise would be occurring, and that would occur over a period of 10-25 weeks. AGDC also proposes to minimize activities during the tourist season.

So how can you submit comments on the SEIS. There are several ways. You can provide a comment tonight during our formal comment period, which we'll have in just a few minutes. Make sure that you you've signed up with Mary at the front table there if you do provide a comment. This will also serve as a subsistence 810 analysis. You can also fill out a comment form that Mary has on the table there. You can go online to asapeiscomments@erm.com and you can email us a comment. You can also mail your comments to Sandy at the Army Corps of Engineers. Just make sure that those are postmarked by August 14th.

During the public comment period tonight each commentor will have five minutes to make a comment. If we have more time at the end we might allow people to make more comments or you could also fill out a form with Mary if you've got a longer comment.

We do have a court reporter present, so

when you come up and give your comment, please make sure that you state and spell your name for her. We also have an interpreter here with us tonight, Edward, so he can help interpret if needed. When you make your comments, please focus on specific issues that are related to the SEIS and related to the ASAP project.

We won't be making any decisions about the project tonight and we won't be responding to any comments or questions during this formal comment period. These comments will be analyzed and then they'll be incorporated into the final EIS.

If you do have questions about the project and you want to stick around afterwards, we've got lots of project materials and we can help you to use the materials to answer whatever questions you have about the project.

Now we will open the ANILCA 810 hearing.

MR. WILLIAMS: Thank you, Kate. I'd like to thank the community for giving us the opportunity to come here tonight and discuss this project with you. My name is Earl Williams and I am a project manager with the Bureau of Land Management. I am reading this statement into the record to let you know that this public meeting is also a subsistence hearing.

Section 810 of the Alaska National Interest Lands Conservation Act, or ANILCA, requires the BLM to evaluate the effects of its actions on subsistence uses and to hold public hearings if it finds that subsistence use may be significantly restricted.

The Alaska Stand Alone Pipeline project is seeking a right-of-way from the BLM to allow for the construction and operation of a buried pipeline across public lands. In reviewing this application, the BLM must consider the potential effects to the environment and the potential impacts to subsistence resources and uses on public lands. The ANILCA 810 evaluation done for this project assessed the potential effects of the proposed alternatives and the cumulative case on subsistence use, and is included as an appendix in the Draft SEIS.

In the evaluation, the BLM finds that the proposed project and its alternatives may result in a significant impact to subsistence uses. These potential impacts may include reductions in the availability or abundance of caribou, moose, and other wildlife. Additionally, there could be reductions in the availability of berries and other plants in some traditional harvest areas.

This hearing is being held to provide you an opportunity to make comments on the preliminary subsistence analysis for the Alaska Stand Alone Pipeline. All comments are welcome, but we especially would like to hear your thoughts regarding mitigation measures that could be applied to minimize impacts to your subsistence use.

The comments you provide will be considered in the preparation of the Final SEIS and the BLM's Record of Decision. You may provide your comments here tonight or submit them in writing. Please submit any written comments to the Corps of Engineers by the close of the comment period.

Thank you.

MS. JOHNSON: Thanks, Earl. So with that we will begin our public comment period. If anyone would like to make a comment, you can come up to the microphone and state your comment.

MR. E. NUKAPIGAK: (In Inupiaq).

I just gave a brief of your opening statement as to what he presented before public hearing. Some people always have questions to ask, but about that you have to answer them at the end of the meeting. I do have a concern, but I think I can wait on that.

MS. JOHNSON: If you have a concern that you'd like to state during the public comment period, we'd love to hear that. If you do have specific questions about the project, as you said, we'll answer those afterwards using the materials here. But come on up if you've got a comment.

MR. E. NUKAPIGAK: (In Inupiaq).

MS. JOHNSON: Would anyone like to make a comment tonight? We'd love to hear from you.

MS. E. BROWER: My name is Eunice Brower. I have to say we're a small village here in Nuiqsut. We haven't developed very much around here, so there's a limited availability of jobs. A lot of our people -- we're a lot of subsistence users in this area over here and with a lot of these development of these pipelines and stuff especially near our village is creating a big impact to our community.

A lot of these animals get deviated on their natural migrations to our village, so in that part where the subsistence is being impacted there's having to go further out to go hunt and get our food, like the caribou. Of course a majority of our diet is based on the whaling. What we eat a majority of the year is because of the whaling crews.

Where you guys are going to be starting your project is near our hunting grounds of the Cross Island by Prudhoe Bay area and that could impact our subsistence partially in that area. That's a big concern because a majority of our diet is based off of if we are lucky enough to get these whales that utilize that area around Prudhoe Bay.

A majority of our diet also comes from the land, from the caribou. A major part of our diet is coming from the land and the caribou that come around here. Because the prices of the store are so expensive because of the freight to fly it in, it's very expensive and a lot of those people can't afford to always go to the store for our food.

A lot of the times our subsistence users either have to go out further to go hunting and a possible mitigation for that is probably fuel vouchers for our subsistence users. But also for our people maybe you could subsidize their diets, maybe provide a food package at least once a month. I don't know. It's just an idea. You guys want to ask about ways to mitigate all this subsistence or you know.

Because of our place here in Nuiqsut a majority of our people are subsistence users and then having to look further for food or different places to hunt because of the impacts to our community is a

little bit more -- you know, because we have to go out further and look for caribou. It doesn't always no longer just -- it makes us have to look further for our caribou.

So, I don't know, maybe you could look at providing a supplemental diet, I don't know, maybe it's just an idea, that you could provide to the residents of Nuiqsut. Because a lot of the time we are subsistence users and we look at our land for food. It's a healthier option than going to the store where, you know, our food is brought in and we don't even know where these other foods come from, if they're raised on a farm or, you know, we don't know there these food come from.

We don't know if it has -- we're just mostly subsistence users because the food that we hunt locally is a lot healthier and we have ways to preserve our food. It's just a lot fresher and a lot more healthier to live off of our land than to go to the store. Plus that's only most of what we know is living a subsistence lifestyle and that's being changed because we have to go look further for caribou.

Then not only that we also trade and barter for food with other communities that are on the North Slope because maybe some of the other villages might not get caribou because of where they're at, you know. So most of our economy is based on subsistence hunting.

Thank you.

MS. JOHNSON: Thank you very much for your comment. If you'd like after the meeting I can show you in the EIS as well the section that talks about subsistence and some of the mitigation measures that are proposed if you're interested in looking at them.

Does anyone else have a comment.

(No comments)

MS. JOHNSON: Okay. So, with that I think we'll close the comment period. As I said before, we'll stay around if you've got questions. Oh, do you have a comment? Okay, great.

MR. E. NUKAPIGAK: Good evening and welcome to Nuiqsut. My name is Edward Nukapigak. I'm one of the six whaling captains. One of our main concerns on the ASAP based on the North Slope we are the closest village to all the industry that is being developed, explored.

Our caribous are one of the main diets that we depend on. We depend on Central Herd and a portion of Porcupine Herd. Once the studies are done, your surveys and all that, once it's all finalized, we're going to see a lot of impact.

Our caribous have not come through yet. The first two herds have already passed. The third herd is sitting over at east side. Why? Too much activity is going on. And then they cross to Colville. The majority of our caribous that come from the east side and Colville are either in that east side or not able to come here further west.

That's why our people here I'm telling you are hurting for caribous right now. So much activities going on. So many studies, so many choppers flying to and from. Those are the people that we're hearing. These are those that are doing a lot of studies.

We feel a lot of our people are scrounging for caribou and they're scrounging for gas vouchers. Gas vouchers are depend on what company comes to our village and they're the one that provide in order for them to study like Armstrong to the south, ConocoPhillips to the north, KDS to the east, ENI to northeast. So those are the impact we're feeling.

When we see a lot of our people right now heading all directions -- and I agree with that lady that comment on this project that's to happen. A lot of our impact are related to industry. None of us (indiscernible) since NPR-A was open. Look at all the roads that's been built to the west. Caribous, Teshekpuk Herd from the west side aren't here. The caribous that used to be have not been mentioned on the North Slope.

What month does ERM do the caribou study of migration from the south going north. You look at those May, June. That would be the best time to do

your caribou study. When do they migrate south. Those aren't mentioned. They are not on your draft EIS.

All these things have been studied in the Interior, the Athabascan land. We feel like we've been robbed about this ASAP lack of caribou migration study by ASAP and the contractor. Lichens, the food that they depend on, have not been thoroughly mentioned because I am familiar with this project. This ain't the first time I've testified and this ain't the first time I translate on behalf of ASAP.

I've met a lot of people that relates to this project and I see them come and go and they never come back. The studies that we have done have not been passed on to the community. Once you folks leave we have no idea of what your next plan is.

The final EIS is something that's kind of scary. If that EIS is finalized and the wrong decision is final, what part of the month will this natural gas pipeline start? During the height of caribou migrations? Are you going to be careless? When TAPS was built, TAP didn't have no Federal regulators here in Nuiqsut because I built TAPS.

Once that has been approved they're going to go forward in a manner of no time. I see the build of the TAP was careless, but this one has to be pretty much according to your regulators. I exposed TAPS at some point. A lot of diesel spills. A lot of things being built around the TAPS being exposed, a portion of the land. A lot of those hasn't been cleaned up yet.

If ASAP is to go forward, North Slope needs to be a thorough study because that's where it starts from. It doesn't start from the Interior. And the West Dock, the whale is going to feel that because we're only 14.5 northeast of West Dock, Cross Island that we depend on for subsisting for whaling.

We have a lot of impacts offshore during whaling season. We have so many offshore vessels that come and go and without those who don't sign the CIA with Alaska Eskimo Whaling Commission are the ones that are involved. You'll see how many barges are going to be out there dredging expanding West Dock in the wake of ASAP.

More of our people will have to travel further, like I have done. When I feel that impact from the offshore vessels, I have to go further. If it's nature, the icy conditions, we need to travel further, but majority of the time in our past whaling seasons a lot of the impacts were offshore vessels that relate to industry and it's still ongoing today.

But we know a company that wants to do an offshore exploration are the ones we're fighting right now. So our people feel the pain, that these are the problems today, offshore and onshore industry activity that is going on. And with this I'd like to see that our caribou migration be a thorough study, that there would be no impact when this development is starting.

Caribous migrate coming south to the north, May June. That's when they start coming down from the foothills. They start migrating in late September going back south, sometimes right through October. I've seen caribous migrate right through Atigun Pass. So it depends on the season we have. If we have an early freeze-up, they head out early. If it's a late freeze-up, they hang around.

But right now our caribous are further from Nuiqsut. About 5,000 or more on the east side are waiting to come across the Colville, but a lot of the areas that the choppers fly, I think they're headed back eastward.

So those are the impacts we're feeling and what kind of mitigation are we going to get from these kind of impacts that comes to our village? (Indiscernible) hasn't come all winter long. So they start building GMDM GMDD road, CD-5 road. Majority of these resources we depend on are not near Nuiqsut or near Fish Creek.

So those are the impacts we are feeling today and how is that going to be mitigated? How is that east side going to mitigate our State and how is the State going to feel about listening to our people here in the village. Too much leases going on. The State no longer communicate with this village. They will do anything they want onshore and offshore. They got -- we can't control them because they no longer come to our village like they used to.

The village has been cut off by state. Once we were cut off, look at what's going on on the east side. More of the lands are being leased and more of those are coming closer and closer. How can state feel about this village when there is so much of this going on.

I think the State and Federal need to sit down and come together. How best can you deal with this village as far as caribou migration. What kind of mitigation can we give this village. I know the State won't, but whatever the level this is a lot more than State.

This is the kind of concerns that we all have. More of these activities going on every day. We have 14 choppers flying in the heart of caribou migration, in the heart of where caribou lives. Conoco, KDS, Armstrong and BLM chopper here in this area. ConocoPhillips got two choppers flying. Armstrong got two choppers flying. KDS got a chopper flying and that's in the heart of the caribou migration on the east side of the Colville. We have no idea where BLM is going to be flying, but I have a gut feeling that they'll be flying down that GMT-2 and BIA side on behalf of ConocoPhillips.

So in order for any of this to go forward we need to get a thorough study on the caribous. That's our main diet. The whale is our main diet too offshore. That's our food that what we depend on besides fish that are coming in.

I just want to give my two cents piece about this project and let the State and Federal know where we're coming from and why the State are not listening when the migration have started. I want you to see 30-50,000 caribous at one point before all this development was set up. Since all this were developed the caribou migration has changed its pattern.

Our hunters travel 30, 40 miles west of the east side or the south. Some of our people don't hunt on the east side anymore after so much activity. You have regulations, you're restricted on something that you can't have firearms over there on the State side.

So I just want to give my portion of my

comments in this ASAP project and we'd like to get more feedbacks after your meetings are done and over with. We'd like to get more feedbacks as to how this project is going along instead of having to wait for the next public hearing.

Thank you.

MS. JOHNSON: Thank you very much, Edward. Is there anybody else who would like to provide comment.

MS. ITTA: Good evening. Martha Itta for the record. I serve as the tribal administrator for Native Village of Nuiqsut.

Where do I start. First of all my concerns with this project, like Edward said, is the mitigation issue. There has been a lot of concern on the mitigation. We work a lot with the Federal government on the government to government basis relationship with them and I know for a fact that there is no way to mitigate our loss of land, our loss of subsistence, also our loss of life.

So my main concern with any project from here on out given that we've been impacted for the past 40 years since Prudhoe Bay. Even though it started in Prudhoe Bay we still get the effects from Prudhoe Bay to this day and growing. So my main concern because not even the Fed government can answer or address our concerns in regards to our safety and health of our people, our way of life, our food security. We've been disregarded.

So my concern is any project going forward here on out needs to address and respect the wishes of our community. We're living it, we're here, you're not. It hurts to see our people suffer day to day, hour by hour, minute by minute, second by second, every day. So that's my main concern is being able to mitigate and do it right the way it should be.

But this project in my opinion is not feasible in my eyes given the fact and the state that the State of Alaska is in and their funds. And I don't think developing gas or oil is going to fix that no matter how much gas or oil there is out there.

The Department of Natural Resources need to live up to their title and look at other resources besides gas and oil because that's not going to fix it. There's too many impacts. They're not being addressed. You need to start listening to the people, respecting and doing it the way -- if you guys are to go forward, it should be on our terms.

More transparency. More higher-ups coming to these meetings. No more sending their associates. They need to start coming to our community and presenting themselves to us so they can hear it from us directly.

So those are my concerns of this project. You guys are not serving the North Slope. I see that and that is very wrong just because it comes from underneath us. Our people should be the first priority no matter what. I mean if we're going to be giving money to the State of Alaska or leasing a lease to the State of Alaska, our people should be first.

Anything else I have I will write down and I will submit them. Thank you.

MS. JOHNSON: Thank you.

MR. R. NUKAPIGAK: Hi. For the record, Robert Nukapigak from Nuiqsut. I've been here since Tent City. First of all I'd like to welcome you guys in this public hearing and the proposed pipeline that you guys are about to do. Will it start or will it be a reality?

We need continuous subsistence. For so many years I have seen so many paths on the migrations of the caribou. There are a few studies that has been done on the Slope, but there's not much that the State has come up with. So many years or so many times in these public meetings on these issues the State or the regulators use our voices and that's taken away our identity.

So in that case, you know, I don't like the way how the State regulates the people by how they're going to change their lives especially when it comes to subsistence. So many years I've been going to the meetings regarding the oil companies or the State or BLM, but most of the time ignore it, because the

State don't care about our voices. Whenever the people comment about these issues it seems like we're talking for nothing especially when it comes to subsistence.

So the proposal that you're doing on this pipeline there should be more environmental assessment, there should be more health assessment in this community because some of the times I think none of these oil companies have reported any of these health assessments. That's the main concern that I want to point out to you guys because I know you guys are going to be regulating so many of these issues in the coming years if this pipeline becomes a reality.

Dedication should be going directly to the community that is heavily impacted by oil and gas industry. Some of the years I see a little dedications coming in from the oil companies and that's not enough. It's like giving pennies to the communities while the oil companies make billions of dollars from our land. You know, they only give us what they can give. It's like robbing us, you know. It's like a common ground.

So I'd like to see more public meetings before this gas pipeline becomes a reality in this part of the region. I'm afraid of the next generations and how they're going to cope with the development because they are going to be out future leaders someday. The younger generations are the most important people that we need to look up to.

Right now we're being too regulated by the State, by the Federal government. Even though we voiced some of our concerns during the meetings after meetings, but seems like most of the time our voices are taking away because of what the EIS or the impact statement that you guys do. I think these need to be directly addressed to the community even before, during and after the project is done. So that is one of my concerns for this public meeting or public comment that you have.

For the record, my name is Robert Nukapigak, resident of Nuiqsut. Thank you.

MS. JOHNSON: Thank you, Robert. Is there anybody else?

(No comments)

MS. JOHNSON: Okay. Well, if there's nobody else, I'll go ahead and close the comment period. Thank you all for coming. Oh, one more comment.

MR. AHNUPKANA: I'm Clarence E. Ahnupkana. I'm a resident of Nuiqsut for the record. I eat caribou. Like they're talking about today. Caribou and talking about caribou and fish, mammal. Fish, mammal or the plant we eat inland. Caribou migration from northeast and we eat caribou. Caribou eat grass and we eat the meat. We eat the caribou. Not just caribou, fish. White fish, arctic char, arctic cisco, least. We eat them. We eat the plants at the same time, like berries, cranberries inland.

We'll all be affected if you build a pipeline. Caribou migration will be going out further and out further and out further inland and no further. I hear this about the pipeline that they talk about since a few years ago over and over and over again.

I eat caribou and fish, all that, and even eggs. My nephews they come and we go and I teach them to survive. It seems like the State don't care no more about Alaska. Only because Alaska is part of the State. Now you want everything from me. You want this, you want that. It seems like you want this to yourself without me. You just want money, more money, more impacts, more impact money for yourself without me.

I've been surviving. How? Survive, no job, no money. You're using my land so much, so much of this. You're making billions and billions and billions of dollars and last PFD, how much PFD? Not so much. It seems like State don't care no more about Native Eskimo people like me. And I survive more and more and more and more.

I go Fish Creek go hunt caribou and fish. There's road blocking my way. I used to travel by snowmachine going down to Fish Creek to go fish hunting. Now I have to go further out, further in or further other way. Blocking where I need to go.

Now this one same thing, pipeline. I

used to hunt caribou, take me out across the river. Now I don't hunt there no more. Now they have pipeline. I don't want to shoot the pipeline. Now there are more pipelines going southwest. Now I'm going further in, going in and going hunting and I'll be surrounded by pipeline. More pipe around us.

They don't even care about Natives. I know that they won't care no more. I heard that they won't care no more. My grandma talked me and talked and talked and talked. The oil companies won't care no more at all when they strike a pipeline -- or strike the oil. So she said, grandson, be quiet, you have to listen carefully.

I hunt wildlife. I survive. I don't just sit around and watch TV at my home. What I need at my table I need food at my table. You go to coffee shop, you go to the coffee shop and order hamburgers, french fries for your own meal. Do you go hunting and put food on the table at your hometown? No, I don't think so. It's just easy life these days. I go out caribou hunting even now. I'm waiting for those caribous coming from southwest. There's choppers, helicopters chasing at them, chasing at us. Even nowadays they still do.

They don't care about Native Eskimo people. We are real people, Inupiat. We are the Indian people. Native. Real live Inupiat people living on North Slope. And you're going to build a pipeline further down to Fairbanks and blocking the caribou migration further up and further up and further up.

Go to grocery store. Groceries one bag is, what, $100? Hundred, $200 for one bag of groceries.

I have more information after. Thank you.

MS. JOHNSON: Thank you for your comments. Would you like to come up and comment?

MR. STINE: Hello. My name is Abraham Stine. I've been here forever. I read in the newspaper scientists don't know why the caribou is declining. I know why it's declining. They put so

much pipelines, roads. Where they migrate there's pipelines, roads. They have to go elsewhere. That's why they're declining.

And the pollution coming from the Prudhoe Bay area, you can see it, yellow, making us sick. And you want to put more pipelines up so the caribou can decline some more. I used to watch Teshekpuk Caribou where the pipelines are now. They're not there anymore. They're somewhere else. They used to be double. You want to make some more pipeline, you're going to kill all the caribou and the Eskimo, making us sick. Pollution. You can see the pollution coming from Prudhoe Bay.

Thank you.

MS. JOHNSON: Thank you.

MS. GIBSON: So I guess if there's no more comments, then feel free to check out project maps and ask questions of the team. Thank you.

MS. JOHNSON: Thank you everyone for coming.

(Off record)

(END OF PROCEEDINGS)

TRANSCRIBER'S CERTIFICATE

I, Salena A. Hile, hereby certify that the foregoing pages numbered 02 through 24 are a true, accurate, and complete transcript of Nuiqsut Scoping Meeting on July 18, 2017, transcribed under my direction from a copy of an electronic sound recording to the best of our knowledge and ability.

_____ _____

DATE SALENA A. HILE

ALASKA STAND ALONE PIPELINE, ASAP

PUBLIC SCOPING MEETING

Trapper Creek, Alaska
August 4, 2017

P R O C E E D I N G S

(Trapper Creek, Alaska - 8/4/2017)

(On record)

MS. JOHNSON: Good evening. Thanks for coming to the public meeting tonight on this beautiful Friday evening. This is the public meeting for the Alaska Stand Alone Pipeline project. My name is Kate and I work for the company Environmental Resources Management. We are responsible for writing the draft supplemental environmental impact statement on behalf of the Army Corps of Engineers.

The purpose of our meeting tonight is to tell you a little bit about the draft supplemental EIS, environmental impact statement, which I'll refer to as the SEIS tonight. Then we'll also provide an opportunity for you to comment on the document verbally.

So we're going to start out the night tonight with some introductions. We're going to go over the steps involved in the National Environmental Policy Act process, which I'll refer to as the NEPA process. We're also going to talk about the project description and background.

I do want to point out that this Alaska Stand Alone Pipeline project is the State's instate natural gas pipeline option. It's different than the AK LNG pipeline project, which would be providing natural gas to international markets. So we're talking about the ASAP pipeline tonight.

We're also going to talk about the draft supplemental environmental impact statement contents and I'll refer to that document as the SEIS. And then we'll also talk about some of the different ways that you're able to provide comment in addition to here in the meeting tonight if you'd like.

I do ask that if you have questions if you could hold those until after the presentation and public comment period are completed unless you want your comment on the record. We'll all hang out for as long as you'd like and we can use some of the project materials that we've brought to answer your questions

at that time.

With that I'd like to introduce Sandy Gibson with the Army Corps of Engineers and she's going to tell you a little bit about their role in the project.

MS. GIBSON: Thanks, Kate. Good evening. The U.S. Army Corps of Engineers is the lead Federal agency for development of the Alaska Stand Alone Pipeline project supplemental EIS. The responsibility of the Federal lead agency is to ensure compliance with applicable environmental review processes.

The Corps of Engineers is responsible for managing the EIS process and the final content of the EIS document, identifying and selecting the cooperating agencies, which are these individuals that you see below, and involving the public in the environmental review process. These tasks are accomplished at the direction of the Corps of Engineers and prepared using an independent third-party contractor. The third-party contractor that the Corps has selected for this undertaking is Environmental Resources Management.

Thanks again for coming. At this time ERM is going to provide a brief overview of where we are in the current EIS development process. Upon conclusion we welcome all of your comments.

Thank you.

MS. JOHNSON: Thanks, Sandy. So this slide here shows a summary of the steps involved in this NEPA process. Right now we're in this blue step. We are currently conducting public meetings. This is our last public meeting today. It's also the 45-day public comment review that began on June 30th and it will continue until August 14th.

I want to point out that the steps that are highlighted in orange are the opportunities that the public has to comment on the document. So right now as well as during the scoping period, which was conducted in 2014, we heard comments from the public at that time, those comments have been summarized in a comment analysis report. If you're interested in that,

you can find that online at asapeis.com. Additionally, once the final SEIS is issued there will be another opportunity for the public to comment.

As many of you know, there was an EIS written for this project in 2012. Since that time there have been some project changes and refinements. As a result of those changes, the environmental impacts have changed slightly and that's what requires a supplemental EIS to be written.

This slide here gives the five main changes between the 2012 project and the current project. The first one is that the pipeline is now designed to transport utility grade natural gas. As a result, fewer support facilities will be required. Rather than multiple compressor stations only a single compressor station is going to be required at Prudhoe Bay.

Additionally, both the mainline and the Fairbanks Lateral routes have been rerouted in some locations. For the most part those have been made to avoid and minimize environmental impacts. If you are interested in where those changes have occurred, there are maps online at asapeis.com as well as in an appendix to the SEIS. We've brought a copy of that. That's one copy on the table for you to reference tonight if you're interested.

And then finally plans for the gas conditioning facility have been refined, so in order to construct that modules would be imported to Dock Head 3 at West Dock. In order to accommodate those, that Dock Head 3 would require some modifications. Additionally some dredging would be required for those barges to access Dock Head 3 and then those dredged sediments would need a location to be disposed. I'll show you that in the next few slides, the proposed location..

So there's four main chapters that I want to point out tonight in the EIS. The first one is the project purpose and need. We'll talk a little bit about each of these. The second is the proposed action and alternatives to the proposed action. So the NEPA process requires that we analyze the environmental impacts of some alternatives to the proposed action. So I'm going to talk about what those are tonight as well.

We'll talk about the affected environment, so what are the existing environmental conditions within the project area and around the project area. Also the environmental consequences, so what are the potential environmental impacts from the project.

This slide shows the Alaska Gasline Development Corporation's proposed purpose and need for the project. The Alaska Gasline Development Corporation is also referred to as the applicant or the project proponent in the EIS. Their proposed purpose and need is to make North Slope natural gas available to residents in Fairbanks, the Southcentral region and other communities in the state as directed by the Alaska State Legislature. It's also to provide access to a stable, affordable and long-term supply of natural gas for heating and powering homes and businesses.

Here we have a figure that shows generally where the pipeline route would be. As you can see, it would begin at Milepost 0 at Prudhoe Bay, then it would follow generally the Trans-Alaska Pipeline System down to just south of Livengood. TAPS would continue east and then the ASAP pipeline would continue south. It would stay on the west side of Fairbanks and Nenana and then it would remain on the east side of Denali National Park. It would continue down the Parks Highway and connect into ENSTAR's existing distribution system just southwest of Big Lake.

If you're interested in locally where the pipeline route is going to be, there's some maps on the wall here that you can take a look at after the presentation.

This slide shows the proposed route for the Fairbanks Lateral. It would connect to the mainline pipeline at Milepost 440. It would run along Murphy Dome and Old Murphy Dome Roads before extending southeast into Fairbanks.

This figure shows an example of what the pipeline construction right-of-way might look like. As you can see, the pipeline would be a buried pipeline with the exception of at fault crossings as well as at some stream and river crossings. The construction right-of-way would be used to store trench spoils as

well as for the construction equipment to access the trench to install the pipeline.

During construction that right-of-way would be between 120 and 350 feet wide. In addition, there would be temporary work spaces used to store equipment and materials within an 800-foot corridor. During pipeline operations that right-of-way would be reduced slightly. It would be reduced to 53 feet at a minimum rather than 120 and then it would still in some locations extend out to 350 feet.

In addition to the below ground pipeline, there would be a number of above ground facilities associated. Those would include both mobile camps and permanent camps as well as pipeline storage yards and gravel material sites. These photos here just show an example of what a mobile camp might look like or what a permanent camp might look like.

As I mentioned earlier, there would be a gas conditioning facility up on the North Slope. It would be located near where the existing central gas facility is. It would be about a mile west of that.

As I mentioned earlier, in order to construct that 23 barges would be required to transport those modules to West Dock. Additionally, in order for those barges to access the dock head, there would be dredging required and the dredging channel would be approximately 500 feet wide by approximately a mile long.

So the project I've been describing is the proposed action, which we also refer to as Alternative 1. The other alternatives that are considered in this SEIS are Alternative 3, which is the no action alternative, so what are the impacts of not completing the project, and then Alternative 2 includes these five main differences from Alternative 1.

The first thing that's considered is the impacts of routing the pipeline through seven miles of Denali National Park. On this figure you can see where that location would be. So this pink line is the proposed action that would go on the east side of the Park. This green hatching is Denali National Park and this blue line is the Alternative 2 route. It would cross the Nenana River on a pedestrian footbridge, it

would then travel seven miles through the Park, it would cross the Nenana River again and then meet up with the proposed action route.

Under Alternative 2 we also consider the impacts of offloading those modules at Dock Head 2 rather than Dock Head 3. We consider a different location for the disposal of materials from the dredging, so those disposed sediments. So under the proposed action they would be disposed of in Prudhoe Bay in a nearshore location. Under Alternative 2 we consider the impacts of disposing of those further out in the Beaufort Sea.

The fourth difference between Alternatives 1 and 2 is that under Alternative 2 we consider a portion of the pipeline being constructed above ground and that portion would be from Milepost 0, way up in Prudhoe Bay, down to Milepost 62 and that's the area that's within the Beaufort Coastal Plain.

So the pipeline would be 733 miles long. So just to give you a frame of reference, that 62-mile section is a little bit less than a tenth of the pipeline length. Finally under Alternative 2 we consider the impacts of crossing the Yukon river using an aerial suspension bridge crossing rather than using a horizontal directional drill crossing and crossing under the river.

Chapter 3, as I mentioned earlier, describes the existing environment in and around the project area. It describes that in terms of these 21 resources. We don't have time to go through all of those during the presentation today, but if you are interested in any of these specifically, you could take a look in the EIS that we brought tonight. We can help you find what you're looking for. The entire EIS is also available at asapeis.com. We've also brought some CDs in the back there. They're got the entire EIS on them as well if you'd like to take one of those.

We are going to spend a little time tonight talking about Chapter 4 and we're going to talk about just a few of those resources that I showed on the last screen. The reason that we've selected these resources is because these are resources that either stakeholders have expressed interest in or they are expected to incur greater impacts than other resources.

So that's how we've selected these.

If you're interested in what the potential impacts could be to the other resources that I showed on the last slide, we've brought some figures on the back table. They're laminated 11x17 and there's one for each resource. So you can see where the major, moderate and minor impacts could be expected to occur and they're color-coded on there so you can zero in on what you're looking for.

The executive summary provides a good bulleted list of potential impacts for each resource. Of course, the EIS describes in detail the analysis, how we came up with those ratings.

The impacts described in the SEIS do include mitigation measures that the Alaska Gasline Development Corporation has proposed to minimize impacts. Finally, Chapter 4 includes a section that talks about potential cumulative effects. So if there are other potential projects occurring in the area, what could those impacts when combined with the impacts of this project look like. So that's considered in that section as well.

So the last few slides here we're just going to go through each of those resources that I showed on the last slide and talk about the greatest potential impacts. On this slide I have combined three of those resources; soils and geology, water and wetlands. The reason that I've done that is because the greatest potential impacts to these resources could all be related to the potential for permafrost thaw.

Permafrost thaw could occur for two reasons. One is where vegetation is being removed from the project right-of-way and then the other is actually during pipeline operation as a result of the pipeline temperature. The pipeline would not be heated. It would be constructed to be at ambient temperature and I'll talk a little bit more about that in just a second.

So as a result of permafrost thaw in locations where the soils are unstable, there could be locations where there's soil subsidence and as a result of that there could be changes to surface water groundwater flow as well as wetland hydrology. So it

considered those potential indirect effects.

So I want to talk a little bit about where this could occur. This could occur in areas of continuous or discontinuous permafrost. So the blue areas on this map show generally where continuous permafrost exists and then the green areas show generally where discontinuous permafrost exists. So within those areas these impacts would be most likely in areas, like I mentioned, where the soils are less stable.

Additionally, in locations where the pipeline is traveling from locations of warmer soil temperatures into cooler soil temperatures, I mentioned that the pipeline would be designed to acclimate to the surrounding soil temperature. If it's moving from a warmer to a cooler soil, it could take a little bit of time to acclimate, so that could be a location where this impact could occur. AGDC has also proposed to consider revegetation and to consider replacing some of those thaw unstable soils to help minimize this impact.

For socioeconomics there could be both positive and negative impacts. Some of the positive impacts could be employment opportunities during both construction and operations. Increased natural gas supply, as well as increased local and state tax revenues. A negative impact that could occur is the upfront local and state expenditures that could be associated with improvements to infrastructure as well as an increased demand on government services.

For cultural resources within the area of direct effects we have identified in the EIS 26 sites of the 72 cultural resource sites that could be subject these impacts. That number of sites is based on the currently available survey data. Those could include physical destruction or damage as well as changes in character, setting or access to those cultural resources.

I do want to point out that the mitigation measures for cultural resources haven't yet been finalized. They will be finalized in the programmatic agreement. If additional mitigation measures are defined in that programmatic agreement, these impacts could be reduced to moderate. If as a result some of these sites are avoided, then the

impacts could be reduced to minor or negligible.

For subsistence resources there would be potential for displacement of subsistence resources as well as changes to access to those resources. The analysis in the EIS is done based on several factors, including the frequency, duration and geographic extent and likelihood of the impacts. So those are all considered and a rating was assigned to each community along the pipeline.

In that way we've identified some communities that are expected to see more major impacts. Those communities are Wiseman and Coldfoot as wells as Nenana and Minto. So if you're interested in that, Trapper Creek is included in that list and we can show you where that is in the EIS.

Finally, potential impacts due to noise would most notably occur in locations where horizontal directional drilling is occurring. More specifically where that directional drilling is occurring within a tenth of a mile of a receptor. So that HDD would occur 24 hours a day, however the noise would occur intermittently for about a third of that time. In order to construct each HDD, it would take approximately 10 to 25 weeks.

So the two locations where that does occur in a nearby receptor are, one, at the Kashwitna River crossing just north of Willow. There are some residences that are located near that horizontal directional drill. Then also by McKinley Park there's a horizontal directional drilling and it would be near some lodges and cabins located in that area. AGDC has proposed to minimize activities in tourist areas during high-tourist seasons to help minimize that impact.

If you do have some comments that you'd like to submit, we would love to hear from you. You can either sign up tonight and provide a verbal comment. If you do provide a comment, please make sure that you just sign in on our sign-in sheet at the back table. You could also fill out a written comment form, which is also at the back table there and you can either leave that with us tonight or you can mail that to the Army Corps of Engineers. You can send a letter to Sandy as well. Just make sure that those are

postmarked by August 14th. Then finally you can email your comments to asapeiscomments@erm.com. There's a link to that on our project website as well at asapeis.com and I'll put up the website address after the presentation here.

During our public comment period we'll start out by providing five minutes for each person. We just want to make sure that everyone has an opportunity to comment that wants to. If anyone has more comments at the end, you're welcome to make more comments.

We do have a court reporter here with us tonight, which is why we're using a microphone. So if you would like to make a comment, just let me know and I'll bring the microphone over to you. Please make sure that you state your first and last name before your comment.

Then finally we won't be making any decisions or responding to comments during the public comment period. Your comments will go on the record and then they will be included in a comment analysis report as well as considered when we're writing the final EIS. As I mentioned before, if you'd like to have a question on the record, you're welcome to do that and then we'll stick around after the meeting and we can help you find the answer using our materials here tonight.

So, with that, Earl with the BLM is going to open the subsistence hearing and then we'll get started.

MR. WILLIAMS: Thank you, Kate. I'd like to thank the community for this wonderful facility. It really makes it nice for us to be able to come here and present the information we've got on the project and hear your comments and concerns. If you would please bear with me, I will read this statement into the record.

My name is Earl Williams. I'm a project manager with the Bureau of Land Management. I am reading this statement into the record to let you know that this public meeting is also a subsistence hearing. Section 810 of the Alaska National Interest Lands Conservation Act, or ANILCA, requires the BLM to

evaluate the effects of its actions on subsistence uses and to hold public hearings if it finds that subsistence use may be significantly restricted.

The Alaska Stand Alone Pipeline project is seeking a right-of-way from the BLM to allow for the construction and operation of a buried pipeline across public lands. In reviewing this application, the BLM must consider the potential effects to the environment and the potential impacts to subsistence resources and uses on public lands. The ANILCA 810 evaluation done for this project assessed the potential effects of the proposed alternatives and the cumulative case on subsistence use, and it is included as an appendix in the Draft SEIS.

In the evaluation, the BLM finds that the proposed project and its alternatives may result in a significant impact to subsistence uses. These potential impacts may include reductions in the availability or abundance of caribou, moose, and other wildlife. Additionally, there could be reductions in the availability of berries and other plants in some traditional harvest areas.

This hearing is being held to provide you an opportunity to make comments on the preliminary subsistence analysis for the Alaska Stand Alone Pipeline. All comments are welcome, but we especially would like to hear your thoughts regarding mitigation measures that could be applied to minimize impacts to your subsistence use.

The comments you provide will be considered in the preparation of the Final SEIS and the BLM's Record of Decision. You may provide your comments here tonight or submit them in writing. Please submit any written comments to the Corps of Engineers by the close of the comment period.

Thank you.

MS. JOHNSON: Thank you, Earl. So with that we will open the public comment period. We would love to hear any thoughts, comments on the project as well as on the environmental impacts tonight. Is there anyone that would like to provide a comment.

(No comments)

MS. JOHNSON: Any questions that you want on the record to be addressed in the final EIS. Anything.

(No comments)

MS. JOHNSON: Okay. So I guess no comments tonight. I guess we'll go ahead and close the public comment period. Thank you so much for joining us tonight.

We'll stick around and talk with you for a little bit.

Thanks a lot.

(Off record)

(END OF PROCEEDINGS)

TRANSCRIBER'S CERTIFICATE

I, Salena A. Hile, hereby certify that the foregoing pages numbered 02 through 14 are a true, accurate, and complete transcript of Trapper Creek Scoping Meeting on August 4, 2017, transcribed under my direction from a copy of an electronic sound recording to the best of our knowledge and ability.

_____ _____

DATE SALENA A. HILE

ALASKA STAND ALONE PIPELINE, ASAP

PUBLIC SCOPING MEETING

Willow, Alaska
August 18, 2017

P R O C E E D I N G S

(Willow, Alaska - 8/18/2017)

(On record)

MS. JOHNSON: Good evening, everyone. I think we're going to get started with our meeting here. We really appreciate you all joining us tonight on this Friday night. Welcome to the public meeting for the Alaska Stand Alone Pipeline project. My name is Kate and I work for the company Environmental Resources Management. We are responsible for writing the supplemental environmental impact statement for the Alaska Stand Alone Pipeline project on behalf of the Army Corps of Engineers.

The purpose of our meeting tonight is to tell you a little bit about that document, which I'll refer to as the SEIS tonight for short and then also the purpose of this meeting is also to provide an opportunity for you to comment publicly on the record about the EIS or the project. We'll do that after the presentation.

So we're going to start out tonight with some introductions. We're going to talk about the steps that are involved in the National Environmental Policy Act, also known as the NEPA process, which is the process that requires that this SEIS be written. We're also going to talk about the project description and project background.

I do want to point out that this project is the Alaska Stand Alone Pipeline project. So it's a different project than the AK LNG pipeline project, which many of you may have heard about. The difference is that this project intends to bring natural gas to the State of Alaska while the AK LNG project intends to bring natural gas to international markets.

We're going to talk about the contents of the draft SEIS tonight. And then we're also going to talk about the different ways that you can provide comments on the document. I'm sure many of you have some questions tonight. It would be helpful if you could hold your questions until after the presentation and public comment period are completed. Of course, if

you've got a question that you want on the record, feel free to ask that at that time.

With that I'd like to introduce Sandy Gibson with the Army Corps of Engineers and she's going to tell you a little bit about their role in the project.

MS. GIBSON: Thanks, Kate. Good evening. The U.S. Army Corps of Engineers is the lead Federal agency for development of the Alaska Stand Alone Pipeline project supplemental EIS. The responsibility of the lead agency is to ensure compliance with applicable environmental review processes.

The Corps of Engineers is responsible for managing the EIS process and the final content of the EIS, identifying and selecting cooperating agencies, which are those individuals that you see listed below here, and involving the public in the environmental review process. These tasks are accomplished at the direction of the Corps of Engineers by use of undertaking of a third-party contractor. The third-party contractor selected is Environmental Resources Management.

Thanks again for everyone coming. At this time ERM will provide a brief overview of where we are in the current EIS development process. Afterwards we'd welcome all comments from you.

Thanks again.

MS. JOHNSON: Thank you, Sandy. So in this slide we show the steps in the NEPA process. I want to highlight a few of them tonight. The first one I want to highlight is the opportunities that the public has to comment on the project and on this document. The first one is the public meeting which we're conducting. This is the last public meeting that we'll be conducting. The public comment period began on June 30th and it will extend through August 29th.

There was an opportunity to comment in 2014 during the scoping period and if you're interested in what those comments were and how they were addressed in the draft, there's a comment analysis report provided online at asapeis.com. There's also a table

in the draft SEIS that describes where those comments have been addressed.

Finally, in winter of 2017 when the final EIS is published, there will be another opportunity to comment on that document at that time.

So many of you may be aware that in 2012 an SEIS was written for this same project and since then there have been many project changes and refinements. So that is what results in this supplemental EIS being required by the NEPA process. So when there are changes that result in a different impact to the environment, they have to be analyzed in a supplemental EIS.

This slide shows the five main changes between 2012 and now. The first change is that the pipeline is now proposed to carry utility grade natural gas. As a result, fewer support facilities will be required along the pipeline. Only one compressor station will be required at Prudhoe Bay.

Additionally, both the mainline pipeline and the Fairbanks Lateral pipeline have been rerouted in some locations. For the most part those changes have been rerouted in order to avoid environmental impacts. You can see where those changes have been made. There are maps online at asapeis.com and then also in the draft SEIS.

And then finally plans for the gas conditioning facility up at Prudhoe Bay have been refined. The modules would be required to be imported to construct the gas conditioning facility and as a result some modifications would be required at Dock Head 3 at West Dock as well as some dredging. We'll talk about that in the next few slides.

So what's included in an SEIS. Chapter 1 describes the project purpose and need. We're going to go over each of these in a little more detail in the next few slides. Chapter 2 describes the proposed action and the alternatives. The NEPA process requires that the EIS analyze the environmental impacts of some alternatives to the proposed action. We're going to talk about the affected environment, so what are the existing conditions within and around the project area. Then we'll also talk about the environmental

consequences or the potential environmental impacts.

The Alaska Gasline Development Corporation, also known as the project proponent or the project applicant, their proposed purpose and need for the project is to make North Slope natural gas available to residents in Fairbanks, the Southcentral region and other communities in the state as directed by the Alaska State Legislature. It's also to provide access to a stable, affordable and long-term supply of natural gas for heating and powering homes and businesses.

Here we have a general overview of the proposed pipeline route. As you can see, it would begin up at Prudhoe Bay at Milepost 0. It would then continue generally along the Trans-Alaska Pipeline System until Livengood where it would continue south and TAPS would continue west. It would stay on the west side of Denali National Park and then it would follow the Parks Highway down to Willow before connecting to ENSTAR's existing distribution system southwest of Big Lake.

There are some close-up maps provided on the wall and the table over there if you're interested in a close-up of the location in this area specifically.

The project also includes a proposed Fairbanks Lateral that would tie into the mainline at Milepost 440. It would generally follow Murphy Dome and Old Murphy Dome Roads and then it would extend southeast into Fairbanks.

This slide shows an example of what the project construction right-of-way might look like. So it would be a buried pipeline except for at fault crossings and at some elevated stream crossings. This figure illustrates that part of the construction right-of-way would be used for the trench spoil and part of the construction right-of-way would be used for equipment to access that trench and install the pipeline.

This right-of-way during construction would be between 120 and 350 feet wide. In addition to that there would be some temporary work spaces for storing equipment and materials within an 800-foot

corridor of the pipeline. Then during operations that pipeline right-of-way would be reduced to a minimum of 53 feet in some areas and then in some areas it would remain out to 350 feet wide.

In addition to the below ground pipeline there would be some above ground facilities. Those would include mobile camps, stationary camps. These are just photos of what a mobile camp and a stationary camp might look like. The project would include pipe storage yards as well as gravel material sites.

As I mentioned earlier, a gas conditioning facility would be constructed up on the North Slope near Prudhoe Bay. This photo here illustrates where the existing central gas facility is and where the location for the proposed gas conditioning facility would be. It's about a mile west of that central gas facility.

In order to construct that facility, modifications would be required at West Dock in order to accommodate 23 barges, which would be bringing in the modules to construct this gas conditioning facility. Dredging would be required for those barges to access the dock. It would occur within about a 500 foot wide channel about a mile long.

The project description that I just gave is for the proposed action or Alternative 1. Now I want to talk a little bit about the alternatives that are also evaluated in the SEIS. Alternative 3 is the no action alternative, so what would the impacts be if the pipeline were not constructed.

(Someone from the public clapping)

Alternative 2 includes these five differences from Alternative 1. The first difference that's analyzed is a route that enters the Denali National Park for about seven miles. I can show you a map of what that would look like. So the EIS evaluates the impacts of this possibility compared to Alternative 1. The proposed action is shown in pink east of Denali National Park and the blue line shows the proposed Alternative 2 within the Park.

The EIS also considers the impacts of

modules being offloaded at Dock Head 2 rather than Dock Head 3. It also considers disposal of those dredged materials in a different location. So I mentioned the dredging that could occur at Dock Head 3. Under the proposed action those would be disposed of in a nearshore location near Prudhoe Bay. Under Alternative 2 the SEIS considers disposing of those further out in the Beaufort Sea.

Additionally, the SEIS considers the impacts of an above ground pipeline from Milepost 0 to 62 within the Beaufort Coastal Plain area. Also constructing an aerial suspension bridge crossing the Yukon River rather horizontal directional drilling under the river.

Chapter 3, as I mentioned, is the affected environment or the existing environment. We won't have time to go over the existing environment, but the SEIS describes it in terms of the resources shown on this slide. So if you're interested in any of these resources specifically, what the existing conditions are, we've brought a copy of the EIS. So if you're looking for something after the meeting, we can help you look up where that is. It's also available online at asapeis.com.

What we are going to talk in a little bit more detail is the environmental consequences. So we're going to focus on some of the resources that either could be expected to have greater impacts than the others and also resources that have received more attention from stakeholders. So the resources that we're going to talk about today are these seven listed on the slide. We'll go through each of those one by one.

If you're interested in the environmental consequences of the other resources that were on the last slide, we've brought these laminated figures up here on the table. There's one figure for each resource and it gives a general geographic overview of where the minor, moderate and major impacts might be expected to each of those resources. So that's a good place to start. Also a good place to start is the executive summary which gives just a bulleted list of impacts associated with each resources. Then, of course, in the SEIS there's a description of how we came up with those impacts.

The impact analysis in Chapter 4 does take into account the Alaska Gasline Development Corporation's proposed mitigation measures. Chapter 4 also includes a section about cumulative effects, so what could the cumulative impacts of another project and this project be if they both were to occur.

So in this slide I'm going to talk about three of those resources that were on the last slide. I'm going to talk about soils and geology, water and wetlands. The reason that I've combined these together is because the greatest potential for impacts to these resources are all related to potential impacts to permafrost.

There is potential for permafrost thaw due to vegetation removal during construction as well as potentially during operation due to the temperature of the pipeline. It would not be a heated pipeline. I'll talk a little bit more about that in a minute. So as a result of those direct effects, it there were to be some soil subsidence due to that permafrost thaw, there could be impacts to water resources and wetland hydrology.

So where would this be most likely to occur. This figure here shows, this blue area, is generally areas where continuous permafrost occurs. This greenish color are areas where discontinuous permafrost generally occurs. So within those areas you would look for areas where the soils are less stable. So a more stable soil wouldn't collapse under permafrost thaw, but a less stable soil might.

AGDC proposes to construct the pipeline at ambient temperature so the pipeline would acclimate to the temperature of the surrounding ground. Some areas where permafrost thaw could still occur is if that pipeline was going from warmer soil into colder soil where it could take a little time to acclimate. AGDC is also going to consider revegetation and will also consider replacing some of those thaw unstable soils that I described.

For socioeconomics there could be both positive and negative impacts. Here I've highlighted some of the greater impacts. The greater positive impacts would be employment opportunities, increased natural gas supply, as well as local and state tax

revenues. A negative socioeconomic impact would be the upfront local and state expenditures associated with infrastructure improvements as well as increased demand on government services.

For cultural resources the SEIS identifies 26 cultural resource locations where these impacts could occur, the impacts of physical destruction or damage or changes in character, setting or access. These are 26 of the 72 known sites within the area of direct effects and that information is based on what is currently available in the survey results.

So mitigation measures for cultural resources will be finalized in the programmatic agreement. They have not yet been finalized. If additional mitigation measures are identified during that process, these impacts could be reduced to moderate. If some of these sites are avoided as a result of the programmatic agreement, then these impacts could be reduced to minor or negligible.

There could be potential for impacts to subsistence resources such as displacement of subsistence resources or changes to access to subsistence resources. The SEIS uses a process that provides a numeric rating for each of the communities shown on this map. It considers the geographic location, the likelihood of the impact, the magnitude of the impact, among other things.

As a result of that process that I described, a few communities were identified as having major impacts. Those are communities adjacent to the included communities adjacent to the project or communities that have increased use area of undisturbed habitat crossing the project. Those communities are Wiseman, Coldfoot, Minto and Nenana.

Finally, impacts could occur resulting from the construction noise. Locations where noise could be most significant are locations where horizontal directional drilling would occur within a tenth of a mile of a receptor. Horizontal directional drilling would occur over 24 hours a day intermittently and for about a third of those 24 hours at each HDD location. That would occur over a period of 10 to 25 weeks.

So there are two locations shown on here where this could be a greater impact. One is at the Kashwitna River HDD just north of Willow. There are some residences located within a tenth of a mile of that location. The other location is up by McKinley Park. There are some cabins and lodges near an HDD in that area.

So how can you provide comments on the SEIS. You can sign up to provide verbal comments tonight. I think most of you have a copy of the comment form. There are also a few sheets of looseleaf paper over there on the table if you didn't get one or if you'd like a little more room to write. You can leave them with us tonight or you can mail them to Sandy at the Army Corps of Engineers. Those should be postmarked by August 29th. Not August 14th. That date has been extended. You can also email your comments to asapeiscomments@erm.com. There's a link to that email on asapeis.com. Everything you need is there. You can also comment tonight during our public comment period.

So we're going to start by providing each commentor with five minutes. We just want to make sure that everyone gets an opportunity to comment. If you do want to comment for longer than five minutes, you're welcome to come back up again after everyone has had an opportunity to comment the first time.

We've got a court reporter here tonight, so if you do want to comment, please come up to the microphone here and state your first and last name so that you can be put on the public record.

I do want to point out that we won't be making any decisions about the project during this public comment period and we won't be providing responses to questions during this public comment period. If you've got a question, please feel free to state it. It will be put on the comment record and addressed following the NEPA process in the EIS.

If you are looking for answers tonight, please feel free to stick around after the comment period. We've got lots of project information with us tonight. We will be happy to help you find the answer to your question or answer it if we can. This is the project website if anyone wants to write that down.

With that we will begin the public comment period. We would love to hear from you tonight.

MR. GRENIER: Brian Grenier, G-R-E-N-I-E-R B-R-I-A-N. About the economic scope of this project, has anyone spoken with the governor about the economic potential of this project? There's not a positive return on investment possible. It's been calculated by major gas producers that $4.20 per million BTUs is required to be profitable and the current spot price is $2.85. $4.20 to be profitable. $2.85 current price. That's my comment.

Thank you.

MS. JOHNSON: Thank you very much. Would anyone else like to comment tonight.

MR. SMOLDON: My name is Todd Smoldon, T-O-D-D S-M-O-L-D-O-N. I talked to Kalb at the Trapper Creek meeting a couple weeks ago and we discussed the pipe storage yard that is off of Willow Creek Parkway, about a mile down Willow Creek Parkway, and it's a pipe storage yard that is just north of Willow Creek Parkway and it does intersect a trail that is used to access Lucky Shot Trail, a multi-use trail.

I sent Kalb a screen shot of that and he told me that -- he asked me to speak to an engineer, if there was an engineer here, to remind them of that. I don't know if that person is here, so I just wanted to get it on the record in public comment. So he suggested there's a number of ways that that could be mitigated and we would like that to happen because it does interfere with a multi-use trail if this project goes forward, which I doubt.

Thank you.

MS. JOHNSON: Thank you. Scott with AGDC is here tonight, so he can come chat with you after. He's in the back there. Does anyone else have a comment they'd like to share.

MR. CHARLES: I'm Steve Charles and I'm a resident of Willow. I'd just briefly mention that I think our Willow area community organization about four years ago sent a resolution I think addressing the

first EIS, the original. And I'd like to make sure you're aware of that and go back and take a look at it. As a member of the Willow Trail Committee, it affected our trails and trails are a very important part of recreation in Willow.

As Todd, the last commentor mentioned, we addressed the man camp that was located on the Lucky Shot connector trail and we commented about that and asked that it be located somewhere else since there's a lot of land here to locate something like that.

I believe about two years ago I think some representatives came up to the Willow Chamber of Commerce meeting. That might have been another form of EIS. I'm not sure, acquainted with that exactly, but I think there was another addition to it or supplement. That second supplement that I mentioned still had a man camp right there, like they just ignored our first resolution and our first comment, when we have all this other land around. I mentioned that the same thing.

Now I see we've gone from a man camp to a pipe storage area right on the trail and it's a major trail that's used. The Junior Iditarod uses it almost every year. A lot of our local races use it. I think it's right in Willow Creek State Recreation area. I think there's just a lot of available areas.

And just a quick comment about I think this pipeline, when I looked at the route, is sort of similar west of Willow to the Point MacKenzie Railroad corridor at the time and there's arguments there where the same thing with the pipeline, the effect it would have on recreation trails and the semi quasi-wilderness that people come out to Willow to enjoy.

I hope those trails are addressed. You know, a pipeline is a big project and I can't see where recreational trails are going to have a major impact, but what I'm asking, I guess, is that you consider that and if there's good alternative mitigation factors rerouting, to consider that for our trails. And our residential areas because we're growing out there too.

MS. JOHNSON: Thank you. We really appreciate the specific comments.

MS. SMOLDON: My name is Carrie

Smoldon, C-A-R-R-I-E S-M-O-L-D-O-N. First I would love for you all to take note of how many people are here tonight. I don't know how many people showed up in Anchorage. I know how many people showed up at Trapper Creek. This matters to the residents of Willow. It will impact our way of life. It will impact our activities, it will impact private residents as well as the community as a whole.

It's frustrating because we went through a process, had a gasline committee with our community organization several years ago that I was the chairperson for and we commented specifically on many things, especially trails. So to see it go from a man camp to a storage yard, that's great, we don't have a man camp across from our new 40-acre park, but to still have a storage area I feel like our comments were ignored and that the trails -- the importance of those trails was completely ignored.

I don't know if people have been out here to walk around and look. I know that I saw the miles and miles that people went through and surveyed. Our community organization and the members of our community are a great resource. Our trails committee is very active. They're a great resource. I would appreciate those resources being utilized if this pipeline actually happens.

MS. JOHNSON: Thank you. I'll give you just a few seconds here to see if anybody else wants to come up.

MR. BOEVE: My name is Talon Boeve, that's T-A-L-O-N B-O-E-V-E. I'll just start by saying that tonight I appreciate Sandy and Kate and a few other people who made this additional meeting possible. I attended the meeting in Trapper Creek and just expressed some concern that it wasn't adequate time for certain residents to comment since there was only a meeting in Trapper Creek and Anchorage and many residents between those areas were lost in the process. So I appreciate them both working to get this additional meeting and to extend the comment period.

I will also say that having gone to the Trapper Creek meeting and now this meeting, I seem to remember a couple of things from the Trapper Creek meeting that weren't discussed in as great a detail at

this meeting. A few things about the noise mitigation, techniques that they might ensue for the horizontal directional drilling under the creeks and rivers and some of the subsistence concerns and those mitigation techniques.

So I just want to thank the -- I think I counted 31 other residents of Willow and the surrounding area that turned out tonight and I just want to thank them for showing up.

MS. JOHNSON: Thank you. Is there anyone else that wants to comments.

(No comments)

MS. JOHNSON: Okay. If there's no one else, then we'll go ahead and close the public comment period. As I said earlier, we will stick around and we will try and help you find answers to your questions if you have them.

Thanks very much for coming tonight.

(Off record)

(END OF PROCEEDINGS)

TRANSCRIBER'S CERTIFICATE

I, Salena A. Hile, hereby certify that the foregoing pages numbered 02 through 15 are a true, accurate, and complete transcript of Willow Scoping Meeting on August 18, 2017, transcribed under my direction from a copy of an electronic sound recording to the best of our knowledge and ability.

_____ _____

DATE SALENA A. HILE

ALASKA STAND ALONE PIPELINE, ASAP

PUBLIC SCOPING MEETING

Wiseman, Alaska
July 26, 2017

P R O C E E D I N G S

(Wiseman, Alaska - 7/26/2017)

(On record)

MS. JOHNSON: Good evening, everybody. Thanks for coming. This is the public meeting for the Alaska Stand Alone Pipeline project. My name is Kate and I work for the company Environmental Resources Management. We are responsible for preparing the supplemental environmental impact statement on behalf of the Army Corps of Engineers.

The purpose of our meeting tonight is to tell you a little bit about what is included in this document and then also to provide you an opportunity to comment on the document or on the project itself. So we'll hold a hearing after the presentation.

So we're going to start out tonight with some introductions and then I'm going to talk to you a little bit about the steps that are involved in the National Environmental Policy Act process, also known as the NEPA process. We're also going to talk about the project description a bit.

I do want to point out that this is the Alaska Stand Alone Pipeline project, so it would be an instate natural gas pipeline project. It's different than the AK LNG pipeline project, which would primarily bring natural gas to international markets, so that's a different project.

I'm going to tell you a little bit about the contents of the EIS and then I'm going to talk about the different ways that you can provide comment on the document.

With that I'd like to introduce Sandy Gibson with the Army Corps of Engineers and she's going to tell you a little bit about her role in the project.

MS. GIBSON: Hi. Thanks everyone for coming. The U.S. Army Corps of Engineers is the lead Federal agency for development of the Alaska Stand Alone Pipeline project supplemental EIS. The responsibility of the lead agency is to ensure compliance with applicable environmental review

processes.

The Corps of Engineers is responsible for managing the EIS process and the final content of the EIS, identifying and selecting cooperating agencies, these individuals listed below, and involving the public in the environmental review process. These tasks are accomplished at the direction of the Corps and prepared using an independent third-party contractor. The third-party contractor selected for this undertaking is Environmental Resources Management, Kate.

At this time ERM will provide a brief overview of where we are in the SEIS process. Afterwards we'd welcome all comments from the you. Thanks.

MS. JOHNSON: Thanks, Sandy. So this slide shows the steps that are involved in the NEPA process. I'm going to highlight a few. First of all we are currently conducting the public meeting on the draft EIS. We are also currently in the middle of this 45-day public comment review period. That began June 30th and it will continue until August 14th.

The steps that are highlighted in orange here are opportunities for the public to provide comment. So a scoping period was held in 2014. The results of the comments at that time have been published in a document on the website asapeis.com in a comment analysis report, so you can take a look at that if you'd like.

It's also summarized in the beginning of this EIS. It talks a little bit about what the common themes were and how those have been addressed in the EIS. And then finally, once the final EIS is published, there will be another opportunity to comment on the document at that time.

So why do we need a supplemental EIS. As many of you know, an EIS was written for this project in 2012 and since then there have been some project changes and refinements. As a result there have been some changes to the potential environmental impacts and that's why this supplemental EIS is required.

On this slide we've got the five main differences between 2012 and now. The first one is that the gas composition would actually be utility grade natural gas. As a result there would be fewer support structures, including a single compressor station at Prudhoe Bay as opposed to multiple compressor stations in the previous version.

Secondly, both the mainline and the Fairbanks Lateral have been rerouted in some locations. That's for the most part to decrease the environmental impacts. If you're interested in knowing where those reroutes are you can go online to our website. I'll post it up at the end of our meeting here. You can actually look at maps of all of the changes in the route between 2012 and now.

Additionally, plans for the gas conditioning facility at Prudhoe Bay have been modified. The modules for the gas conditioning facility will now be imported and as a result some modifications would be required at Dock Head 3 up on the North Slope and some dredging would also be required so that those barges could access the dock head and import those modules.

I'm going to talk about the four main chapters of the SEIS tonight. Chapter one is the project purpose and need. Chapter two is the proposed action and alternatives. The NEPA process that requires an EIS also requires that we analyze the environmental impacts of alternatives to the proposed action. Chapter three is the affected environment, so the existing conditions within and around the project area. Then chapter four describes the environmental consequences or potential environmental impact to these resources described in chapter three.

The Alaska Gasline Development Corporation, who is the project proponent or the project applicant, their proposed purpose and need for the project is to make North Slope natural gas available to residents in Fairbanks, the Southcentral region and other communities in the state as directed by the Alaska State Legislature and to provide access to a stable, affordable and long-term supply of natural gas for heating and powering homes and businesses.

This slide shows the proposed pipeline

route. It would begin at Prudhoe Bay, Milepost 0. It would be a buried pipeline generally following the Trans-Alaska Pipeline System route down to Livengood, where it would continue south. It would stay west of Fairbanks and Nenana, it would stay on the east side of Denali National Park, and then it would connect with ENSTAR's existing distribution system just southwest of Big Lake.

There would also be a Fairbanks Lateral that would tie into the mainline at Milepost 440. Again Milepost 0 is up here in Prudhoe Bay. The Fairbanks Lateral would travel on Murphy Dome and Old Murphy Dome Roads and then it would extend southeast into Fairbanks.

This figure shows an example of what the project right-of-way might look like during construction. As I mentioned, the pipeline would be buried. The construction right-of-way would be used to store trench spoils during construction as well as for equipment access in order to install the pipeline.

This would be anywhere between 120 feet wide to 350 feet wide during construction. In addition, there would be some temporary work spaces for storing materials and equipment that would be within an 800-foot corridor of the pipeline route. During operations the right-of-way would be reduced to 53 feet wide in some locations, but it would continue to be out to 350 feet in some locations.

In addition to the below ground pipeline, there would be a number of mobile camps and permanent camps. There would also be pipe storage yards as well as gravel material sites. These pictures just show an example of what a mobile camp might look like and what a stationary camp might look like.

As I mentioned earlier, a gas conditioning facility would be constructed up on the Slope near Prudhoe Bay. This shows the existing central gas facility. That gas conditioning facility would be constructed about a mile west of there.

In order to import the modules to construct that, there would be some modifications to Dock Head 3 at West Dock. So 23 barges would transport those modules and in order for those barges to access

the dock, there would be dredging of a channel which would be approximate 500 feet wide by about a mile long.

So as I mentioned we also analyzed the impacts of alternatives to the proposed action. We've identified Alternative 2, which has five different components which I'll go over, and also Alternative 3 which is the no action alternative, which is required, so the impacts of the pipeline not being constructed.

So under Alternative 2 we considered the impacts of the route that enters Denali National Park. This pink line is the proposed action. Green is the Denali National Park and then the Alternative 2 route is shown in blue. This route would cross the Nenana River on a pedestrian footbridge, go seven miles through the Park and then it would cross the Nenana River again before connecting to the proposed action route.

Secondly, modules would be offloaded at Dock Head 2 rather than Dock Head 3. The dredge sediments would be disposed of in a different location. Under the proposed action we consider the impacts of disposing those here nearshore in Prudhoe Bay. Under Alternative 2 we consider the impacts of disposing those further out in the Beaufort Sea.

Alternative 2 considers an above ground pipeline for a portion of the route. It would be the first 62 miles in the Beaufort Coastal Plain. That's a little less than 10 percent of the entire pipeline route. It's 733 miles long. Finally, under Alternative 2 we consider the impacts of an aerial suspension bridge crossing the Yukon River rather horizontal directional drilling.

MR. REAKOFF: How high would that elevated section be on the North Slope or what distance off the ground?

MS. JOHNSON: You know, I don't know the answer to that offhand, but I can help you find that in the EIS after the comment period.

Chapter 3 gives a description of existing conditions in terms of these 21 resources. We're not going to talk about that in detail today

because we just don't have time, but if you're interested in any of these we've got a copy of the EIS. Jack also has a copy of the EIS here in town. So if you're looking for any information we'll stick around after the comment period and we can help you find what you're looking for in there.

We are going to talk a little bit about the environmental consequences to some of these resources. So we selected these resources because these are resources that could have the greatest environmental impacts as well as resources that have received a greater amount of attention from stakeholders.

If you're interested in impacts to the other resources, we've got some figures here. There's one figure for each resource, each of the 21 resources. They do a nice job of showing where the minor, moderate and major impacts would be expected to be along the pipeline route for each resource. You can also look in the executive summary or the EIS for more detail.

Chapter 4 also describes cumulative effects, so the effects of other potential projects in the area that could result in impacts in the same area as this proposed project. So what would those combined impacts look like.

So on this slide I've combined three resources together, soils and geology, water and wetlands, and the reason I've done that is because the greatest potential impacts to these resources are similar in that they're all related to a potential for permafrost thaw. That could occur either due to vegetation removal during the construction of the pipeline within the project right-of-way or it could also occur during pipeline operation.

As a result of that permafrost thaw, sometimes you can get soil subsidence and as a result of that soil subsidence you could get altered surface and groundwater drainage as well as altered wetland hydrology as indirect effects.

So where could that occur. This map shows in blue areas of continuous permafrost generally. These green areas are generally discontinuous permafrost. I'm sure as you know Wiseman is in this

area of continuous permafrost. Within this area this soil subsidence could occur to the greatest extent in areas where the soil is less stable. So maybe like organic soils or clay soils rather than more stable soils like a gravel.

MR. REAKOFF: So is it a chilled gas or is it above and freezing?

MS. JOHNSON: So it would be an ambient temperature pipeline and that's actually the next thing I was going to talk about.

AGDC has proposed some mitigation. The first thing is that they propose to construct an ambient temperature pipeline. So the pipeline would acclimate to the surrounding temperature. There would be some situations where the pipeline, as you can imagine, is moving from a warmer soil into an area of permafrost which may take some time to acclimate. So that's another situation where you might see that impact. AGDC will also consider revegetation and consider replacing some of those unstable soils that I mentioned earlier to help mitigate this impact.

So for socioeconomics we could seek both positive and negative impacts. Some positive impacts that we could see are employment opportunities during both construction and operations of the pipeline. We could see an increased natural gas supply during operations, as well as local and state tax revenues. One negative impact is upfront local and state expenditures that could be associated with improvements to infrastructure as well as increased demand on government services during construction.

For cultural resources there could be potential for some physical destruction or damage or changes in character, setting or access at some cultural resource locations. So in the SEIS we've identified 26 of the 72 sites within the area of direct effects that could see some of these impacts. These are based on current survey results.

I do want to point out that mitigation measures would be finalized in the programmatic agreement. So if some additional mitigation measures are required as part of that document these impacts to these 26 sites could be reduced to moderate. If some

of these sites are avoided, if that's required by the programmatic agreement, then those impacts could be reduced to minor or negligible.

For subsistence resources there's potential for displacement of subsistence resources as well as changes to access. We've identified some areas that we'd likely see greater impacts than other communities, so communities located directly along the pipeline route. Wiseman and Coldfoot are listed as having major impacts here as well as Nenana and then Minto because of increased use areas that cross that pipeline.

Sure.

MR. REAKOFF: Change in access is exclusion in subsistence access. Is that what you're talking about?

MS. JOHNSON: So it could be increased access or I guess excluding access. Yeah, it could go either way.

Here we're highlighting the greatest impacts. There's a potential impact of noise during horizontal directional drilling activities. There are a couple locations where this could occur in nearby receptors. The HDD could occur for over 24-hour periods. However, it would occur intermittently and for approximately a third of that 24 hours. It would occur potentially for a 10 to 25 week period.

So where this could have a greater impact are two locations at the Kashwitna River crossing drilling site. There are some residences located within a tenth of a mile of that location as well as at the McKinley Park area, the Denali Cabins. They are within a tenth of a mile of an HDD location.

So that's a quick summary of some of the impacts described in the EIS. If you're interested in commenting on the document, we will have an opportunity for you to provide public comment tonight. You can also go online to asapeis.com and you can access this email comment address at asapeiscomments@erm.com.

We brought a comment form with us

tonight if you prefer to comment privately. You can turn that in tonight or you can also mail your comments to Sandy at the Army Corps of Engineers. Her address is listed right here. It's also on the form. Just make sure that you get comments to us by August 14th in order to be considered because that's the close of the comment period.

So during our comment period tonight we'll start out by allowing each person five minutes to comment. We just want to make sure that everyone has an opportunity to comment. If you've got more comments after that you're welcome to come back up and comment some more. We do have a court reporter present tonight, so please make sure that you speak into the microphone. She'll bring you the microphone if you'd like to comment. We want to make sure that we get your comment recorded so that it can be addressed. Then also make sure that you state your name first and last before you comment.

We won't be making any decisions about the project today. We won't be able to provide responses to any comments during the public comment period and we won't be answering questions during the public comment period. Those will be reviewed and then they will be addressed when we're writing the final EIS. There will also be a public comment analysis report published so you can see how comments were addressed.

After the public comment period we will stick around. If you've got questions about where you can find information, we can help you find that information and we can answer some questions at that time.

This is also serving as a subsistence hearing tonight, so Earl with the BLM is going to open the subsistence hearing.

MR. WILLIAMS: Thank you, Kate. I'd like to thank you. I really appreciate the community of Wiseman giving us an opportunity to come here tonight and present the project and hear your comments and concerns. I would like to open the subsistence hearing by reading a statement into the record.

My name is Earl Williams. I'm a

project manager with the Bureau of Land Management. I am reading this statement into the record to let you know that this public meeting is also a subsistence hearing. Section 810 of the Alaska National Interest Lands Conservation Act, or ANILCA, requires the BLM to evaluate the effects of its actions on subsistence uses and to hold public hearings if it finds that subsistence use may be significantly restricted.

The Alaska Stand Alone Pipeline project is seeking a right-of-way from the BLM to allow for the construction and operation of a buried pipeline across public lands. In reviewing this application, the BLM must consider the potential effects to the environment and the potential impacts to subsistence resources and uses on public lands. The ANILCA 810 evaluation done for this project assessed the potential effects of the proposed alternatives and the cumulative case on subsistence use, and is included as an appendix in the Draft SEIS.

In the evaluation, the BLM finds that the proposed project and its alternatives may result in a significant impact to subsistence uses. These potential impacts may include reductions in the availability or abundance of caribou, moose, and other wildlife. Additionally, there could be reductions in the availability of berries and other plants in some traditional harvest areas.

This hearing is being held to provide you an opportunity to make comments on the preliminary subsistence analysis for the Alaska Stand Alone Pipeline. All comments are welcome, but we especially would like to hear your thoughts on mitigation measures that could be applied to minimize impacts to your subsistence use.

The comments you provide will be considered in the preparation of the Final Supplemental EIS and the BLM's Record of Decision for the right-of-way. You may provide your comments here tonight or submit them in writing. Please submit any written comments to the Corps of Engineers by the close of the comment period.

Thank you.

MS. JOHNSON: Thanks, Earl. So we'd

love to hear your comments tonight and we will be opening the public comment period. Do you have a comment? Tina will be bringing you a mic.

MR. REAKOFF: I'm going to make comments in regard to the 810 analysis subsistence use. My name is Jack Reakoff. I'm the Chairman of the Western Interior Regional Advisory Council to the Federal Subsistence Board. Our Regional Council has a vested interest in ensuring that subsistence accesses are maintained and subsistence uses are mitigated.

When you discussed an elevated section of pipe, the Central Arctic Caribou Herd and Teshekpuk Herds migrate east and west across that coastal plain, especially just post-calving. I would like to see the pipeline -- if you're going to elevate the pipeline, it has to be high enough to where those caribou can get underneath it and move through it just like TAPS is.

So it can't be right close to the ground. The caribou have to be able to move back and forth unimpeded because they're a very important resource. They have to be able to access areas to the east. They calve east and west of Prudhoe Bay and they move to the east, usually over into the Arctic Refuge, and then move towards their wintering grounds. So that's one comment on subsistence resources.

I'd like to see that the ASAP right-of-way is maintained as open access to subsistence uses, crossing or paralleling it. For customary and traditional users for hunting, fishing, trapping and wood gathering. All resources, fish and wildlife and other wild renewable resources are protected under Alaska National Interest Lands Conservation Act. Also wood cutting and berry picking and et cetera.

I would like to see construction crews are excluded from harvest of fish and wildlife during construction. Recreational uses of very limited fishery resource and terrestrial resources should not occur by construction crews on off hours. During the construction of the pipeline the crews were excluded from that. They violated those in some instances and they fished Galbraith Lake out. They wiped the lake trout out of there. They're still on a catch and release system on Galbraith Lake. These are very

sensitive resources.

Moose populations are .1 to .2 moose per square mile. There's two moose per square mile down in the Tanana Valley. These are very limited resources. We have specific lottery draw permits for sport hunting in this area. So we have limited resources and we do not want to see those abuse by pipeline crews. There literally could be thousands and thousands of participants.

So grayling resources in the Jim River would be wiped out with recreational use. These grayling in the Jim River is one of the major areas where grayling are summering. They're right along the road. They'd be easily accessed. A lot of those fish are 15 to 25 years old, so we can't have just unlimited recreational use. So I would like to see that as a mitigation.

Spawning habitat for whitefish in the south fork of the Koyukuk River, I saw that the pipeline was going right through where there's a least cisco spawning area in the fall. So it's a very sensitive area. If construction is going to occur, it should not be happening in the river environment during that spawning period.

So the whitefish show up there in early September. They're there through after the ice is coming down. So if they're going to bury a pipeline across the south fork, they have to get it in there before that spawning occurs. They spawn and the fry out-migrate, so it could easily be done, but it has to be done at the right time of the year.

The Jim River has lots of spawning habitat for chinook salmon and summer chum and coho, especially in what's known as the Jim River 1 and 2 slough that has coho spawning habitat in it. Those should be looked at as far as mitigations. The TAPS goes right across it. It's elevated over those drainages so it's not an impedance to those fish.

So those are my offhand comments on subsistence use. The primary thing that I would like to see is that subsistence resources are protected to the highest degree. We, as a community, do not want to see borrow pits near this community, noise and

disruption to this life way here.

The previous pipeline proposals there was areas -- and I saw that most of the borrow, most of the gravel extraction was in areas that would not be nearly as detrimental as some previous proposals that we've looked at here.

So that would be my comments on the subsistence aspects. Thank you.

MS. JOHNSON: Thank you very much.

MR. REAKOFF: Can I make a comment on just general aspects? I saw that there would be significant access impedance to Wiseman itself. There's a route that crosses our access road, so this community has two lodges here, actually three, a summer endeavor, but there's two lodges here in Wiseman. Those have 12 to 14 person and 16 to 18 person and I work with Northern Alaska Tour Company. Last year I had nearly 5,000 visitors that came from mid May through the 10th of September.

Those accesses to this historic community is part of the economic strength of this area. Coldfoot Camp derives a lot of revenue from the visitor industry, so it can't have our access road blocked off for indefinite periods of time. We have to maintain the access into Wiseman because of the socioeconomic impacts that would be extreme to this community if we had even a few day displacement of visitation to this area.

I was happy to see that the new project doesn't have nearly as many compressors. That they have one compressor. That was a big issue with previous projects with all these compressor stations strung out with crews and that kind of impact to that surrounding area. So I was happy to see that.

I'm concerned about the thaw placement. There's these thaw lobes coming off the sides of the mountains up in the Dietrich River. I don't even think the State of Alaska's avoidance of -- they want to reroute the Dalton Highway around that thaw lobe that's advancing to the road. They didn't think it's far enough away. They've got only 400 feet from the current center line of the Dalton Highway. Where they

placed it it's on a steep bank on permafrost and I don't think that that road is going to hold there.

I think that the State of Alaska needs to do more site investigation, looking at what they're actually going to address. I'm concerned that I see that the routing of this gas line is right parallel to that road alignment. I don't know that this project understands that that thaw lobe is cutting 75 feet below the surface of the ground. It's cutting deep into the material. There's State engineers that are looking at that depth of penetration of the thaw lobe that's advancing to the Dalton Highway.

If they put the gas line in there, it could cut right into it. I think the gas line needs to be routed way out into the Dietrich River Valley down onto the flood plain to get around that. There's no avoiding that. That thing is coming down, advancing right to the road. The road is on the lip of a bench and once it crosses that lip at 75 foot of advancement, it's going to dive right up the valley floor.

So that's a serious concern, is it could actually displace the pipe, break the pipe and have an explosion or something like that, the worst case scenario. So I think there needs to be a little more thought put into how the State is putting in the road, where that placement of that road is and where that pipeline is in relation to that road. I don't think there's enough site investigation going on because 400-foot displacement from the current center line is not adequate to avoid that thaw lobe.

There's another one to the south that advances at 150 feet or 140 feet annually. So that one's coming down and it's got a lot more material. It could be down in the road in 20 years. So these thaw lobes in the Dietrich River Valley are something that's a serious engineering concern that I don't think is quite being taken nearly as seriously as it could be and the State environmental groups have instrumentation. They've drilled in there. They know exactly what's going on with that. I think there needs to be -- that data needs to be incorporated into the engineering plan of this project.

Those are my other comments. Thank you.

MS. JOHNSON: Great. Thank you. Would anybody else like to comment? We'd love to hear from you.

(No comments)

MS. JOHNSON: With that we will close the public comment period. Thank you very much for participating.

(Off record)

(END OF PROCEEDINGS)

TRANSCRIBER'S CERTIFICATE

I, Salena A. Hile, hereby certify that the foregoing pages numbered 02 through 17 are a true, accurate, and complete transcript of Wiseman Scoping Meeting on July 26, 2017, transcribed under my direction from a copy of an electronic sound recording to the best of our knowledge and ability.

_____ _____

DATE SALENA A. HILE

ATTACHMENT F

Comments on the FSEIS

- Page Intentionally Left Blank -

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 155
Seattle, WA 98101-3140

OFFICE OF
ENVIRONMENTAL REVIEW
AND ASSESSMENT

July 18, 2018

Jason Berkner, Project Manager
U.S. Army Corps of Engineers, Alaska District
P.O. Box 6898 (CEPOA-RD)
JBER, Alaska 99506-0898

Dear Mr. Berkner:

The U.S. Environmental Protection Agency has reviewed the Final Supplemental Environmental Impact Statement prepared by the U.S. Army Corps of Engineers for the Alaska Stand Alone Pipeline Project (CEQ No. 20180136; EPA Project Number 09-054-DOD). Our review was conducted in accordance with the EPA's responsibilities under the National Environmental Policy Act and Section 309 of the Clean Air Act.

The Alaska Gasline Development Corporation proposes to transport natural gas from the North Slope of Alaska to an existing natural gas distribution system that serves the southcentral portion of the State, using a 733-mile-long buried pipeline, and includes a lateral connecting line to Fairbanks. The Final SEIS analyzed the proposed action; an action alternative with variations regarding elevation of a portion of the pipeline, alignment through Denali National Park and Preserve, barge access, and Yukon river crossing; and a no-action alternative. The EPA is a cooperating agency for the development of the SEIS. Throughout the NEPA process, we have participated in agency work groups and have provided extensive comments on prior versions of the EIS, including comments on the Draft SEIS sent to the Corps on August 29, 2017. The EPA appreciates our involvement as a cooperating agency, and we are providing the comments below for your consideration.

We appreciate the additional information that has been provided in the Final SEIS to address several of the EPA's comments on the Draft SEIS. Specifically, the additional information provided regarding mitigation measures aids in understanding potential impacts of the proposed project; this information includes additions to the list of "Applicant Proposed Design Features, Mitigation Measures, and Best Management Practices," a new table of "Recommended Mitigation Measures and Best Practices Under Regulatory Obligations of the Clean Water Act," and a new discussion and table disclosing "Regulatory Agency Recommended Mitigation Measures."

In addition, the Final SEIS provides a clearer understanding of temporary and permanent impacts to wetlands. We appreciate the inclusion of the potential CWA §404 permit conditions which the Corps may require if the determination is made to issue a permit. We encourage use of the listed potential permit conditions, which would reduce the anticipated environmental impacts and address some of the EPA's concerns raised during our review of the Draft SEIS, including increasing the effectiveness of the revegetation plan. For example, these potential permit conditions include segregation of soils and reuse of topsoil to enhance revegetation of the backfilled trench area, the placement of side cast material into wetlands, which would be required to be underlain by geotextile or ice pads, as well as other measures to stabilize and revegetate areas disturbed by the proposed activities. We also recommend that the Corps

further incorporate the use of geotextile pads throughout the construction right-of-way to the greatest practicable extent, to further reduce direct and secondary impacts to wetlands along the alignment.

The Final SEIS included near-field air quality modeling results for the proposed Gas Conditioning Facility, which did not project adverse impacts on local air quality. We also appreciate that additional information and mitigation has been included to address our concerns regarding protection of drinking water wells.

Our remaining comments and recommendations for the project are provided below.

Wetlands

The EPA continues to have concerns about the potential for significant impacts to wetlands and insufficient discussion of measures to avoid, minimize and mitigate those impacts. At the time of the Draft SEIS, the proposed direct wetland impacts were estimated to be 8,907 acres (7,573 permanent and 1,161 temporary) and 1,037 acres of secondary wetland impact due to permafrost degradation, totaling 9,944 acres. In the final SEIS, the overall wetland impacts have increased, based on the Corps' most recent Jurisdictional Determination. The direct impacts to wetlands are now estimated to be 9,705 acres (8,015 permanent and 1,690 temporary) and 1,170 acres of secondary wetland impact due to permafrost degradation, totaling 10,875 acres. The fact that the impacts to permafrost are considered secondary effects and are not accounted for as permanent impacts of the proposed project continues to be a concern for the EPA. Because these impacts are likely to occur throughout a large portion of the alignment in the interior of Alaska and to persist over time, we continue to recommend that they be considered when determining the Least Environmentally Damaging Practicable Alternative and when assessing the appropriate level of compensatory mitigation.

We also recommend that the project record adequately demonstrate that the project has avoided and minimized wetland impacts to the full extent practicable, in accordance with the mitigation sequence under the 404(b)(1) guidelines. The EPA is committed to assist the Corps in identifying opportunities to avoid, minimize and compensate for the wetland impacts prior to the Record of Decision.

The EPA notes that the Final SEIS does not include a wetlands compensatory mitigation plan. Pursuant to the 404(b)(1) Guidelines and the EPA-Corps Compensatory Mitigation Rule, compensatory mitigation must be fully considered prior to a final 404 permit decision. Based on the anticipated impacts identified in the final SEIS, the EPA offers to assist in identifying opportunities for consideration for the detailed components of the compensatory mitigation plan and recommends that it be developed prior to the Record of Decision and included in the selected alternative. The EPA also requests the opportunity to review and comment on the plan prior to the Record of Decision.

The June 15, 2018 Memorandum of Agreement between the Department of the Army and the Environmental Protection Agency concerning Mitigation Sequence for Wetlands in Alaska under Section 404 of the Clean Water Act offers useful guidance on options for ensuring that the Clean Water Act requirements for compensatory mitigation are appropriately evaluated and applied. Because the proposed project would impact aquatic resources in numerous watersheds across the State, the EPA recommends that the project applicant refer to the MOA for guidance as it identifies appropriate opportunities to offset aquatic resource impacts that are demonstrated to be unavoidable, particularly in the use of the watershed approach. The MOA's flexibility in identifying compensatory mitigation

options is meant to afford the applicant appropriate means of ensuring that the activity complies with the requirements of the Guidelines which implement the statutory goals of the Clean Water Act.[1]

Dredged Material Management

The Final SEIS provides additional explanation of the rationale for screening out Dock Head 4 from the alternatives analysis. We recommend that the Corps ensure that sufficient detail has been received from the applicant on the environmental impacts of construction of Dock Head 4 to complete the public interest review and finding of conformity with the 404(b)(1) guidelines and consider summarizing this information in the ROD.

We appreciate the opportunity to review the Final SEIS for the ASAP Project. If you have questions concerning our comments, please contact Molly Vaughan of my staff in Anchorage, at (907) 271-1215 or vaughan.molly@epa.gov, or you may contact me at (206) 553-1841 or nogi.jill@epa.gov.

Sincerely,

Jill A. Nogi, Manager
Environmental Review and Sediment Management Unit

[1] 40 CFR § 230.10 (a) - (d).

August 29, 2018

Jason Berkner
U.S. Army Corps of Engineers, Alaska District
P.O. Box 6898 (CEPOA-RD)
JBER, Alaska 99506-0898

RE: Unsolicited EPA Comments on ASAP Final SEIS

Dear Mr. Berkner:

I am writing in response to a letter addressed from the Environmental Protection Agency (EPA) to the Corps of Engineers on July 18, 2018 and provided August 24, 2018 to the Alaska Gasline Development Corporation (AGDC) with a request to respond. Below are each of the EPA comments related to AGDC's work along with detailed responses.

EPA Comment: *We encourage use of the listed potential permit conditions... including increasing the effectiveness of the revegetation plan. For example, these potential permit conditions include segregation of soils and reuse of topsoil to enhance revegetation... we also recommend that the Corps further incorporate the use of geotextile pads throughout the construction right-of-way to the greatest practicable extent...*

AGDC Response: AGDC has addressed the segregation of the surface layer, the use of topsoil, and use of geotextile pads / mats throughout the NEPA process. As stated previously on multiple occasions, AGDC intends to segregate the surface layer from other subsurface soils in specific instances following a prescribed engineering process that is dependent upon site-specific conditions. A determination of where and when segregation of the surface layer ("topsoils") will occur will be based on specific engineering criteria that were outlined in the AGDC Report entitled *Segregation of the Surface Layer,* transmitted on November 17, 2017 (*ASAP-TRN-001-835-00109)*. The report notes that it is not practicable to remove and segregate surface layer soils in all instances for this project, but in many instances this activity will be feasible and will occur.

AGDC has also provided information to the Corps of Engineers and cooperating agencies showing that it is not practicable to use mats or geotextile pads for most of the pipeline. Matting is primarily planned for areas in which wetlands are short distances across, non-permafrost, inundated, and flat. The use of mats is challenging because of requirements for material availability, level ground, impacts to productivity, and effects on schedule. Mats are constructed from dimensional lumber that is bolted together and are usually constructed from hardwoods. Since hardwoods don't exist in Alaska, this means that they would need to be imported to the State of Alaska, creating a very substantial logistics effort and cost. Mats or pads can

also be slippery and pose a safety hazard to personnel and equipment. They can only be safely used on ground which is level or has a very limited slope (generally <2%). Due to the uneven nature of frozen ground, mats are typically only used in summer conditions and typically in inundated wetlands where they can settle into the softer soil creating a more level work surface. As a result, mats are applicable to less than 1% of wetlands and 0.5% of the total route.

The above concepts have been discussed in detail during agency meetings and, where necessary, have been clarified in follow-up responses to requests for information. Transmittals where the above concepts were addressed in reports or in comment responses are listed below.

- *Transmittal No.: ASAP-TRN-001-835-00005. 2016-03-01. Design Basis – Pipeline. Alaska Stand Alone Pipeline (ASAP) Project. 002-C-27-BDC-YYY-0001. September 17, 2015.*
- *Transmittal No.: ASAP-TRN-001-835-00012. 2016-04-01. Pipeline Design and Installation Questions and Considerations – Response Matrix. Response to RFI 396 on 03/14/2016.*
- *Transmittal No.: ASAP-TRN-001-835-00033. 2016-06-17. RFI 412 Responses to draft SEIS Chapter 2 Agency Comments.*
- *Transmittal No.: ASAP-TRN-001-835-00037. 2016-07-15. ASAP Environmental Evaluation Document.*
- *Transmittal No.: ASAP-TRN-001-835-00042. 2016-08-01.* ASAP Revegetation Plan.
- *Transmittal No.: ASAP-TRN-001-835-00062. 2017-01-25. Chapter 4 AGDC Responses to Agency Comments – Part A.*
- *Transmittal No.: ASAP-TRN-001-835-00067. RFI 427 Chapter 3 AGDC Responses to Agency Comments and Mitigation Inconsistencies*
- *Transmittal No.: ASAP-TRN-001-835-00069. Alaska Stand Alone Pipeline Mitigation Measures and Best Management Practices.*
- *Transmittal No.: ASAP-TRN-001-835-00078. 2017-02-14. ASAP Responses to Agency Comments – ASAP Ch 4 Agency Comments AGDC Submittal 3.*
- *Transmittal No.: ASAP-TRN-001-835-00092. 2017-08-29. AGDC Detailed Comments on ASAP DSEIS.*
- *Transmittal No.: ASAP-TRN-001-835-00094. 2017-10-04. RFI-481 ASAP SEIS – Public Comment Responses.*
- *Transmittal No.: ASAP-TRN-001-835-00095. 2017-10-09. Comment Response Clarifications – Attachment 2 – Matted Summer Wetlands.*
- *Transmittal No.: ASAP-TRN-001-835-00101. 2017-10-30. RFI 484 – Use of Rubber Mats.*
- *Transmittal No.: ASAP-TRN-001-835-00102. 2017-10-31. RFI 484 – Additional Detail in the Revegetation Plan.*
- *Transmittal No.: ASAP-TRN-001-835-00109. 2017-11-17. Segregation of the Surface Layer. AGDC Report. November 16, 2017.*

- *Transmittal No.: ASAP-TRN-001-835-00115. 2017-12-04. Comparative Belowground Designs and Return of Wetlands. Response to RFI 484.*

EPA Comment: *The EPA continues to have concerns about the potential for significant impacts to wetlands and insufficient discussion of measures to avoid, minimize and mitigate those impacts... In the final SEIS, the overall wetland impacts have increased, based on the Corps' most recent Jurisdictional Determination... the fact that the impacts to permafrost are considered secondary effects and are not accounted for as permanent impacts of the proposed project continues to be a concern for the EPA... we continue to recommend that they be considered when determining the Least Environmentally Damaging Practicable Alternative and when assessing the appropriate level of compensatory mitigation.*

AGDC Response: As described in previous iterations of the ASAP Wetlands Compensatory Mitigation Plan and as noted in detail in AGDC's Clean Water Act Application for the ASAP Project, AGDC first avoided and then minimized impacts to wetlands to the greatest extent practicable. The resulting unavoidable impacts to wetlands were then evaluated to determine which impacts were substantive in that they had the potential to result in watershed level impacts to aquatic resources. AGDC has worked with the Corps to ensure agreement on which watershed level impacts were substantive and would require compensatory mitigation. AGDC has offered appropriate and practicable mitigation to compensate for those unavoidable impacts to wetlands.

AGDC has avoided and minimized many impacts to wetlands underlain by permafrost by working in winter, using ice roads and ice pads, and using existing facilities and pads. AGDC is offering compensatory mitigation for unavoidable impacts to wetlands underlain by permafrost in the Prudhoe Bay Watershed, as noted in the most recent version of the *ASAP Wetlands Compensatory Mitigation Plan*. If the EPA comment is meant to pertain to indirect impacts to wetlands in permafrost areas (e.g., potential for lateral thaw to permafrost where wetlands are not directly impacted), this concept has been addressed in detail in the SEIS and specifically in the AGDC technical report, *Analysis of Potential Indirect Impacts to Wetlands Related to Buried Pipeline Construction*. This report documents that there are some instances in which there exists the potential for a small amount of lateral thaw to occur over several decades in adjacent discontinuous permafrost underlying wetlands in thaw-sensitive areas; however, if this did occur, it would not necessarily result in a change of wetland quality or function.

As noted previously, the industry standard for cold temperature gaslines in arctic and subarctic conditions is to bury them under sufficient cover, as described in the AGDC Reports entitled, *Comparative Belowground Designs and Return of Wetlands (Transmitted 12-04-2017)* and *the ASAP Belowground Pipeline Mode: Selection, Construction, Operation, and Maintenance on Alaska's North Slope (Transmitted 03-28-2016)*. The proven belowground gas pipeline design is safer, more secure, and leads to a stable operating pipeline after approximately 5 years of monitoring, maintenance, and revegetation. A large diameter gasline (a 36" pipe, plus in some cases bedding and padding) will displace enough space in the trench to allow residual native material to crown the trench and settle near to flat or in slightly convex form over the ditch. Trench breakers will be used generously during installation, and natural waterflow will be maintained. While some ponding and thermokarsting is expected in select areas, AGDC's plans for monitoring, trench restoration, and revegetation will address these issues in the first five years. Reducing the amount of pipe required for additional VSMs also means a reduction in wetlands impacts for

supporting facilities to store VSM pipe. The revised *ASAP Revegetation Plan (Transmitted 10-31-2017)*, developed in conjunction with the Alaska Department of Natural Resources (ADNR), addresses many of the agency's concerns.

EPA Comment: *We also recommend that the project record adequately demonstrate that the project has avoided and minimized wetlands impacts to the full extent practicable in accordance with the mitigation sequence under the 404(b)(1) guidelines.*

AGDC Response: AGDC has avoided and minimized impacts to wetlands to the full extent practicable in accordance with the Clean Water Act *404(b)(1)* guidelines, as outlined in extensive analyses and documented in the SEIS and in AGDC's Clean Water Act Application. It is expected the project record will correctly reflect that work.

EPA Comment: *...compensatory mitigation must be fully considered prior to a final 404 permit decision... Because the proposed project would impact aquatic resources in numerous watersheds across the State, the EPA recommends that the project applicant refer to the MOA for guidance as it identifies appropriate opportunities to offset aquatic resource impacts that are demonstrated to be unavoidable, particularly in the use of the watershed approach. The MOA's flexibility in identifying compensatory mitigation options is meant to afford the applicant appropriate means of ensuring that the activity complies with the requirements of the Guidelines which implement the statutory goals of the Clean Water Act."*

AGDC Response: Thank you for the recommendation. AGDC used and will continue to use the June 15, 2018 Memorandum of Agreement (MOA) between the Department of the Army and the EPA concerning Mitigation Sequence for Wetlands in Alaska under Section 404 of the Clean Water Act. AGDC appreciates the flexibility that this MOA affords Alaska-based projects, including the recognition that Alaska is a unique working environment.

AGDC followed strong scientific rationale (see below) and USACE guidance (2008 USACE-EPA Mitigation Rule, 33 CFR Parts 325 and 332; 40 CFR part 230; personal communication w/ USACE Alaska District staff; 2018 Joint USACE-EPA MOA) as the basis for the watershed level approach that was used in the development of the ASAP *Wetlands Compensatory Mitigation Plan*. The 2008 Mitigation Rule recommended a watershed level approach and addressed compensatory mitigation for unavoidable losses of aquatic resources and functions. It also established performance standards, set timeframes for decision making, and established equivalent requirements and standards for the three types of compensatory mitigation: mitigation banks, in-lieu fee (ILF) programs, and permittee-responsible mitigation (PRM) projects. In 2018, a Joint Memorandum of Agreement (MOA) between the USACE and EPA was signed, providing additional guidance to the project that was incorporated into the most recent version of the Plan (August 15, 2018).

The ASAP Wetlands Compensatory Mitigation Plan describes how AGDC will mitigate substantive impacts to wetlands within the watersheds it transects. Substantive impacts are those which would impact the aquatic functions of the watershed in a manner that is statistically significant and would require appropriate and practicable mitigation. Much literature has been produced on the impacts of development and urbanization on watersheds and the point at which development significantly impacts

the attributes of the watershed's aquatic resources, such as water quality, bank erosion, sedimentation, aquatic habitat, biodiversity, and macroinvertebrate, fish, and plant communities. The consensus among aquatic scientists and landscape ecologists is that statistically significant impacts to the aquatic resources and functions of a watershed occur once approximately 10% of land within a watershed is urbanized (Hilderbrand et al., 2010; Schueler et al., 2009; Booth and Jackson 1997; Booth et al. 1996, Luchetti and Fuersteburg 1993; MWCOG 1992; Booth 1991; Weaver 1991; Limburg and Schmidt 1990; Steedmen 1988; Jones and Clark 1987; Klein 1979)[1]. The development of surfaces that are impervious to water (pavement, rooftops, storm drains, canals, etc.) and the introduction of compacted surfaces that reduce absorption of water (gravel roads, gravel pits, agricultural areas) can contribute to these impacts, although impervious surfaces are a larger contributor (Booth and Jackson 1997)[1]. An Impervious Cover Model developed from decades of aquatic system research has indicated that, "certain zones of stream quality exist, most notably at about 10% impervious cover, where sensitive stream elements are lost from the system" (Center for Watershed Protection 2016)[1]. Others have noted that urbanization begins to have an influence on some biological parameters within watersheds at slightly lower threshold levels, ranging between 5 and 10%, depending on the parameter (Baker and King 2010; Hilderbrand et al., 2010; Utz et al. 2009; Hicks and Larson 1997; May et al. 1997)[1].

ASAP is a long, linear project traversing many remote watersheds with relatively unaltered hydrology, few impervious or compacted surfaces, and little urbanization. The presence of a buried pipeline in a restored and revegetated trench will not result in substantive impacts to aquatic resources for most watersheds traversed by the project. The pipeline will be buried under at least 30 inches of native material and the right-of-way will be revegetated, resulting in cover that is not impervious at the surface, unlike other linear projects (e.g., highways). Even despite the literature stating that most watershed level impacts occur at approximately 10% disturbance, the USACE required AGDC to use a very conservative threshold of 5% in its watershed level analysis to determine degraded watersheds. This led to the USACE increasing the compensatory mitigation requirements beyond what was initially proposed, both in terms of the number of watersheds requiring mitigation and the total mitigation acreage / debit requirements. AGDC has worked with the Corps of Engineers over the last two years to continually refine its plan, finally coming to agreement on where substantive watershed level impacts requiring mitigation would occur. The compensatory mitigation offered by AGDC is therefore appropriate, practicable, and compliant with the Clean Water Act.

EPA Comment: *We recommend that the Corps ensure that sufficient detail has been received from the applicant on the environmental impacts of construction of Dock Head 4 to complete the public interest review and finding of conformity with the 404(b)(1) guidelines and consider summarizing this information in the ROD.*

AGDC Response: AGDC has provided all requested information to the USACE on DH4; the Final SEIS discloses the environmental impacts of constructing Dock Head 4 (DH4) to the public.

[1] Full references available upon request

Thank you for the opportunity to respond to these comments. Please contact me if there are any further questions regarding these matters.

Sincerely,

Frank T. Richards, P.E.
Senior Vice President, Program Management

Enclosure(s):

Cc: Ryan Winn, USACE
Lisa Haas, AGDC
Kalb Stevenson, AGDC

United States Department of the Interior
Office of the Secretary
Office of Environmental Policy and Compliance
1849 C Street, NW - MS 5538 - MIB
Washington, D.C. 20240

JUL 18 2018

9043.1
PEP/ER

ER17/0318

Mr. Jason Berkner
Project Manager
U.S. Army Corps of Engineers
P.O. Box 6898
Joint Base Elmendorf-Richardson, Alaska 99506-0898

Re: Alaska Stand Alone Pipeline Project - Final Supplemental Environmental Impact Statement

Dear Mr. Berkner:

The Department of the Interior (Department) reviewed the Final Supplemental Environmental Impact Statement (SEIS) conducted by the U.S. Army Corps of Engineers (USACE) for the proposed Alaska Stand Alone Pipeline (ASAP). We submit the following comments from the U.S. Fish and Wildlife Service (USFWS) for USACE's consideration.

The USFWS comments include input from both the Anchorage and Fairbanks Fish and Wildlife Conservation Offices (FWCOs), and are submitted in accordance with provisions of the National Environmental Policy Act of 1969 (83 Stat. 852; 42 U.S.C. 4321 et seq.), the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), the Bald and Golden Eagle Protection Act (54 Stat. 250, as amended, 16 U.S.C. 668a-d), the Migratory Bird Treaty Act (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.), the Marine Mammal Protection Act (16 U.S.C. 1361-1407), and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

Background

The Alaska Gasline Development Corporation (AGDC) is the project proponent and the USACE is the lead action agency for the project. Plans for the project include constructing a natural gas pipeline and associated infrastructure to deliver natural gas from the North Slope of Alaska to South-central Alaska, with a lateral line supplying natural gas to Fairbanks, Alaska.

The USFWS is a cooperating agency on the project and in that role USFWS has provided scoping comments and recommendations during the development of the original Environmental Impact Statement (October 9, 2012) and the SEIS on the ASAP. The Department's letter on the Draft SEIS, dated August 29, 2017, included comments from USFWS and USFWS' most recent comments, dated May 01, 2018, were submitted during the cooperating agency review of the preliminary Final SEIS.

Potentially Affected Fish and Wildlife Trust Resources

The mission of the USFWS is working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people. Within the proposed project area, the Department's trust resources include migratory birds (including bald eagles), species listed as threatened or endangered under the Endangered Species Act and their designated critical habitat, interjurisdictional fish, and the wetland habitats used by these species.

Recommendations

The Department appreciates the consideration of the USFWS' comments throughout the development of the SEIS. Although many of the USFWS' comments have been addressed in the Final SEIS, the comments below outline remaining concerns and notes the USFWS' recommended alternative.

Buried Versus Elevated Pipeline: The cost-benefit analyses of an elevated pipeline did not consider the use of vertical support members only in the presence of thaw-unstable permafrost, or the reduction in environmental impacts and long-term maintenance costs when compared to a buried pipeline. Instead, the analyses focused on distances between mile posts where both thaw-unstable and thaw-stable permafrost will be encountered for either an all buried, or an all elevated, pipeline. Because the details of the analysis are considered confidential (i.e. ECO_22 and ENG_24 in Appendix Q), an independent review of the financial and environmental costs to repair thermokarsting and subsidence over the life of a buried pipeline (and possibly into perpetuity if left in place) is not possible.

Where thaw-unstable permafrost occurs, the USFWS continues to recommend elevating rather than burying the pipeline, due to a high potential for thermokarst and subsidence above the buried pipeline, which may lead to local changes in drainage patterns and irreparable impacts to wetland resources. In order to maintain the integrity of the active layer and the underlying permanently frozen soils, the USFWS continues to recommend leaving the thermal insulating qualities of the tundra intact by elevating the pipeline on Vertical Support Members (VSMs) from milepost 0 to at least beyond the area of extensive ice-rich, saturated soils containing a high density of oriented thaw lakes on the ACP. We also support elevating the pipeline on VSMs wherever thawunstable permafrost is encountered in other areas of continuous and discontinuous permafrost along the pipeline.

Collision Hazard with Elevated Structures: The USFWS is not concerned about birds colliding with an elevated pipeline as indicated in the Final SEIS (i.e. ENG_30 and WLD_5 in Appendix Q). The USFWS appreciates the incorporation of Best Management Practices (BMPs) to help minimize potential bird collisions with aerial infrastructure (e.g. towers and guy wires) into the Final SEIS by the AGDC.

Salvage Topsoil for Reclamation: The USFWS continues to recommend salvaging the topsoil containing plant roots and propagules for reclamation to encourage revegetation by native plant species (e.g. GEO_15, MIT_11, and MIT_12 in Appendix Q) and appreciates that salvaging topsoil for reuse in reclamation has been identified in the proposed mitigation measures (Section 4.5.2.1). The USFWS recommends including all the proposed mitigation measures and BMPs in Table 4.5-1 in the USACE's permit.

Compensatory Mitigation for Wetland Loss: Between the Draft SEIS (June 21, 2017) and the current Final SEIS (March 31, 2018), impacts to wetlands and waters of the U.S. from the proposed project increased from 8,906.9 to 9,704.8 acres (Table 2.2-1 in each document), with permanent impacts increasing from 7,746.1 to 8,014.8 acres. A final *Wetlands Compensatory Mitigation Plan* is forthcoming, but in review of the November 10, 2016 draft plan, the USFWS expressed concern that only 104.97 acres was proposed for compensation of permanent wetland losses (1.3 percent of the permanent impact), (e.g., WET_7 in Appendix Q). The USFWS' concern related to the amount of mitigation proposed remain and are increased by the fact that impacts to wetland and waters of the U.S. have increased by approximately 797.9 acres (8.2 percent).

To address these concerns, the USFWS recommends implementing the recently signed Memorandum of Agreement (MOA) concerning *Mitigation Sequence for Wetlands in Alaska under Section 404 of the Clean Water Act,* signed June 15, 2018, between USACE and the Environmental Protection Agency (EPA). The six guiding principles in this MOA address the previous justifications for proposing to limit wetlands compensatory mitigation for this project.

Alternatives: Among the two action alternatives considered, the USFWS recommends Alternative 2, primarily because it is the only alternative that includes an elevated pipeline where thaw-unstable terrain would be encountered on the Arctic Coastal Plain. As discussed above, the USFWS is less concerned about elevating the pipeline between mile posts than about elevating the pipeline in thaw-unstable terrain. Ideally, the USFWS recommends selecting the Least Environmental Damaging Practicable Alternative (LEDPA) among the many choices available to suit the site-specific conditions along the pipeline alignment, rather than averaging the LEDPA for a specific distance between mileposts or for the entire 733-mile pipeline.

The Department appreciates this opportunity to comment on the Final SEIS and we look forward to reviewing the proposed permit during the public notice review. If you have any questions regarding our comments, please contact Planning and Consultation Branch Chief, Mr. Bob Henszey, Fairbanks Fish and Wildlife Conservation Office at 907-456-0323, or via email bob_henszey@fws.gov.

Sincerely,

for Michaela E. Noble
Director, Office of Environmental Policy
and Compliance

Submitted electronically to: Jason Berkner, USACE: jason.r.berkner@usace.army.mil

cc: Philip Johnson, Department of the Interior, Anchorage: philip_johnson@ios.doi.gov

TRANSMITTED ELECTRONICALLY – NO HARD COPY TO FOLLOW

Bob Henszey, USFWS Fairbanks FWCO: bob_henszey@fws.gov
Sarah Conn, USFWS Fairbanks FWCO: sarah_conn@fws.gov
Douglass Cooper, USFWS Anchorage FWCO: douglass_cooper@fws.gov
Audra Brase, ADFG Division of Habitat, Fairbanks: audra.brase@alaska.gov
Mark Douglas, EPA Aquatic Resources Unit: douglas.mark@epa.gov
Jim Rypkema, Alaska Department of Environmental Conservation Storm Water and Wetlands: james.rypkema@alaska.gov

August 29, 2018

Jason Berkner
U.S. Army Corps of Engineers, Alaska District
P.O. Box 6898 (CEPOA-RD)
JBER, Alaska 99506-0898

RE: Unsolicited USFWS Comments on ASAP Final SEIS

Dear Mr. Berkner:

I am writing in response to a letter addressed from the Department of the Interior (DOI) – U.S. Fish and Wildlife Service (USFWS) to the Corps of Engineers on July 18, 2018 and provided to the Alaska Gasline Development Corporation (AGDC) on August 24, 2018 with a request to respond. Below are each of the USFWS comments related to AGDC's work along with detailed responses.

DOI-USFWS Comment: *The cost-benefit analyses of an elevated pipeline did not consider the use of vertical support members only in the presence of thaw-unstable permafrost, or the reduction in environmental impacts and long-term maintenance costs when compared to a buried pipeline. Instead, the analyses focused on distances between mile posts where both thaw-unstable and thaw-stable permafrost will be encountered for either an all buried, or an all elevated pipeline....Where thaw unstable permafrost occurs, the USFWS continues to recommend elevating rather than burying the pipeline, due to a high potential for thermokarst and subsidence above the buried pipeline, which may lead to local changes in drainage patterns and irreparable impacts to wetland resources. In order to maintain the integrity of the active layer and the underlying permanently frozen soils, the USFWS continues to recommend leaving the thermal insulating qualities of the tundra intact by elevating the pipeline on Vertical Support Members (VSMs) from milepost 0 to at least beyond the area of extensive ice-rich, saturated soils containing a high density of oriented thaw lakes on the ACP. We also support elevating the pipeline on VSMs wherever thaw unstable permafrost is encountered in other areas of continuous and discontinuous permafrost along the pipeline.*

AGDC Response: AGDC's position has been that the Corps' analysis of an aboveground pipeline alternative was out-of-scope and extraneous, not fitting the original scope identified in the initiation of the NEPA process for a Supplemental EIS. The original scope was to focus on the environmental impacts of major project changes, namely 1.) the modification and use of West Dock to bring in GCF modules, and 2.) increased access to gas for Alaska's communities. However, the scope expanded from its original intent, and a much broader analysis was performed in the SEIS. During the course of the Supplemental NEPA process, AGDC identified that the USFWS, as a cooperating agency, did not object to a buried pipeline during the original EIS that was noticed in 2012. The USFWS issued a Biological Opinion without any

comment on environmental impacts of a buried pipeline at that time. The pipe mode did not significantly change between the 2012 EIS and the 2018 SEIS (with very minor exceptions) and has always been designed to be buried under at least 30 inches of cover. Still, AGDC accommodated numerous requests for information from Corps of Engineers on the aboveground alternative, providing a variety of thorough analyses, including cost analyses. The cost analyses demonstrated the impracticability of an aboveground design for both the entire pipeline route and for the portion of the route that traverses continuous and discontinuous permafrost (hybrid BG / AG) and were validated by another industry cost study for an aboveground natural gas pipeline that was referenced in the analysis. To provide even more detailed cost analyses or additional variations of cost analyses (e.g., by permafrost stability type as opposed to milepost range), would not have yielded additional useful information than was not already provided in the alternative analysis.

The industry standard for cold temperature gaslines in arctic and subarctic conditions is to bury them under sufficient cover, as noted in the AGDC Reports entitled, *Comparative Belowground Designs and Return of Wetlands (Transmitted 12-04-2017)* and *the ASAP Belowground Pipeline Mode: Selection, Construction, Operation, and Maintenance on Alaska's North Slope (Transmitted 03-28-2016)*. The impracticability of the aboveground option is further noted in these documents, for reasons related to cost, logistics, and available technology, including operational engineering concerns (e.g., liquid dropout potential aboveground during cold winters). The proven belowground gas pipeline design is safer, more secure, and leads to a stable operating pipeline after approximately 5 years of monitoring, maintenance, and revegetation. A large diameter gasline (a 36" pipe, plus in some cases bedding and padding) will displace enough space in the trench to yield an adequate amount of native material to crown the trench and settle near to flat or in slightly convex form over the ditch. Trench breakers will be used generously during installation, and natural waterflow will be maintained. While some ponding and thermokarsting is expected in select areas, AGDC's plans for monitoring, trench restoration, and revegetation will address these issues in the first five years. Reducing the amount of pipe required for additional VSMs also means a reduction in wetlands impacts for supporting facilities to store VSM pipe. The revised *ASAP Revegetation Plan (Transmitted 10-31-2017)*, developed in conjunction with the Alaska Department of Natural Resources (ADNR), addresses many of the agency's concerns.

DOI-USFWS Comment: *The USFWS is not concerned about birds colliding with an elevated pipeline as indicated in the Final EIS...*

AGDC Response: The USFWS's stated lack of concern for injury or fatality of birds resulting from bird strikes along the miles of aboveground pipeline and several thousand VSMs standing approximately 10' in the air seems inconsistent with the USFWS's stated concerns throughout the NEPA process for bird strikes related to other aboveground project features. USFWS has, for example, requested specific mitigation measures pertaining to lighting, building paint, and reflective tape to minimize bird strikes with aboveground features.

DOI-USFWS Comment: *The USFWS continues to recommend salvaging the topsoil containing plant roots and propagules for reclamation to encourage revegetation by native plant species... and appreciates that salvaging topsoil for reuse in reclamation has been identified in the proposed mitigation measures...*

AGDC Response: AGDC has addressed the segregation of the surface layer and the use of topsoil throughout the NEPA process. As stated previously, AGDC intends to segregate the surface layer from other subsurface soils in several instances, following an engineering rationale and depending on site conditions. A determination of where and when segregation of the surface layer ("topsoils") will occur will be based on very specific engineering criteria. Most notably, these criteria were outlined in the AGDC Report entitled *Segregation of the Surface Layer,* transmitted on November 17, 2017 (*ASAP-TRN-001-835-00109)*. The report notes that it is not practicable to remove and segregate surface layer soils in all instances for this project, while it is in others.

AGDC has addressed agency comments on the ASAP Revegetation Plan, segregation of the surface layer, stabilization of the trench, and replacement of topsoils in detail. As stated, above, segregation of the surface layer will occur in select areas based on engineering criteria, as noted in the AGDC Report entitled *Segregation of the Surface Layer,* transmitted on November 17, 2017 (*ASAP-TRN-001-835-00109)*. For reference, below are transmittals in which these concepts have been addressed in greater detail:

- *Transmittal No.: ASAP-TRN-001-835-00005. 2016-03-01. Design Basis – Pipeline. Alaska Stand Alone Pipeline (ASAP) Project. 002-C-27-BDC-YYY-0001. September 17, 2015.*
- *Transmittal No.: ASAP-TRN-001-835-00010. 2016-03-28. The ASAP Belowground Pipeline Mode: Selection, Construction, Operation, and Maintenance on Alaska's North Slope.*
- *Transmittal No.: ASAP-TRN-001-835-00012. 2016-04-01. Pipeline Design and Installation Questions and Considerations – Response Matrix. Response to RFI 396 on 03/14/2016.*
- *Transmittal No.: ASAP-TRN-001-835-00033. 2016-06-17. RFI 412 Responses to draft SEIS Chapter 2 Agency Comments.*
- *Transmittal No.: ASAP-TRN-001-835-00037. 2016-07-15. ASAP Environmental Evaluation Document.*
- *Transmittal No.: ASAP-TRN-001-835-00042. 2016-08-01. ASAP Revegetation Plan.*
- *Transmittal No.: ASAP-TRN-001-835-00062. 2017-01-25. Chapter 4 AGDC Responses to Agency Comments – Part A.*
- *Transmittal No.: ASAP-TRN-001-835-00067. RFI 427 Chapter 3 AGDC Responses to Agency Comments and Mitigation Inconsistencies*
- *Transmittal No.: ASAP-TRN-001-835-00069. Alaska Stand Alone Pipeline Mitigation Measures and Best Management Practices.*
- *Transmittal No.: ASAP-TRN-001-835-00078. 2017-02-14. ASAP Responses to Agency Comments – ASAP Ch 4 Agency Comments AGDC Submittal 3.*
- *Transmittal No.: ASAP-TRN-001-835-00092. 2017-08-29. AGDC Detailed Comments on ASAP DSEIS.*

- *Transmittal No.: ASAP-TRN-001-835-00094. 2017-10-04. RFI-481 ASAP SEIS – Public Comment Responses.*
- *Transmittal No.: ASAP-TRN-001-835-00102. 2017-10-31. RFI 484 – Additional Detail in the Revegetation Plan.*
- *Transmittal No.: ASAP-TRN-001-835-00109. 2017-11-17. Segregation of the Surface Layer. AGDC Report. November 16, 2017.*
- *Transmittal No.: ASAP-TRN-001-835-00115. 2017-12-04. Comparative Belowground Designs and Return of Wetlands. Response to RFI 484.*

DOI-USFWS Comment: *Between the Draft SEIS (June 21, 2017) and the current Final SEIS (March 31, 2018), impacts to wetlands and waters of the U.S. from the proposed project increased... the USFWS expressed concern that only 104.97 acres was proposed for compensation of permanent wetlands losses (1.3 percent of the permanent impact)... The USFWS' concern related to the amount of mitigation proposed and are increased by the fact that impacts to wetland and waters of the U.S. have increased by approximately 797.9 acres (8.2 percent)... To address these concerns, the USFWS recommends implementing the recently signed Memorandum of Agreement (MOA) concerning Mitigation Sequence for Wetlands in Alaska... The six guiding principles in this MOA address the previous justifications for proposing to limit wetlands compensatory mitigation for this project.*

AGDC Response:

AGDC followed strong scientific rationale (see below) and USACE guidance (2008 USACE-EPA Mitigation Rule, 33 CFR Parts 325 and 332; 40 CFR part 230; personal communication w/ USACE Alaska District staff; 2018 Joint USACE-EPA MOA) as the basis for the watershed level approach that was used in the development of the ASAP *Wetlands Compensatory Mitigation Plan*. The 2008 Mitigation Rule recommended a watershed level approach and addressed compensatory mitigation for unavoidable losses of aquatic resources and functions. It also established performance standards, set timeframes for decision making, and established equivalent requirements and standards for the three types of compensatory mitigation: mitigation banks, in-lieu fee (ILF) programs, and permittee-responsible mitigation (PRM) projects. In 2018, a Joint Memorandum of Agreement (MOA) between the USACE and EPA was signed, providing additional guidance to the project that was incorporated into the most recent version of the Plan (August 15, 2018).

The ASAP Wetlands Compensatory Mitigation Plan describes how AGDC will mitigate substantive impacts to wetlands within the watersheds it transects. Substantive impacts are those which would impact the aquatic functions of the watershed in a manner that is statistically significant and would require appropriate and practicable mitigation. Much literature has been produced on the impacts of development and urbanization on watersheds and the point at which development significantly impacts the attributes of the watershed's aquatic resources, such as water quality, bank erosion, sedimentation, aquatic habitat, biodiversity, and macroinvertebrate, fish, and plant communities. The consensus among aquatic scientists and landscape ecologists is that statistically significant impacts to the aquatic resources and functions of a watershed occur once approximately 10% of land within a watershed is urbanized (Hilderbrand et al., 2010; Schueler et al., 2009; Booth and Jackson 1997; Booth et al. 1996, Luchetti and

Fuersteburg 1993; MWCOG 1992; Booth 1991; Weaver 1991; Limburg and Schmidt 1990; Steedmen 1988; Jones and Clark 1987; Klein 1979)[1]. The development of surfaces that are impervious to water (pavement, rooftops, storm drains, canals, etc.) and the introduction of compacted surfaces that reduce absorption of water (gravel roads, gravel pits, agricultural areas) can contribute to these impacts, although impervious surfaces are a larger contributor (Booth and Jackson 1997)[1]. An Impervious Cover Model developed from decades of aquatic system research has indicated that, "certain zones of stream quality exist, most notably at about 10% impervious cover, where sensitive stream elements are lost from the system" (Center for Watershed Protection 2016)[1]. Others have noted that urbanization begins to have an influence on some biological parameters within watersheds at slightly lower threshold levels, ranging between 5 and 10%, depending on the parameter (Baker and King 2010; Hilderbrand et al., 2010; Utz et al. 2009; Hicks and Larson 1997; May et al. 1997)[1].

ASAP is a long, linear project traversing many remote watersheds with relatively unaltered hydrology, few impervious or compacted surfaces, and little urbanization. The presence of a buried pipeline in a restored and revegetated trench will not result in substantive impacts to aquatic resources for most watersheds traversed by the project. The pipeline will be buried under at least 30 inches of native material, and the right-of-way will be revegetated, resulting in cover that is not impervious to water at its surface, unlike other linear projects (e.g., highways). Even despite the literature stating that most watershed level impacts occur at approximately 10% disturbance, the USACE required AGDC to use a very conservative threshold of 5% in its watershed level analysis. This led to the USACE increasing the compensatory mitigation requirements beyond what was initially proposed, both in terms of the number of watersheds requiring mitigation and the total mitigation acreage / debit requirements. AGDC has worked with the Corps of Engineers over the last two years to continually refine its plan, finally agreeing on where substantive watershed level impacts requiring mitigation would occur. The compensatory mitigation offered by AGDC is therefore appropriate, practicable, and compliant with the Clean Water Act.

DOI-USFWS Comment: *Among the two action alternatives considered, the USFWS recommends Alternative 2, primarily because it is the only alternative that includes an elevated pipeline where thaw-unstable terrain would be encountered on the Arctic Coastal Plain. As discussed above, the USFWS is less concerned about elevating the pipeline between mile posts than about elevating the pipeline in thaw-unstable terrain. Ideally, the USFWS recommends selecting the Least Environmental Damaging Practicable Alternative among the many choices available to suit the site-specific conditions along the pipeline alignment, rather than averaging the LEDPA for a specific distance between mileposts or for the entire 733-mile pipeline.*

AGDC Response: Even in thaw-unstable terrain, the cold-temperature, buried pipeline is the superior industry standard design that can be built and operated with a high degree of safety, security and operational reliability (Cite report titles, year, doc numbers). The restoration of the trench and implementation of ASAP's *Revegetation Plan (Year / Doc Number)*, which was developed by the State of Alaska's experts in revegetation (ADNR Plant Materials Center staff), will help to stabilize the ground, meeting cover standards, and is likely to return wetland plant species to much of the disturbed area.

[1] Full references available upon request

Sincerely,



Frank T. Richards, P.E.
Senior Vice President, Program Management

Enclosure(s):

Cc: Ryan Winn, USACE
Lisa Haas, AGDC
Kalb Stevenson, AGDC

ATTACHMENT G

Government to Government Consultation

- Page Intentionally Left Blank -

2012	Participating in 2014	2013 - invited	Group	Contact	Additional e-mails in or from entity	Additional Letters/info to or from entity	20140711 GIG letter	20140714 Invitation to Attend for 20150306 Tribe(s) for Tribes	20140718 GIG email with attachments	20140807 GIG Solicitation for Attendance on Section 106	20140814 GIG Solicitation for Attendance on Section 106	20140903 email response	2014 Scoping meeting held in a Tribal community	2014-08-26 Section 106 invite	2014-09-03 Invitation to Meet/Reserve	2014-10-08 Section 106 mtg - see minutes	2014-10-08 sender - for teleconference	2014-10-09 Attend meeting see agenda	2014-11-03 Section 106 mtg - see minutes	2014-11-13 Section 106 mtg - see minutes	2014-11-24 Notification of Scoping Report	2014-12-03 Section 106 mtg - see minutes	2014121? Section 106 mtg - see minutes	20141210 Invitation to 2015 01's teleconference	20150128 Section 106 working group - see minutes	20150203 Section 106 mtg - see minutes	20150303 Attending GEIS for 2 months	20150310 Letter by email to 3 tribes about tribal names	20150526 Email requesting response to place names	20150603 email from Kris to others about tribal names	20150616 Email to 106 group about tribal names	20150624 Meeting to Discuss Place Names - see meeting minutes	20150625 Letter emailed 20150626	20150630 Letter mailed 20150630	20150725-20150825 Comment Resolution mtg	20151007 Section 106 meeting 20151008	20151103 Section 106 meeting 20151103	Informal GIG held in this community Sandy Gibson and Mary Rowena present (except August) Sandy Gibson only not able to find docs for Akhtna Valley	2017Date Contacted by phone Aug-Nov	Wants to participate in 2017	Plans a Mtn?	Mtn? spoke with	Attended Section 106 meeting - rtOct14	Date Contacted by email e-mail address	Date Contacted By Letter	Attended Section 106 meeting October 26, 2017	Sent meeting minutes	20171218 Revised Draft ASAP PA sent to Section 106 working group	Attended Section 106 meeting May 3, 2018	Sent meeting minutes for attendees
			ACHP	Charleen Vaughn, Anthony Lopez		20150301																																											
			AGDC																						x																							x	x
x		x	Ahtna, Inc.	Heidi Lingenfelter/no longer at Ahtna Joe Bovee Jana Turvey Kathryn Martin Michelle Anderson Roy Tansy	20140807 -Kathryn Martin wants to participate, 20141223 -Joe Bovee and Heide Lingenfelter want to participate 20150116 - via Tribal Liaison interested 20171017 - Roy Tansy declined invite 20171026 - Kathryn Martin tenative for Section 106 mtg 3 emails received from Joe Bovee in All ASAP emails					x						x							x	x		x	x	x	x																14-Aug-17	Joe Bovee	822-3476	Joe Bovee 822.34 76	Kathryn Martin b	8/14/2017 8/14/2017 8/14/2017 8/14/2017 8/14/2017	Heide Lingenfelter Jana Turvey Joe Bovee Kathryn Martin Michelle Anderson	10/3/2017		x		
			Ahtna Corporation 110 W. 38th Ave, Suite 100 Anc						x																																						
		x	Alaska DOT&PF -Kathy Price	Brett Nelson																																						10/4/2017		451.5439			10/4/2017	kathy.price@alaska.gov	10/10/2017		x		
		x	Alaska Historical Society																																											10/10/2017				
		x	Alatna Traditional Council				x		x			x				x	x			x		x										x	x											10/11/2017	alatnatribe@gmail.com	10/10/2017				
x		x	Alatna Village		20171011 - request for Cultural Resource info on Kanuti and Olsen Lakes																																							968.2261			10/3/2017	alatnatribe@gmail.com	10/3/2017				
		x	Alexander Creek, Inc.																																											10/10/2017				
x		x	Allakaket Village	Jonanthan Henzie	20171011 - request for Cultural Resource info on Kanuti and Olsen Lakes		x		x		x				x	x			x		x																					10/11/2017		968.2237			10/3/2017	allakaketepa@yahoo.com; elisa.bergman@tananachiefs.org; jonathan.henzie@outlook.com;	10/3/2017				
		x	Alyeska - Pete Nagel																																							10/4/2017		787.8170					10/10/2017		x		
x	x	x	Arctic Slope Regional Corporation	group depending on time of meeting 852.8633	20150116 - via Tribal Liaison interested 20171019 - Eric Kenning declined Section 106 mtg					x			Bridgette Wolgemuth												x		x	x	x	x												14-Aug-17		852-8633	left message				10/10/2017				
		x	Arctic Village Traditional Council																																										10/10/2017		x		
		x	Baan-O-Yeel Kon Corporation																																										10/10/2017				
		x	Bean Ridge Corporation							x																																				10/10/2017				
		x	Beaver Traditional Council																																											10/10/2017				
		x	BIA - Fairbanks	Lesley Dewilde Cyril Andrews Dennis Bodenchuk Duane Matt Dymphna "Trish' Johnson Jeremy Geffre Katie Freeman Kenneth Pratt Teresa Estes																																							10/4/2017		456.0222			10/4/2017	lesley.dewilde@bia.gov; dennis.bodenchuk@bia.gov; jeremy.geffre@bia.gov; teresa.estes@bia.gov;	10/10/2017		x	x	
		x	Birch Creek Tribal Council																																										10/10/2017				
x	x		BLM	Carrie Cecil Crystal Glassburn Earle Williams Jenny Blanchard John Jangala Marnie Graham Robert King William Hedman				x		x																																								
		x	Caswell Native Association																																											10/10/2017				
x		x	Cheesh-Na Tribal Council				x		x			x				x	x			x		x										x	x											10/3/2017				
		x	Chickaloon Moose Creek Native Association							x																																			10/10/2017				
x	x	x	Chickaloon Native Village																																										10/3/2017				
x	x	x	Chickaloon Village Traditional Council	Angie Wade Jessica Winnestaffer	20140806 - Chief Gary Harrison wants tribe to participate 20140908 - confirm receipt of G2G see '20140414-20141202 emails with Chickaloon' 20170816 - request new date for mtg 20171026 -Accepted invite to Section 106 mtg 3 emails received from Jessica Winnestaffer in All ASAP emails	20140825 - requesting information G2G 20141212 - informal G2G in Chickaloon	x		x		x		Jessica Winnestaffer	x	x	x		x		x	x	x		x	x	x	x		x	x												14-Aug-17	Angie Wade/em ail 16Aug17 Jessica Winnestaf fer/email 14Aug17	745.0749	Morgan	Angie Wade/by phone				10/3/2017	x		x		
		x	City of Fairbanks																																									10/10/2017				
		x	Cook Inlet Historical Society																																										10/10/2017				
		x	Cook Inlet Regional Inc. Foundation																																										10/10/2017				
x	x	x	Cook Inlet Regional, Inc.	Dara Glass, Tanisha Gleason Jason Brune	20141223 - Dara Glass wants to participate 20150116 - via Tribal Liaison interested 20171013 - Accepted invitation	20140825 - invite to section 106 & attachment				x																x	x		x	x	x	x												14-Aug-17	by email 2	274.8638	spoke to Keisha, add Connie Miller			cmiller@ciri.com	10/10/2017		x		
		x	Cook Inlet Tribal Council																																										10/10/2017				
		x	Denali Borough	Clay Walker																																						10/16/2017		683.1330				cwalker@denaliborough.com; mlambert@denaliborough.com;	10/17/2017				
		x	Denali Citizens Council	Nancy Bale	20171020 - invite to Section 106 group																																					11/20/2017	by phone					nancy@denalicitizens.org			x		
		x	DinYee Corporation		20171026 - accepted invite					x																																					10/10/2017				
x	x	x	Doyon Regional Corp Limited	Jamie Marunde Gary Lee Sarah Obed Sharon Hildebrand	20171011 - Tentative to attend Section 106					x						x									x		x	x	x	x														Gary Lee/by pho	10/3/2017				10/3/2017		x	x	xx
		x	Eklutna Native Village	Richard Farber	20140808 - invite, 20140808 -response outside area 20171011 - fwd to R. Farber 20171127 - want to participate in PA 20171127 - added to working group list																																										10/3/2017				10/3/2017		x		
		x	Eklutna, Inc																																											10/10/2017				
			Enstar Anchorage Administrative Office	Andrew Frasier																																							11/2/2017		277.5551			11/3/2017	andrew.fraiser@enstarnaturalgas.com					
x			EPA					x		x																																							
x		x	Evansville Village	Frank Thompson	20141027 - email about conversation with Chief Thompson	20140819 - requesting formal G2G 20140825 - requesting public meeting, 20141010- MFR on informal G2G	x		x		x	9/11		x	x			x		x			x	x	x	x																					10/3/2017		x		
		x	Evansville, Inc.							x																																				10/10/2017				
		x	Fairbanks North Star Borough																																											10/10/2017				
x		x	Fort Yukon (Gwichyaa Zhee Gwich'in)								x				x	x			x		x																							10/3/2017				10/3/2017				
		x	Gold Creek-Susitna NCI																																											10/10/2017				
			Gakona				x		x		x				x	x			x		x												x	x															
		x	Gulkana Village				x		x		x				x	x			x		x												x	x											10/3/2017				
		x	Iditarod Historic Trail Alliance																																										10/10/2017				
x		x	Inupiat Community of Arctic Slope (ICAS)	Lloyd Paningona	20171005		x		x																																		852.4227				none	10/3/2017		x		
		x	Inupiat History, Language and Culture Commission (North Slope Borough CLG)																																										10/10/2017				
		x	Kaktovik Inupiat Corporation							x																																				10/10/2017				
		x	Kaktovik Village				x		x		x				x	x			x		x												x	x											10/3/2017				
			Kenai Natives Assoc. Corp							x																																								
x	x	x	Kenaitze Indian Tribe (IRA)	Brenda Trefon	20150319 - Brenda wants to participate 5 emails from 20170814-20171031 from Brenda Trefon see all ASAP email PDF	20140828 - MFR on visit to Kenaitze Tribe	x		x		x	8/27		x	x			x		x			x	x	x	x		x	x												14-Aug-17	by email 1	398.7933					10/3/2017		x		
x	x	x	Knik Tribal Council	Bob Charles Richard Martin Fran Seager-Boss	20140624 -Knik wants to be consulting party 20140630 - would like GIS files 20140804 - Bob Charles wants to participate, 20140806 - sour gas, 20140806 - fwd letter, 20141223 - Bob Charles wants to participate, 20150116 - via Tribal Liaison interested 20150203 - Place names, 20150203 - place names attachment, 20150602 - place names 20150609 - request for teleconference 20150609 - response from tribe 20160309 - want to participate in PA See 20140624-20151007 emails contains multiple e-mails with Knik 23 emails from 20170814-20171031 from Bob Charles/Richard Martin see all ASAP email PDF 20170922 -request for GIS shape files	20150203, 20150610 - MFR discussion on place names, 20170921-requesting MOU 20171115, 20171116 - USACE letter to AGDC about Knik request 20171122 - Meeting at Knik Tribal office 20171214-response from AGDC about Knik requests,	x		x		x	8/20	Bob Charles Richard Martin	x	x	x		x		x	x	x		x	x	x	x	x		x	x	8/1											14-Aug-17	Bob Charles by email 20170814 Richard Martin	373.3153	left mes	Richard Martin			10/3/2017	xxx	x	xx	
		x	Knik Village																																										10/10/2017				
		x	Knikahtnu, Inc.																																										10/10/2017				

- Page Intentionally Left Blank -

| | | |

- Page Intentionally Left Blank -

ATTACHMENT H

Project Changes in Response to Comments

- Page Intentionally Left Blank -

Name	Milepost	Reason	Description	Wetlands Impact	DSEIS Acreage	FSEIS Acreage	Acreage Difference
Trapper Creek	645.80-655.08	Reroute to avoid larger number of trails on west side of Parks Highway in response to public comments. This alignment is identical to the one finalized for use on AKLNG.	The AKLNG footprint was utilized for the reroute of ASAP. It was assumed that the original engineering for AKLNG was sound and required no additional work. Where ASAP wetlands data were unavailable, AKLNG wetlands data was used. At MP 645.80, the alignment will veer east and cross the George Parks Highway. After crossing the highway, the alignment will parallel the highway on the east side and generally head south until MP 655.08, then cross back to the west side of the George Parks Highway and rejoin the alignment. The new alignment will cross the same streams as the original alignment, but at a location further downstream. The two northern most stream crossings are more incised on the new alignment than the original. The new alignment will add 5 access road segments and delete two access road segments.	Permanent Impact	8.27	11.53	3.25
				Temporary Impact/Minimization	1.21	0.62	-0.59
				Uplands/Avoidance	136.87	157.53	20.65
Rustic Wilderness Camp	~MP 700.5	Change in location of the Rustic Wilderness Camp based on landowner input and public comment.	The location for the Rustic Wilderness Camp has been moved from a private parcel at approximately MP 80.5 of the George Parks Highway, south, to a State owned parcel at approximately MP 77.5 of the George Parks Highway. The new camp location is adjacent to the mainline ROW instead of the original location which was off of the mainline ROW. The new camp location would also eliminate the need for access road AR-CAMP-E-697.31 (this particular access road is an existing road). This is a change only in the project footprint. The alignment for the pipeline has not been impacted by this change.	Permanent Impact	17.95	0.00	-17.95
				Uplands/Avoidance	12.64	29.92	17.28
Willow Pipe Storage Yard	~ MP 707	Change in location of the Willow PSY based on public comment.	The location for the existing Willow PSY is directly adjacent to a feeder for the Lucky Shot Trail. While the current location does not intersect the trail, it is directly adjacent to the trail. The new location for the Willow PSY will utilize the same parcel, but will move the PSY approximately 150' to the west, leaving a 150' vegetative buffer between the end of the PSY and the feeder trail. The access road as it currently shows in the footprint will not have to be changed with this proposed location change of the PSY. The new location meets the intent of the public comment which was to not block the feeder trail access to the Lucky Shot Trail. This is a change only in the project footprint. The alignment for the pipeline has not been impacted by this change.	Uplands/Avoidance	8.94	8.94	0.00
Prospect Camp and Pipe Storage Yard	~ MP 278	Change in location of the Prospect Camp and PSY to reduce environmental impacts.	The current location for the Prospect Creek Camp and PSY was inadvertently placed onto a riverine wetland feature. The new location proposed for the Prospect Creek Camp and PSY is southwest of the current location by approximately 2,000 feet. The small segment of access road AR-CAMP-YD-N-277.83 has been eliminated and an additional, longer segment has been added to access road AR-CAMP-YD-N-277.82 for Camp and PSY access. This is a change only in the project footprint. The alignment for the pipeline has not been impacted by this change.	Permanent Impact	40.65	43.17	2.52
				Uplands/Avoidance	1.94	0.00	-1.94
Nenana Native Allotments	~ MP 471	An HDD False Right of Way encroaches on two abutting Native Allotments.	Currently, the HDD False Right of Way for the Nenana River HDD overlaps two native allotments that abut each other. The proposed change will trim the edge of the HDD False Right of Way to not encroach on the Native Allotment Parcels. This is a change only in the project footprint. The alignment for the pipeline has not been impacted by this change.	Uplands/Avoidance	3.78	0.00	-3.78
Reroute near MP 684.5	684.19 to 684.62	Reroute to avoid larger cut/fill at corner of parcel.	The parcel owner requested that the pipeline not cross the parcel at the north west corner of the parcel. The owner also stated that the pipeline could cross the parcel further south on the parcel. The pipeline was rerouted south to the maximum extent while still allowing sufficient room from construction. The reroute also allowed a much less oblique approach to the bluff at the north end of the route revision. This reroute does not affect any new landowners.	Uplands/Avoidance	6.03	5.33	-0.70
Kashwitna HDD	~ MP 694	An HDD False Right of Way encroaches private parcel.	Currently, the HDD False Right of Way for the Kashwitna River covers a home on a private parcel. This parcel has a bluff on the south side, and the low area at the bottom of the bluff would be used for the HDD False ROW. The HDD False ROW for the Kashwitna River HDD has been trimmed to be coincident with the bottom of the bluff. This is a change only in the project footprint. The alignment for the pipeline has not been impacted by this change.	Temporary Impact/Minimization	21.11	20.85	-0.26
				Uplands/Avoidance	9.05	6.76	-2.29
Titan Parcel	732.51 to 732.99	Reroute to avoid larger cut/fill at corner of parcel.	The parcel owner requested that the pipeline not cross the parcel due to planned expansion of the Titan plant. The proposed reroute turns east earlier and avoids the private parcel in question. This reroute does not affect any new landowners.	Uplands/Avoidance	6.52	6.63	0.11
ADOT/PF Parks Hwy Above Grade Rail Crossing	~ MP 581	ADOT/PF -George Parks Highway Above-Grade Rail Crossing highway alignment change.	Because of the George Parks Highway reroute at approximately MP 194, the access road AR-RS-N-580.86 is no longer required because it does not connect to the highway. The solution was to delete the access road AR-RS-N-580.86. This is a change only in the project footprint. The alignment for the pipeline has not been impacted by this change.	Permanent Impact	0.08	0.00	-0.08
				Uplands/Avoidance	6.63	0.00	-6.63
Fairbanks Operations and Maintenance Base	Near intersection of Parks Highway and Geist Road in Fairbanks	Comments received by AGDC have requested AGDC find a new location for the Fairbanks Operations and Maintenance Base.	The Fairbanks Operations and Maintenance Base was originally proposed to be located on University of Alaska Fairbanks property at the corner of Yankovich Road and Miller Hill Road. The new proposed location is a University of Alaska property which is available for development at the corner of Geist Road and the George Parks Highway. This is a change only in the project footprint. The alignment for the pipeline has not been impacted by this change.	Permanent Impact	0.00	3.82	3.82
				Uplands/Avoidance	4.68	1.03	-3.65
Sea Ice Pad and Access Road	West Dock (~MP 0)	NMFS requested AGDC include the sea ice access road and areas vehicles would drive (i.e., additional sea ice work pad) adjacent to the dredge and disposal sites for the West Dock work.	Additional workspace and a connecting road are required between the dredge site at West Dock, and the dredge disposal site. A sea ice road was placed between the west dock dredging site sea ice pad and the disposal site sea ice pad. This access road was added, and an existing access road was utilized for project travel to allow access to the disposal site without requiring driving to West Dock, then driving down the sea ice road to the disposal site. The intent of the sea ice road was to keep this access road on grounded sea ice as much as is practicable. This is a change only in the project footprint. The alignment for the pipeline has not been impacted by this change.	Temporary Impact/Minimization	0.00	250.70	250.70
				Uplands/Avoidance	0.00	21.08	21.08
MP57-62 ROW Construction Mode	MP 0-62	ROW construction mode was changed from MP 57 to MP 62 to reduce Environmental Impacts from 32ft wide to 9ft wide from MP0 to MP57 (and now to MP 62), in accordance with expected impacts.	The Tundra Ice Workpad Typical Right of Way construction mode has been extended from MP 57 to MP 62. An additional 5 miles of ice workpad will replace Gravel Pad Typical Right of Way mode. The intent of this change is to reduce the permanent wetland impact of the pipeline in the Arctic Coastal Plain. In accordance with these changes, gravel access road AR-N-57.06 changes to ice road. In addition, the GIS now shows the 32ft permanent impact has been reduced to 9ft wide permanent impact to wetlands from MP0 to MP 57 (and now to MP 62), in accordance with expected impacts. This is a change only in the project footprint. The alignment for the pipeline has not been impacted by this change.	Permanent Impact	292.84	66.81	-226.03
				Temporary Impact/Minimization	596.81	819.90	223.10
				Uplands/Avoidance	14.10	14.10	0.00
				Total Change in Permanent Wetlands Impacts			**-237.72**

- Page Intentionally Left Blank -

Appendix B

U.S. Fish and Wildlife Service Biological Opinion

- Page Intentionally Left Blank -

United States Department of the Interior

U.S. FISH AND WILDLIFE SERVICE
Fairbanks Fish and Wildlife Field Office
101 12th Avenue, Room 110
Fairbanks, Alaska 99701
March 7, 2018

Sandy Gibson
Project Manager
Regulatory Division, North Branch
Alaska District
U.S. Army Corps of Engineers

Re: Revised Alaska Stand Alone Pipeline – 2018 Biological Opinion Amendment

Dear Ms. Gibson:

Thank you for inquiring about endangered and threatened species and critical habitats pursuant to section 7 of the Endangered Species Act of 1973 (ESA), as amended. This document transmits the U.S. Fish and Wildlife Service's (Service) amended Biological Opinion (BO) regarding proposed revisions to the Alaska Gasline Development Corporation's (AGDC) Alaska Stand Alone Pipeline (ASAP) project description. The Service consulted with the U.S. Army Corps of Engineers (USACE) on this development in a BO dated July 10, 2012, regarding effects of the action on threatened spectacled eiders (*Somateria fischeri*), Alaska-breeding Steller's eiders (*Polysticta stelleri*), polar bears (*Ursus maritimus*), designated polar bear critical habitat, and the candidate species Pacific walrus (*Odobenus rosmarus*).

The Service's July, 2012 determinations regarding effects to polar bears, and designated polar bear critical habitat remain unchanged and therefore, effects of the proposed revisions on polar bears or designated polar bear critical habitat are not evaluated further herein. Furthermore, on December 5, 2017, the Service determined the Pacific walrus was not warranted for ESA-listing. Consequently, potential impacts to Pacific walrus from the proposed revisions do not require consultation or conferencing under section 7, and are not discussed further herein. However, the proposed revisions may increase project impacts to Steller's and/or spectacled eiders. Therefore, this document describes effects of the proposed revisions on listed eiders pursuant to section 7 of the ESA

Because information regarding the status of Alaska-breeding and spectacled eiders has been improved with more recent data, we reference the Services' Programmatic BO for Wetland Impacts on the North Slope 2016-2017 for updated Status of the Species and Environmental Baseline of listed eiders (USFWS 2016). Furthermore, because the Service's evaluation of Cumulative Effects, as well as Reasonable and Prudent Measures, implementing Terms and Conditions, and Conservation Recommendations remain unchanged from the 2012 BO (USFWS 2012), these sections are not repeated herein, although they are attached for reference (Appendix 1).

Following review of the status and environmental baseline of listed eiders, and analysis of potential effects of the proposed action to these species, the Service has concluded the proposed action *is not likely to jeopardize* the continued existence of spectacled or Alaska-breeding Steller's eiders. A complete administrative record of this consultation is on file at the Fairbanks Fish and Wildlife Field Office (FFWFO), 101 12th Avenue, Fairbanks, Alaska, 99701. If you have comments or concerns regarding this BO, please contact Ted Swem, Endangered Species Coordinator, Fairbanks Fish and Wildlife Field Office at (907) 456-0441.

Sincerely,

Ted Swem

Ted Swem
Endangered Species Coordinator
Fairbanks FFWFO

INTRODUCTION

This document transmits the U.S. Fish and Wildlife Service's (Service) amended Biological Opinion (BO) regarding proposed revisions to the Alaska Gasline Development Corporation's (AGDC) Alaska Stand Alone Pipeline (ASAP) project description. The Service consulted with the U.S. Army Corps of Engineers (USACE) on this development in a BO dated July 10, 2012, regarding effects of the action on threatened spectacled eiders (*Somateria fischeri*), Alaska-breeding Steller's eiders (*Polysticta stelleri*), polar bears (*Ursus maritimus*), designated polar bear critical habitat, and the candidate species Pacific walrus (*Odobenus rosmarus*).

The Service's July, 2012 determinations regarding effects to polar bears, and designated polar bear critical habitat remain unchanged and therefore, effects of the proposed revisions on polar bears or designated polar bear critical habitat are not evaluated further herein. Furthermore, on December 5, 2017, the Service determined the Pacific walrus was not warranted for ESA-listing. Consequently, potential impacts to Pacific walrus from the proposed revisions do not require consultation or conferencing under section 7, and are not discussed further herein. However, the proposed revisions may increase project impacts to Steller's and/or spectacled eiders. Therefore, this document describes effects of the proposed revisions on listed eiders pursuant to section 7 of the ESA. We used information in AGDC's Draft Supplemental Environmental Impact Statement (AGDC 2017a) and revised Biological Assessment (BA; AGDC 2017b), project-specific communications with the USACE, other Service documents, and published and unpublished literature to develop this document.

Because information regarding the status of Alaska-breeding and spectacled eiders has been improved with more recent data, we reference the Services' Programmatic BO for Wetland Impacts on the North Slope 2016-2017 for updated Status of the Species and Environmental Baseline of listed eiders (USFWS 2016). Furthermore, because the Service's evaluation of Cumulative Effects, as well as Reasonable and Prudent Measures, implementing Terms and Conditions, and Conservation Recommendations remain unchanged from the 2012 BO (USFWS 2012), these sections are not repeated herein, although they are attached for reference (Appendix 1).

PROJECT DESCRIPTION

The following text focuses on revisions to the project description as aspects of the project that have not been revised were previously evaluated in the Service's 2012 BO (USFWS 2012).

Gas conditioning facility

The size of the Gas Conditioning Facility (GCF) would increase from 70 acres (0.28 km^2) to 90.6 acres (0.37 km^2). The GCF would be located approximately 1 mi (1.6 km) west of the existing Central Gas Facility in the Prudhoe Bay industrial complex (Figure 1). The GCF would be accessed from the west margin of the CGF by an approximately 0.71 km long, 0.02 km^2, access road. The GCF would also construct approximately 4,200 ft (1.3 km) of gas connecting lines supported by 171 vertical support members (VSMs). Peak construction of the GCF and pipeline is expected to require 1.5 years (2 summer seasons + 1 winter season).

GCF camp
Additionally, a 20.2 acre (0.08 km^2) GCF camp would be constructed nearby to provide lodging for personnel. This camp would be accessible by two new gravel access road segments totaling 3.95 km in length and 0.19 km^2 (Figure 1).

Material sources
Within the action area, two new gravel material sources (MS) would be developed. A 136.89-acre (0.55-km^2) material source, MS 1A-A, with two access roads is proposed near the GCF (Figure 1). The combined length of these two access roads is roughly 2.2 km, and a combined footprint of approximately (0.07 km^2). Additionally, MS 1B-F would be developed within the Sagavanirktok River channel near MP 18 (Figure 2).

Natural gas pipeline
The buried, non-enriched natural gas pipeline would increase in diameter from 24 to 36 inches (61 to 91 cm), with a construction corridor of about 470 ft (143.3 m), and permanent right of way corridor of at least 53 ft (16.15 m). The currently proposed alignment would shift the pipeline location west from the 2012 alignment between mileposts (MP) 0 and MP 29.

Pipeline access road
Near MP 20, an approximately 3.7-km long, 0.12 km^2, gravel road would be constructed to provide access to the ASAP ROW from the Dalton Highway (Figure 2).

West Dock modifications
A single season of winter dredging would take place at West Dock to create a 9-ft (2.7 m) deep navigation channel and run basin. Dredged material would be placed nearby upon bottomfast sea ice within Prudhoe Bay. Mooring pilings would also be installed during the winter. The DH3 berths would be modified and portions of the causeway road would be widened to 60 ft (18.3 m) (Figure 3). Additionally, a temporary bridge composed of two barges would facilitate offloading and transport of large modules.

Barging operations
A 23-barge sealift would import construction materials and 53 prefabricated modules over the course of a single-season sealift. Each barge would be accompanied by an ocean-going support tug though standard marine shipping routes (Figure 4). Vessels would not transit through the Ledyard Bay Critical Habitat Unit for spectacled eiders.

Revised action area
The action area remains unchanged from that described in the 2012 BO (USFWS 2012), with the exception of the addition of the marine transit route through the Bering Sea, Bering Strait, Chukchi Sea, Beaufort Sea, and Prudhoe Bay (Figure 4).



Figure 1. Detail of proposed project features and 200 m zone of influence associated with the ASAP Project within the Prudhoe Bay industrial complex. New infrastructure includes a GCF pad and access road from the existing CGF, a GCF Camp and access road, MS 1A-A and access roads, 1.3 km of elevated gas connecting lines, as well as the beginning segment of the buried ASAP gasline (not shown).



Figure 2. Material source 1B-F within the Sagavanirktok River channel near MP 18 of the proposed ASAP Project. This MS would be accessed via an existing gravel road. Near MP 20, a new gravel access road would be constructed between the ASAP ROW and the Dalton Highway.



Figure 3. The West Dock Causeway and Prudhoe Bay dredge disposal locations associated with modifications to West Dock in support of ASAP construction.

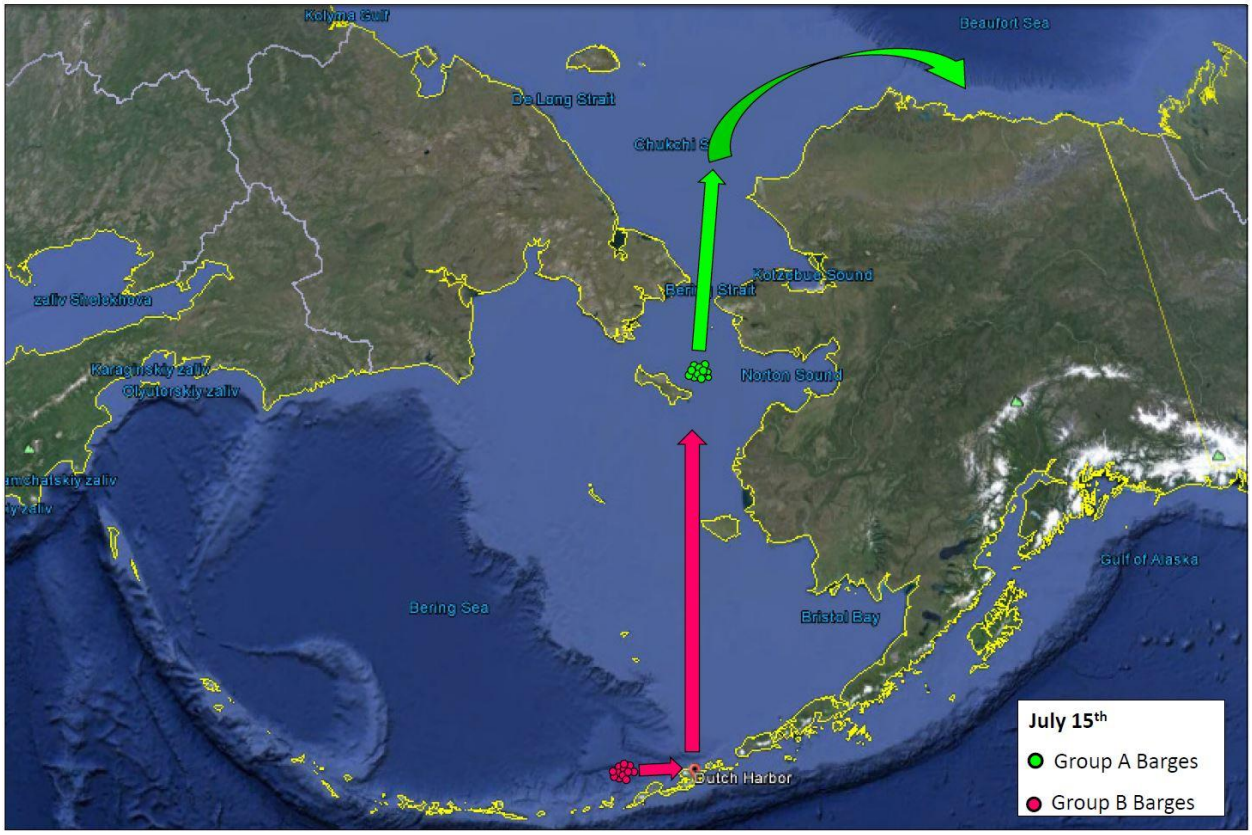


Figure 4. Proposed marine transit routes for a single season of barge and ocean-going tug operations associated with the first year of ASAP construction.

EFFECTS TO LISTED EIDERS

Effects of disturbance

Long-term terrestrial habitat loss[1]

Because the applicant has adopted wintertime construction (e.g., excavation of fill and/or gravel placement on undisturbed tundra would occur during winter months), disturbance of nesting females, eggs, or young broods from construction of gravel infrastructure would be unlikely. Nonetheless, direct permanent habitat loss would result from extraction and/or placement of gravel fill impacting roughly 546.3 total acres (2.21 km^2) of listed eider nesting habitat.

We also anticipate indirect habitat loss via disturbance will occur within a 200 m (656.2 ft.) zone of influence surrounding newly constructed ASAP infrastructure from on-pad activities, pipeline and road operations, as well as maintenance activities. The two principal mechanisms through which disturbance can adversely affect eiders on their breeding grounds are:

1. Displacing adults and/or broods from preferred habitats during pre-nesting, nesting, brood rearing, and migration; and

[1] Although effects to listed eiders from long-term habitat loss were evaluated in the 2012 BO, because 1) the footprint of the proposed action has changed, and 2) more current estimates of listed eider densities are available (USFWS 2015), this effects analysis supersedes the Service's 2012 evaluation regarding impacts from long-term habitat loss.

2. Displacing females from nests, exposing eggs or small young to inclement weather and predators.

We do not anticipate significant long-term habitat loss from ice road or snow trail operations associated with winter gravel extraction and/or placement. Research indicates damage from ice roads occurs on higher, drier sites with little or no damage in wet or moist tundra areas (Pullman et al. 2003) when ice roads are used. Jorgenson (1999) found impacts were limited to isolated patches of scuffed high microsites and crushed tussocks. Similarly, Yokel and VerHoef (2014), found disturbance from seismic and ice road activity was greatest in drier, shrubby habitat than in moist habitat. McKendrick (2003) studied several riparian willow areas and found although some branches were damaged, the affected plants survived. Because spectacled eiders prefer to nest in low moist tundra areas (Anderson and Cooper 1994, Anderson et al. 2009), we anticipate limited damage in higher drier tundra habitat from ice roads would not adversely affect spectacled eiders.

Loss of production

Alaska-breeding Steller's eiders are not expected to nest east of the Colville River; therefore, we expect effects of long-term habitat loss from the ASAP project on Steller's eiders would be insignificant. However, we provide an assessment of potential loss of spectacled eider production resulting from construction and operation of the ASAP project in the discussion below. Broadscale aerial surveys conducted in multiple years allow us to estimate how average density of spectacled eiders varies across the landscape (USFWS 2015). These estimates were developed at a coarse regional scale and are not site- or habitat-specific; however, they reflect the best available data on the density of breeding spectacled eiders in the action area (USFWS 2015). Distribution on a local scale may vary based on the availability of preferred habitats.

Although estimated spectacled eider density across the action area ranged from 0.001 to 0.35 eiders/km^2 (Figure 5), to estimate the number of spectacled eider pairs potentially displaced by proposed ASAP features within the action area, we multiplied the midpoint density of spectacled eider breeding pairs within the area (0.17 eiders/km^2 or 0.09 nests/km^2; USFWS 2015) by the total estimated affected area (26.04 km^2). We assume the estimated number of pairs displaced is equivalent to the number of nests or broods that may be affected. We also assume that spectacled eiders will be present and attempt to nest annually in the action area. Finally, we assume that displaced pairs will not move and successfully nest elsewhere, which is an unproven and conservative assumption. Applying these assumptions and this logic, we estimate the proposed action would cause the failure of 113 spectacled eider nests over 50 years of estimated ASAP development life:

$$0.17 \text{ birds/km}^2 \times 0.5 \text{ nests/pair} \times 26.04 \text{ km}^2 = 2.26 \text{ nests annually}$$

$$2.26 \text{ nests annually} \times 50 \text{ years} = 113 \text{ spectacled eider nests over 50 years}$$

Because the most recent population estimate for North Slope-breeding spectacled eiders is 14,814 (13,501–16,128, 90% CI; Stehn et al. 2013), we would not anticipate population level effects from the loss of roughly 2 spectacled eider nests per year, or 113 nests over a 50-year period, resulting from construction and operation of the ASAP project.

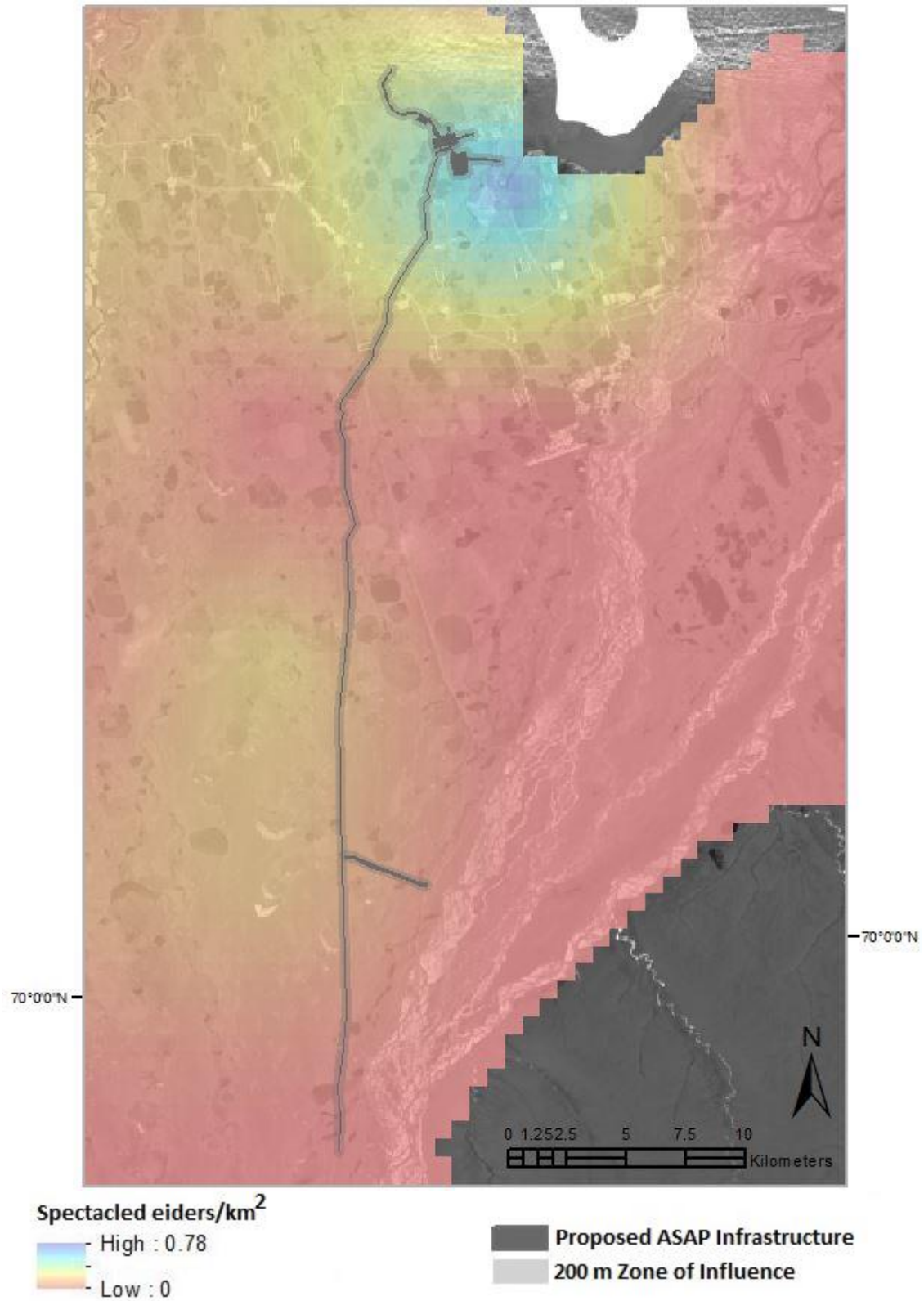


Figure 5. Estimated density distribution of spectacled eiders observed on North Slope aerial transects during breeding pair surveys in June, 2012-2015 (USFWS 2015), in relation to proposed ASAP project features within the action area.

Disturbance in marine habitat
Migratory or molting listed eiders, or those making local movements to forage in marine waters could be encountered during vessel transit through the Bering, Chukchi, or Beaufort seas. These birds could be subject to disturbance from the proposed sealift operations. However, we expect disturbance to migratory, molting, or foraging listed eiders would be minor because these individuals can respond to vessel presence or disturbance by moving away from the vessels to a safe distance. Furthermore, because vessels would avoid transiting through Ledyard Bay Critical Habitat, where spectacled eiders concentrate during molt, we would not anticipate vessel disturbance to result in appreciable impacts listed eiders.

Effects of collisions with vessels
In addition to disturbance, migratory listed eiders would also be at potential risk of collision with vessels during the proposed single season of barging operations. Worldwide, migratory birds suffer considerable mortality from collisions with man-made objects (Manville 2004). Birds involved in collisions with man-made objects may also experience severe injuries including concussions, internal hemorrhaging, and broken bones. Birds are particularly at risk of collision when visibility is impaired by darkness or inclement weather (Weir 1976). In a study of avian interactions with offshore oil platforms in the Gulf of Mexico, collision events were more common, and more severe (i.e., the number of collision incidents increased) during poor weather (Russell 2005). There is also evidence that lights on structures, particularly red steady-state lights, result in disorientation which increases collision risk (Reed et al. 1985, Russell 2005, Manville 2000). Strike rate may also be related to flight behavior, in particular, altitude (Anderson and Murphy 1988). Johnson and Richardson (1982) in their study of migratory behavior along the Beaufort Sea coast, reported that 88% of eiders flew below an estimated altitude of 10 m (32 ft) and well over half flew below 5 m (16 ft). Day et al. (2004 and 2005) also noted eider species may be particularly susceptible to collisions with offshore objects as they fly low (mean flight altitude 12.1 ±0.8 m) and at relatively high speeds (approximately 45 mph) over water.

Although limited, the best available information with which to estimate collision risk between marine vessels and migratory birds are observations recorded during Royal Dutch Shell's (Shell) exploratory oil and gas activities in 2012. Ten vessels operating in the Chukchi Sea for 108 days recorded 131 total bird-vessel encounters, 17 of which were fatal collisions between eiders (13 king and 4 common eiders) and vessels. Of these 17 collisions, 2 involved mobile offshore drilling units, while the other 15 involved support vessels, which are reasonably similar to the barges and tugs currently planned for use in the proposed action. Considering that 10 vessels were involved in 15 fatal eider collisions, we estimate average collision rate per vessel to be 1.5 (i.e., 15 ÷ 10 = 1.5 collisions/vessel) over a 108-day season.

These rates are based on reported collisions for king and common eiders during a single shortened industry season in the Chukchi Sea. Listed eider species were not among the seaduck collisions recorded in 2012, however spectacled and Steller's eiders moving through the Bering, Chukchi, and Beaufort seas during the ASAP project would also be at risk of colliding with the proposed barges and tugs, presumably in proportion to their relative abundance in seaduck populations. Assuming spectacled and Steller's eiders are equally as vulnerable to collisions as king and common eiders, and because there is no basis to assume otherwise, we believe

information on collision rates of much more abundant king and common eiders can be used to reasonably approximate collision rate for less abundant spectacled and Steller's eiders. To do this, we considered the number of observed collisions for eiders during Shell's 2012 exploratory season in the Chukchi Sea, combined with the estimated number of eiders migrating through the region, which were theoretically exposed to collision risk.

Based on a total of 705,380 eiders (529,271 king and 176,109 common eiders) recorded during migration counts near Utqiaġvik in late summer and fall of 2002 (Quakenbush et al. 2004[2]), we very roughly estimate the risk of collision, per eider passing through the Chukchi Sea, for each vessel operating offshore to be:

1.5 collisions per vessel per season ÷ 705,380 eiders = 0.0000021 collisions per vessel per season

We can then roughly estimate the risk of collision for listed eiders migrating through the Bering, Chukchi, and Beaufort seas, by multiplying the individual eider collision rate (described above), by the estimated abundance of spectacled and Steller's eiders from pre-nesting aerial survey data for the North Slope (Stehn et al. 2013[3]). These surveys estimate spectacled and Steller's eiders number approximately 14,814 (90% CI = 13,501-16,128) and 680, respectively (Stehn et al. 2013). Therefore, we estimate listed eider collision rates would be:

14,800 spectacled eiders × 0.0000021 collisions per vessel per season = 0.031 spectacled eiders per vessel per season

680 Steller's eiders × 0.0000021 collisions per vessel per season = 0.0014 Steller's eiders per vessel per season

If these figures represent the number of collisions expected per vessel moving through the Chukchi Sea, we can then approximate the number of collisions expected for 46 vessels total (23 barges, each accompanied by a tug) and in the Bering and Chukchi seas:

0.031 spectacled eiders per vessel × 46 vessels = 1.43 spectacled eiders

0.0014 Steller's eiders per vessel × 46 vessels = 0.064 Steller's eiders

Because the figures above are based on an approximately 108-day season during Shell's 2012 campaign, we have adjusted the calculations to estimate collisions over approximately 150-days[4]

[2]This survey was based on observed counts from a fixed location. It employed a subset of time intervals and extrapolated the data to account for intervals during which no observations were made. Because the majority of king and common eiders nest in Northern Canada, we believe these counts reasonably estimate the number of king and common eiders passing through Arctic Alaska. Listed eiders were not detected during these migration counts, presumably due to the comparative scarcity and identification challenges for spectacled and Steller's eiders.

[3] These surveys were based on aerial observations of a subset of available nesting habitat on the North Slope. The data were then extrapolated to account for available nesting habitat that was not surveyed.

[4] We expect the proposed barging operations would be of shorter duration (likely much shorter) than the length of a typical open-water season. We also acknowledge the timing of barge operations would be difficult to estimate with precision due to a number of factors including seasonal variation in sea ice conditions and marine forecasts.

of a typical open-water season as follows:

For spectacled eiders:

1.43 spectacled eider collisions ÷ 108 days = 0.013 collisions per day; therefore,
0.013 collisions per day × 150 days = 1.98 spectacled eider collisions

For Steller's eiders:

0.064 Steller's eider collisions ÷ 108 days = 0.00059 collisions per day; therefore,
0.00059 collisions per day × 150 days = 0.089 Steller's eider collisions

The reliability of these estimates may be limited by several biases. For example, 1) collisions are often episodic, and those resulting from light attraction in inclement weather may be particularly so, such that observations collected on a few vessels in a single year may not be representative of collisions in general, 2) monitoring for collisions is difficult and an unknown number of collisions may go undetected, even by trained bird observers, and 3) low visibility often coincides with increased collisions (Ronconi et al. 2015), which may increase the number of undetected collisions. However, these estimates are based on the best information available. Therefore, the Service estimates loss of roughly 2 adults and/or fledged juvenile spectacled eiders, and no Steller's eiders from collisions with vessel operations during the proposed ASAP project.

Because the most recent population estimate for North Slope-breeding spectacled eiders is 14,814 (13,501–16,128, 90% CI; Stehn et al. 2013), we would not anticipate population level effects from the loss of 2 spectacled eider adults and/or fledged juveniles during the proposed single season of barging operations.

CONCLUSION

Regulations (51 CFR 19958) that implement section 7(a)(2) of the ESA define "jeopardize the continued existence of" as "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species."

Listed eiders

In evaluating impacts of the proposed ASAP project to listed eiders, the Service identified potential adverse effects from direct and indirect long-term habitat loss as well as collisions with vessels involved in barging operations. Using methods explained in the *Effects of the Action* section, the Service estimates potential loss of production of up to 113 spectacled eider nests, as well as 2 spectacled eider adults and/or fledged juveniles from collisions. Given that the loss in production would occur over an estimated 50-year development life, and the overall estimated

---

Therefore, lacking greater certainty in project timing, we have conservatively extrapolated our estimate to cover a full open-water season. We believe this represents an overestimation of collision risk to listed eiders. Furthermore, because appreciable collision risk to listed eiders is not expected despite this acknowledged overestimation, we expect actual collision risk to listed eiders may be considerably less than the level predicted.

loss of is a very small proportion of the estimated North Slope-breeding population of spectacled eiders (13,501–16,128, 90% CI; Stehn et al. 2013), we believe spectacled eider loss that may result from the proposed ASAP project would not significantly affect the likelihood of survival and recovery of this species. Furthermore, adverse effects to Alaska-breeding Steller's eiders are not anticipated.

Therefore, after reviewing the current status of the species, environmental baseline, and effects of the action, the Service concludes the proposed action is *not likely to jeopardize the continued existence* of spectacled or Alaska-breeding Steller's eiders by reducing appreciably the likelihood of survival and recovery in the wild by reducing reproduction, numbers, or distribution of these species.

Future Consultation

This BO's determination of non-jeopardy is based on the assumption that the USACE and their agents will consult with the Service on future activities related to the ASAP project that are not evaluated in this document. For example, although overhead powerlines and/or guyed communication towers are not included in the project as described, if these features were proposed to be added in the future, the Service would need to evaluate the impact of those features on listed eiders and re-initiation of formal consultation may be necessary.

In addition to listed eiders, the area affected by the proposed action may now or hereafter contain plants, animals, or their habitats determined to be threatened or endangered. The Service, through future consultation, may recommend alternatives to future development within the action area to prevent impacts that will contribute to a need to list such a species or their habitat. The Service may require alternatives to proposed actions that are likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species, or result in the destruction or adverse modification of designated or proposed critical habitat. The Federal action agencies should not authorize actions that may affect such species or critical habitat until it completes its obligations under applicable requirements of the ESA as amended (16 U.S.C. 1531 et seq.), including completion of any required procedure for conference or consultation.

INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. "Harm" is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns that include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action, is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement (ITS).

USACE has a continuing duty to regulate the activity covered by this ITS. If USACE 1) fails to assume and implement the terms and conditions, or 2) fails to require the applicant to adhere to the terms and conditions of the ITS through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse.

Spectacled eiders

The activities described and assessed in this BO may adversely affect spectacled eiders through direct and indirect long-term habitat loss and collisions with vessels. Methods used to estimate spectacled eider take from habitat loss and collisions are described in the *Effects of the Action* section. Based on these estimates, the Service authorizes *loss of production from 113 spectacled eider nests* from long-term habitat loss, as well as *2 adults and/or fledged juveniles* from collisions resulting from the proposed action[5].

While the incidental take statement provided in this consultation satisfies the requirements of the ESA, it does not constitute an exemption from the prohibitions of take of listed migratory birds under the more restrictive provisions of the Migratory Bird Treaty Act. However, the Service will not refer the incidental take of any migratory bird or bald eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703–712), or the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. §§ 668–668d), if such take is in compliance with the terms and conditions specified herein.

REINITIATION NOTICE

This concludes formal consultation for the ASAP Project. As provided in 50 CFR 402.16, re-initiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if:

1. The amount or extent of incidental take for spectacled eiders is exceeded over the period covered by this BO;
    a. More than 113 spectacled eider nests over 50 years;
    b. More than 2 adult and/or fledged juveniles lost due to collisions with vessels;
2. New information reveals effects of the action that may affect listed species in a manner or to an extent not considered in this opinion;
3. The agency action is subsequently modified in a manner that causes an effect to listed species or critical habitat not considered in this opinion; or
4. A new species is listed or critical habitat is designated that may be affected by the action.

[5] Incidental take of spectacled eiders authorized by this ITS is not additive to the incidental take estimated and authorized by the 2012 BO ITS. Rather, this ITS supersedes and replaces incidental take of spectacled eiders authorized by the 2012 BO to reflect changes to the project description.

LITERATURE CITED

AGDC. 2017a. Alaska Stand Alone Pipeline Project - Draft Supplemental Environmental Impact Statement. June 2017, Alaska Gasline Development Corporation, Anchorage, Alaska.

AGDC. 2017b. Alaska Stand Alone Pipeline/ASAP Project – Biological Assessment. February 8, 2017, Alaska Gasline Development Corporation, Anchorage, Alaska. 151 pp.

Anderson B.A. and S.M. Murphy 1988. Lisburn terrestrial monitoring program 1986 and 1987: The effects of the Lisburn powerline on birds. Final report by ABR Inc. for ARCO Alaska. 60pp.

Anderson, B. and B. Cooper. 1994. Distribution and abundance of spectacled eiders in the Kuparuk and Milne Point oilfields, Alaska, 1993. Unpublished report prepared for ARCO Alaska, Inc., and the Kuparuk River Unit, Anchorage, Alaska by ABR, Inc., Fairbanks, Alaska, and BBN Systems and Technologies Corp., Canoga Park, CA. 71 pp.

Anderson, B. A., A. A. Stickney, T. Obritschkewitsch, J. E. Shook, and P. E. Seiser. 2009. Avian studies in the Kuparuk Oilfield, Alaska, 2008. Data Summary Report for ConocoPhillips Alaska, Inc., and the Kuparuk River Unit, Anchorage, AK, by ABR, Inc., Fairbanks, AK.

Day, R.H., J.R. Rose, A.K. Prichard, R.J. Blaha, and B.A. Cooper. 2004. Environmental Effects on the Fall Migration of Eiders at Barrow, Alaska. Marine Ornithology 32:13–24.

Day, R.H., A.K. Pritchard, and J.R. Rose and A.A. Stickney. 2005. Migration and collision avoidance of eiders and other birds at Northstar Island, Alaska, 2001-2004: Final Report for BP Alaska Inc., Anchorage, Alaska prepared by ABR Inc., Fairbanks, Alaska. 156 pp.

Johnson, R. and W. Richardson. 1982. Waterbird migration near the Yukon and Alaska coast of the Beaufort Sea: II. Molt migration of seaducks in summer. Arctic 35(2): 291-301.

Jorgenson, M.T. 1999. Assessment of tundra damage along the ice road to the Meltwater South exploratory well site. Unpublished report prepared for ARCO Alaska, Inc., Anchorage, AK, by ABR, Inc., Fairbanks, AK. 11pp.

Manville, A.M., II. 2000. The ABCs of avoiding bird collisions at communication towers: the next steps. Proceedings of the Avian Interactions Workshop, December 2, 1999, Charleston, SC. Electric Power Research Institute. 15 pp.

Manville, A.M., II. 2004. Bird Strikes and electrocutions at power lines, communication towers, and wind turbines: State of the art and state of the science – next steps towards mitigation. Proceedings 3rd International Partners in Flight Conference, March 20-24, 2002, Asilomar Conference Grounds, CA. USDA Forest Service General Technical Report PSW-GTR-191. 25 pp.

McKendrick, J.D. 2003. Report on condition of willows at four streams crossed by the 2002 Grizzly ice road. Report prepared for ConocoPhillips, Alaska, Inc., Anchorage, AK by Lazy Mountain Research Company, Inc., Palmer, AK. 13pp.

Pullman, E.R., M.T. Jorgenson, T.C. Cater, W.A. Davis, and J.E. Roth. 2003. Assessment of ecological effects of the 2002–2003 ice road demonstration project. Final report prepared for ConocoPhillips Alaska, Inc., by ABR, Inc., Fairbanks, Alaska. 39pp.

Reed, J.R., J.L. Sincock, and J.P. Hailman. 1985. Light attraction in endangered procellariiform birds: reduction by shielding upward radiation. Auk 102: 377-383.

Ronconi, R.A., K.A. Allard, and P.D.Taylor. 2015. Bird interactions with offshore oil and gas platforms: review of impacts and monitoring techniques. Journal of Environmental Management 147: 34–45.

Russell, R.W. 2005. Interactions between migrating birds and offshore oil and gas platforms in the northern Gulf of Mexico: Final report. U.S. Department of Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS Study MMS 2005-009. 348 pp.

Stehn, R., W. Larned, and R. Platte. 2013. Analysis of aerial survey indices monitoring waterbird populations of the Arctic Coastal Plain, Alaska, 1986-2012. U.S. Fish and Wildlife Service, Anchorage, Alaska. Unpublished Report. 56 pp.

USFWS. 2012. Biological Opinion for the Alaska Stand Alone Gas Pipeline. Consultation with the U.S. Army Corps of Engineers, prepared by U.S. Fish and Wildlife Service, Fairbanks, Alaska. 65 pp.

USFWS. 2015. 2012-2015 ACP aerial breeding pair waterbird survey. Waterfowl Branch, Migratory Bird Management, U.S. Fish and Wildlife Service, Anchorage, Alaska.

USFWS. 2016. Wetland impacts on the North Slope of Alaska: 2016 and 2017. Programmatic Biological Opinion. U.S. Fish and Wildlife Service, Fairbanks, Alaska. 55 pp.

Weir, R. 1976. Annotated bibliography of bird kills at man-made obstacles: A review of the state of the art and solutions. Unpublished report prepared for Department of Fisheries and Environment, Canadian Wildlife Service-Ontario Region. 29 pp.

Yokel, D. and J. VerHoef. 2014. Impacts to, and recovery of, tundra vegetation from winter seismic exploration and ice road construction. Unpublished report. U.S. Department of the Interior, Bureau of Land Management. Fairbanks, Alaska. 61 pp.

APPENDIX 1

Reasonable and Prudent Measures, Terms and Conditions, and Conservation Recommendations excerpted from the Service's 2012 Biological Opinion for Biological Opinion for the Alaska Stand Alone Gas Pipeline.

11. REASONABLE AND PRUDENT MEASURES

These reasonable and prudent measures (RPMs) and their implementing terms and conditions (T&Cs) aim to minimize the incidental take anticipated from activities described in this BO.

We have not identified RPMs or terms and conditions for polar bears. However, the Service anticipates that AGDC would obtain and comply with the terms and conditions of a LOA under the Beaufort Sea ITRs, pursuant to the MMPA.

As described in *Section 8 – Incidental Take Statement*, activities conducted by the USACE and their agents are anticipated to lead to incidental take of spectacled eiders through long-term habitat loss and disturbance of nesting females during the life of the project.

RPM 1 – Breeding spectacled eiders may remain on tundra in the action area through late August, but are considered to be most vulnerable to the effects of disturbance through the early brood-rearing stage. Accordingly, off-pad activities and pipeline maintenance within the action area should not be scheduled between June 1 and July 31 to the extent practicable.

12. TERMS AND CONDITIONS

To be exempt from the prohibitions of Section 9 of the Act, MBM Office must comply with the following terms and conditions, which implement the RPMs described above. These terms and conditions are non-discretionary.

T&C 1 – The AGDC has scheduled all construction activities outside of the eider breeding window. Changes to this schedule that affect the timing of proposed activities relative to spectacled eider nesting and brood-rearing periods should be reported to USFWS so that potential effects to eiders can be evaluated.

13. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. We recommend the following actions be implemented:

1. Ravens are known to depredate eider nests near Barrow, AK (Quakenbush et al. 2004, Rojek 2008) and are potentially significant predators of spectacled eider eggs elsewhere on the North Slope, including oil fields. The Service recommends that AGDC remove any nest materials from accessible raven nest locations prior to egg laying, in addition to developing and implementing techniques designed to render their structures unattractive to breeding ravens.

2. While no collisions between spectacled eiders and project structures are anticipated, the Service recommends reporting all sea duck collisions to the Endangered Species Branch, Fairbanks Fish and Wildlife Field Office to improve our understanding of potential collision risks to eiders in the Prudhoe Bay area. Please contact Ted Swem at 907-456-0441.

Appendix C

National Marine Fisheries Service Letter of Concurrence

- Page Intentionally Left Blank -

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

September 5, 2018

Col. Michael Brooks
US Army Corps of Engineers, Alaska District
Regulatory Division
PO Box 6898
JBER, Alaska 99506-0898

Re: Alaska Stand Alone Pipeline Letter of Concurrence, POA-2009-651, NMFS #AKR-2018-9802

Dear Col. Brooks:

The National Marine Fisheries Service (NMFS) has completed informal consultation under section 7(a)(2) of the Endangered Species Act (ESA) regarding the proposed modifications to the West Dock to facilitate module offloading for the construction of a Gas Conditioning Facility (GCF) located in Prudhoe Bay, Alaska (Figure 2). The United States Army Corps of Engineers (USACE) requested written concurrence that the proposed action may affect, but is not likely to adversely affect, bowhead whales (*Balaena mysticetus*), Beringia DPS bearded seals (*Erignathus barbatus nauticus*), or Arctic ringed seals (*Phoca hispida hispida*) in the project area. NMFS also considered effects from vessel activity along the marine transit route to Prudhoe Bay on blue whales (*Balaenoptera musculus*), fin whales (*Balaenoptera physalus*), Western North Pacific gray whales (*Eschrichtius robustus*), Western North Pacific DPS and Mexico DPS humpback whales (*Megatera novaeangliae*), North Pacific right whales (*Eubalaena japonica*), sperm whales (*Physeter microcephalus*), and Western DPS Steller sea lions (*Eumetopias jubatus*), as well as designated Steller sea lion and North Pacific right whale critical habitat. Based on our analysis of the information you provided to us, and additional literature cited below, NMFS concurs with your determination regarding the species in the immediate project area and agrees that the vessel activity in the marine transit route may affect, but is not likely to adversely affect, the listed species and critical habitat in the remainder of the action area.

This letter underwent pre-dissemination review in compliance with applicable Data Quality Act guidelines. A complete administrative record of this consultation is on file in this office.

Consultation History

In 2011, the USACE provided a Biological Assessment in conjunction with the Alaska Stand-Alone Pipeline (ASAP) Environmental Impact Statement (EIS) to NMFS (AGDC 2011). NMFS provided a Letter of Concurrence (LOC), dated January 11, 2012, concurring with the USACE's determination of 'may affect, not likely to adversely affect' listed species. On September 6, 2017, the USACE reinitiated consultation due to modification to the original project. NMFS requested additional information on the project description, schedule, and determinations via email on September 18, 2017. USACE responded to the request for information via email and

with a revised Biological Assessment on November 6, 2017. On November 21, 2017, NMFS requested additional information on the project description including the marine transit route, the action area, and proposed mitigation measures. On January 25, 2018, USACE met with NMFS and the Alaska Gasline Development Corporation (AGDC) to discuss exclusion zones, effects of noise associated with project activity, clarifications of the project description, and proposed mitigation measures. On March 23, 2018 and then again on June 29, 2018, NMFS received revised Biological Assessments for this project. From April 2, 2018 until August 22, 2018, there were ongoing discussions regarding the action area, species list, determinations, and proposed mitigation measures. Consultation for this project was initiated on August 22, 2018.

Description of the Proposed Action

AGDC submitted a revised Joint Application for Permit (JafP) for the ASAP Project (AGDC 2015) to provide gas for Alaskans. It proposed the construction and operation of (i) a GCF on the North Slope capable of conditioning 500 million standard cubic feet per day of natural gas, (ii) a 733-mile, 36-inch-diameter buried natural gas pipeline extending from Prudhoe Bay on the North Slope of Alaska to a tie-in with the ENSTAR system in south central Alaska at milepost (MP) 39 of the existing Beluga Pipeline near Big Lake, (iii) a 30-mile, 12-inch-diameter lateral pipeline from MP 440 of the Mainline to Fairbanks, and (iv) associated off-ROW facilities (Figure 1).

Since the publication of the FEIS, there have been revisions to the ASAP Project design that have necessitated an SEIS to evaluate additional environmental impacts and reinitiation of the ESA Section 7 consultation. Project revisions that require the reinitiation of the ESA Section 7 consultation are concentrated in the northern portion of the project area at Prudhoe Bay and on the North Slope.

Construction activities at the northern end of the ASAP project area that are new and require Section 7 consultation include delivery of GCF modules and construction materials to West Dock at Prudhoe Bay (Figure 2, Figure 3; AGDC 2015, AGDC 2016). These activities were not evaluated in the ASAP FEIS (USACE 2012). The construction of the GCF would require a single-year sealift involving 23 barges that would transport 53 pre-fabricated modules to Prudhoe Bay. Improvements to West Dock would be required to facilitate module offloading, including winter dredging of a navigational channel leading up to Dock Head 3 (DH3; Figure 3, Figure 4), disposal of dredged material over bottomfast ice in a nearshore area of Prudhoe Bay (Figure 3), construction of a temporary bridge using ballasted barges and bulkheads (Figure 5), other infrastructure modifications to the dock and causeway, and barging materials to Prudhoe Bay. Barges would be ballasted by filling internal barge compartments with seawater using portable pumps and hoses inserted into utility holes on the barge decks. Barges would be un-ballasted by pumping the water out of the barge.

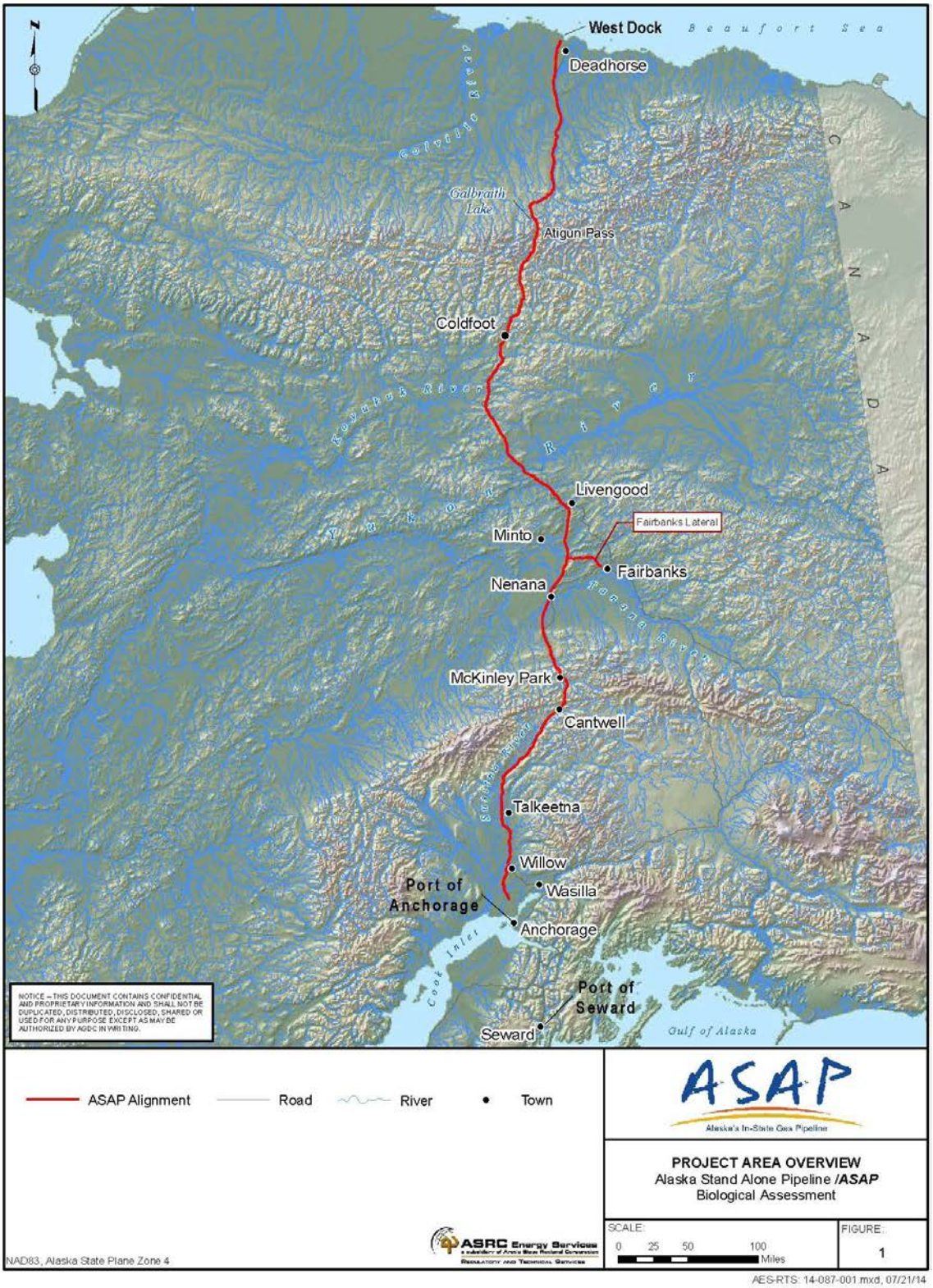


Figure 1. ASAP Project Alignment

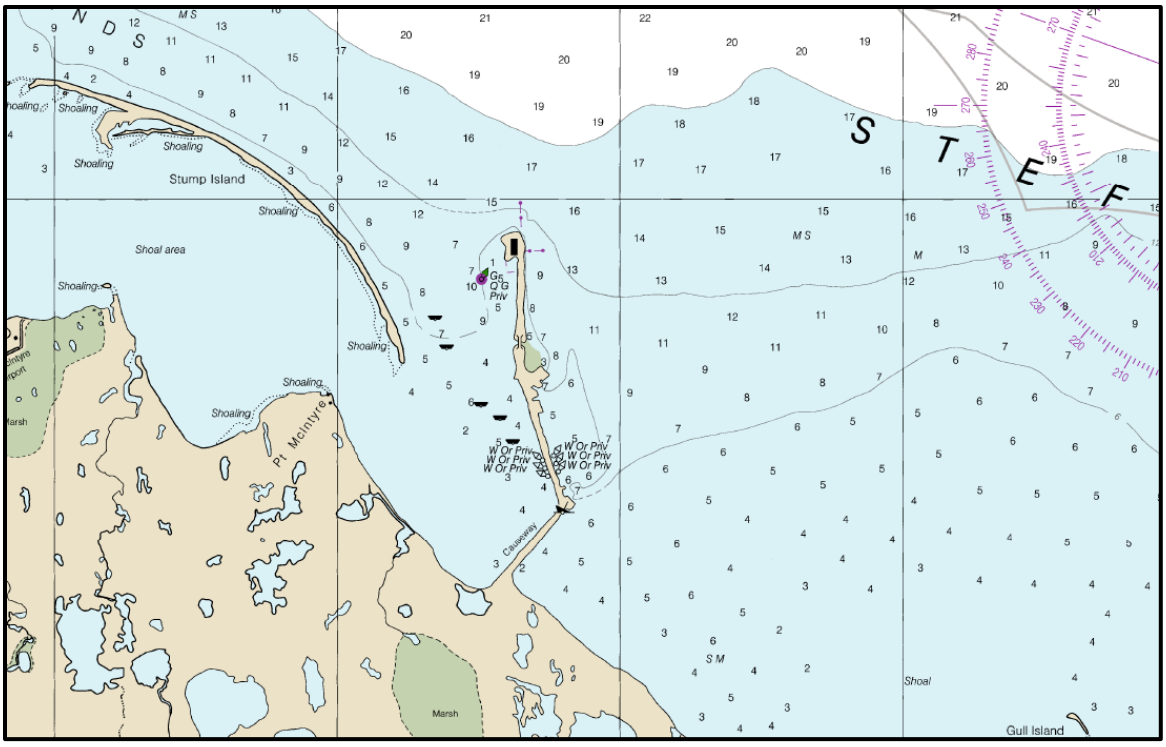


Figure 2. Dock Head 3 (DH3) at West Dock, Prudhoe Bay, Alaska

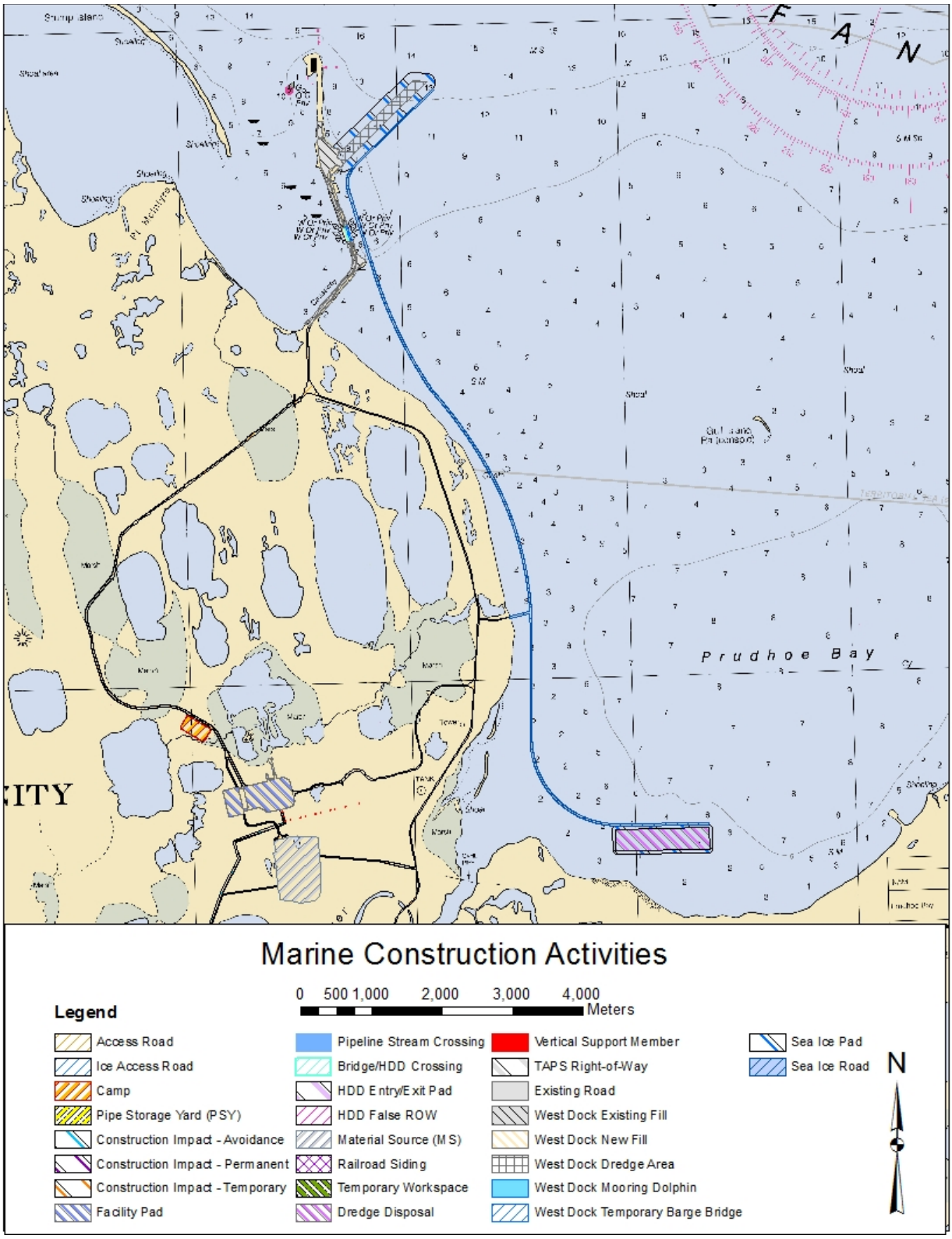


Figure 3. Construction Activities in Marine Waters

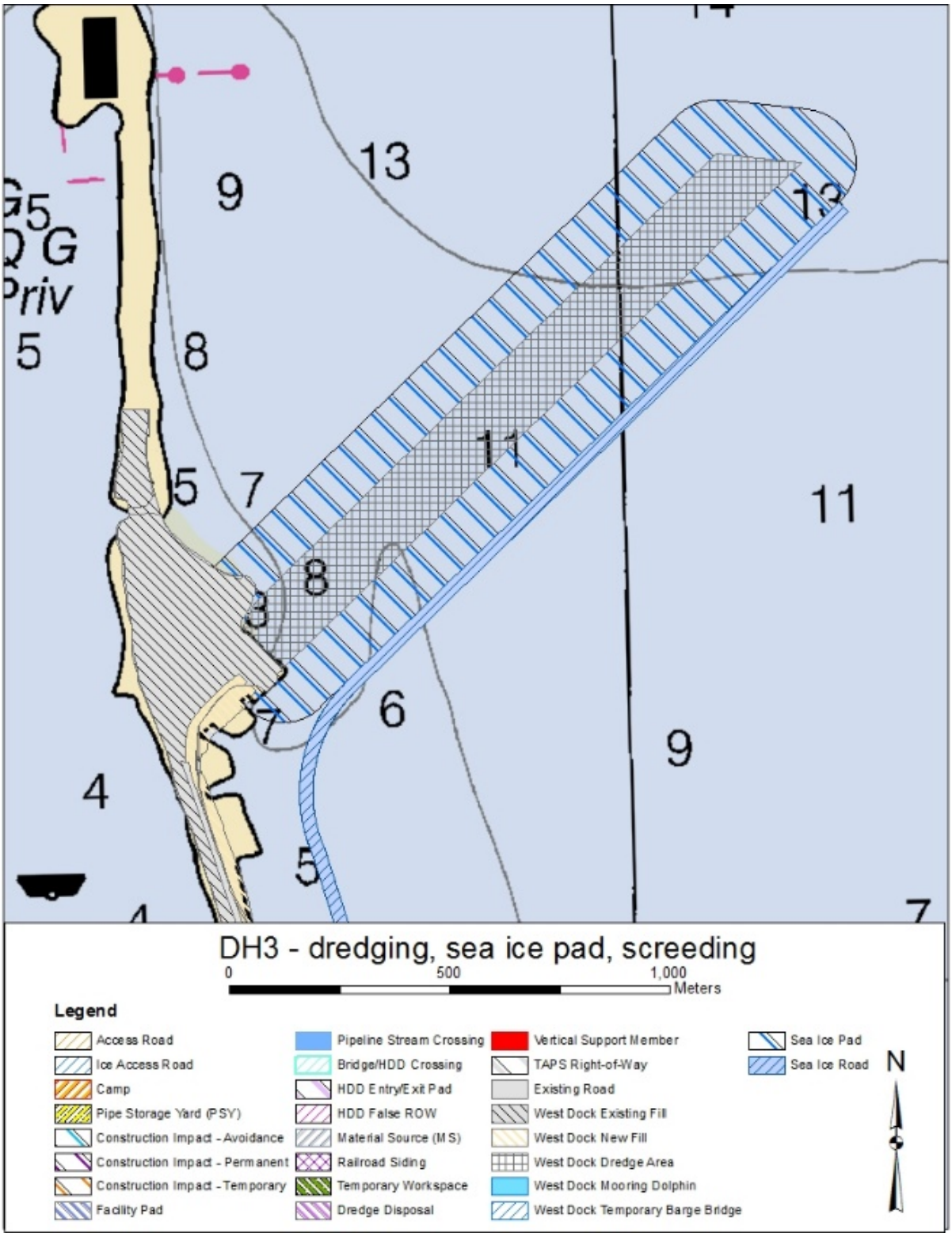


Figure 4. Detail of Dredging the Navigation Channel

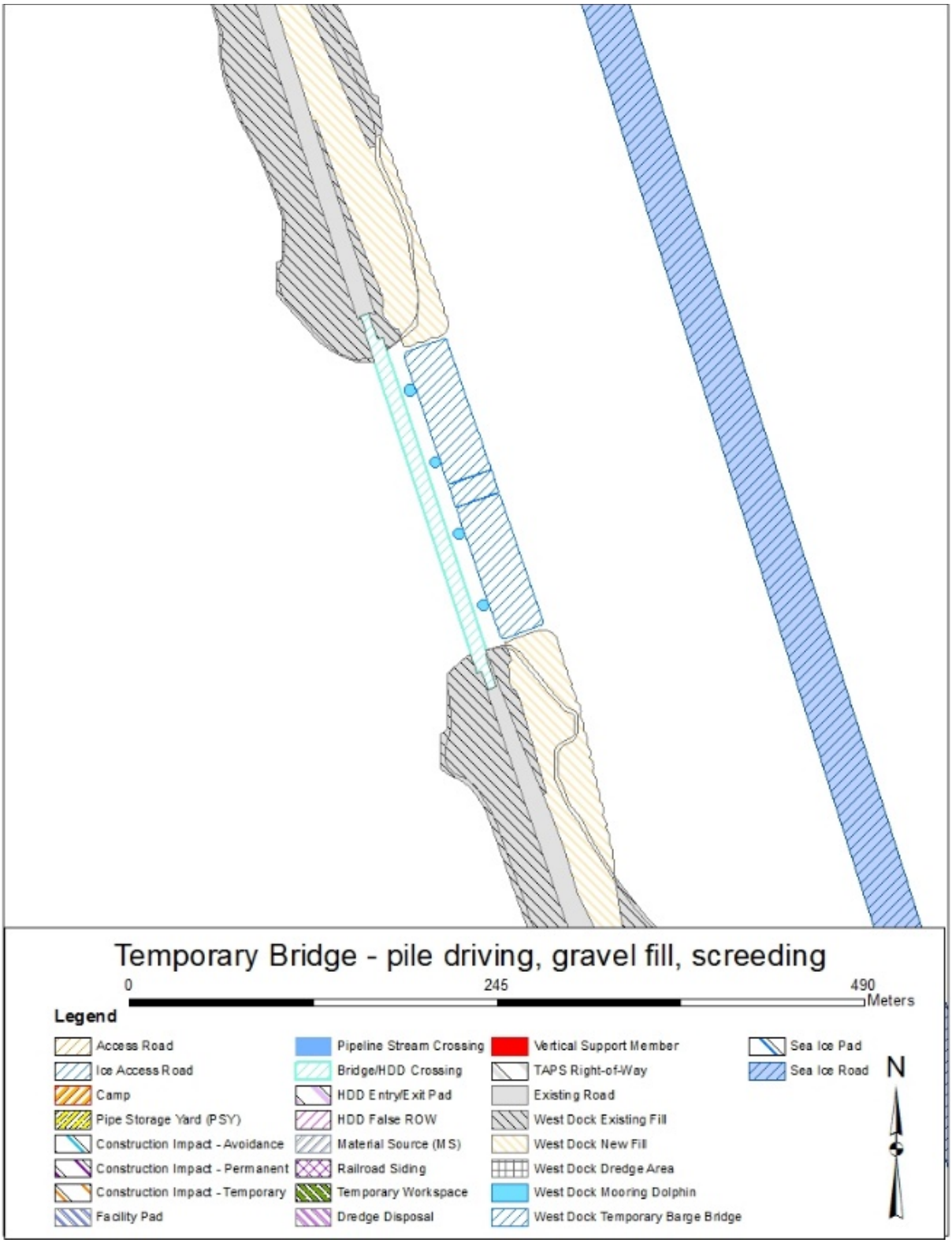


Figure 5. Detail of Temporary Bridge

West Dock Modifications

Modifications of the existing West Dock facilities would be necessary to facilitate offloading and transport of modules off the causeway within a short ice-free work window. The modification of West Dock infrastructure would involve impact pile driving of mooring dolphins (48-inch pipe), vibratory pile driving of sheet piles, widening of the West Dock causeway, and use of a temporary barge bridge to span the 650 feet (ft) gap paralleling the existing weight-limited bridge currently spanning the causeway (Figure 5). Collectively, all West Dock modifications would occur over a period of less than two years.

The water depth around West Dock is dependent on wind conditions. It is less than 15 ft (4.5 m) near the end of the causeway at the Seawater Treatment Plant (STP) and approximately 7 ft (2.1 m) near DH3 (NOAA 2016). Any work in winter would be in or around shallow water covered by several feet of bottomfast or shorefast sea ice.

Dredging and Disposal of Dredged Material

Dredging of a navigational channel (Figure 4) leading up to DH3 to 9 ft below Mean Lower Low Water (MLLW) is necessary for barge offloading to occur at West Dock DH3 (AGDC 2015, AGDC 2016). West Dock's Operator, British Petroleum Exploration (Alaska), Inc. (BPXA) was previously authorized to dredge this channel (AGDC 2015, AGDC 2016).

Up to 250,000 cubic yards (cu yd) of material would be dredged through the ice in winter and trucked over ice roads to a 100 acre disposal area in southwestern Prudhoe Bay where it would be disposed of in the nearshore environment over bottomfast ice, landward of the Territorial Sea boundary (Figure 3). ASAP proposes to dredge the navigational channel to 9 ft below MLLW to accommodate the maximum barge draft of 7.6 ft and allow an additional 1-2 ft of clearance space. Dredging would occur in March and April. Over-dredging would mitigate against trench infilling during spring break-up and would eliminate any need for summer dredging.

Winter was selected over summer for dredging to avoid negatively impacting whales and fish and to promote project safety. Conventional winter excavation, using extended reach excavators, is the preferred method of dredging and has been used during the construction of several North Slope pipelines. Three tracked excavators would be used over one winter construction season to provide enough time for ice cutting, winter storms, dredge disposal at the approved location, and other unforeseen delays.

After the ice roads and pads are constructed, a ditchwitch would be used to cut the ice in the dredge area and the ice would be removed with tracked excavators. The excavators would then excavate the 500 ft-wide channel to approximately -9 ft and place the dredged material into trucks. Concurrent with the excavation, trucks would transport the dredge spoils to the designated disposal site.

Winter disposal would coincide with winter dredging activity.

The preferred disposal location for dredge material from the West Dock navigation channel is landward of the Territorial Sea boundary in the nearshore environment over bottomfast ice within Prudhoe Bay (Figure 3; AGDC 2015). Table 1 shows the estimated duration of ice cutting in the dredge area, Table 2 shows the estimated duration of equipment operation for dredge and disposal, and Table 3 shows the estimated trucking effort for dredge disposal.

Table 1. Estimated Duration of Ice Cutting in Dredge Area

Linear Ft. of Ice per Day	Total Number of Ditchwitches per Day	Total Hrs per Ditchwitch per Day	Total Ditchwitch Hours per day	Estimated Days of Operation	Total Ditchwitch Hours
18,000	3	16.67	50	39	1,950

Table 2. Estimated Duration of Equipment Operation for Dredge Disposal

Description	Qty	Days	Hours	Total Hrs	Operation
CAT 345 amphibious	2	39	936	1,872	Excavating & Loading Trucks
CAT 730 Articulated Trucks	32	39	936	29,952	Hauling to Disposal
CAT 320 or equivalent	1	39	936	936	Cleaning Truck Beds
D-8 Dozer	1	39	936	936	Clean up at Disposal Site
Ditchwitch	4	39	936	3,744	Cutting Ice
CAT 320 Long Stick	2	39	936	1,872	Removing Ice
966 Loader	1	39	936	936	Pushing Ice from Work Area
CAT 16 Grader	2	39	936	1,872	Ice Road Maintenance
966 with Snow Blower	1	39	936	936	Ice Road Maintenance
Water Truck	2	39	936	1,872	Ice Road Maintenance

Table 3. Estimated Trucking Effort for Dredge Disposal

Loads per Hour per Truck	Hours per Day	Loads per Truck per Day	Total Days	Total Trucks Running per Day	Total Number of Round Trips
1.2	20.0	23.5	25.0	32.0	18,779

Ice Roads and Ice Pads

Ice would be thickened to support excavators by drilling though the ice and pumping seawater onto the ice surface. Construction of the ice pads and roads would begin prior to March 1. A 108 acre ice pad (400 feet wide x 11,680 feet long) would be created around the dredge area, 104 acres of ice roads (8.61 miles long x 60 feet wide) would be created between the dredge and the disposal area, and 38.5 acres of transportation corridor would be created around the dredge disposal area (11,183 feet long x 150 feet wide).

There would also be thickening of the ice at the barge bridge to provide a safe platform from which to work. The footprint of this ice pad would be 1.5 acres and match the footprint of the temporary bridge, which will be constructed almost entirely within groundfast ice. Ice thickening would begin in January and continue into February. No new areas would be thickened by pumping seawater to the surface after March 1.

Impact Pile Driving

Impact pile driving would be required at West Dock to install four mooring dolphins, probably during the ice-free season (summer). The four mooring dolphins would protect the current bridge from the barges and hold the ballasted barges in place (Figure 5). The mooring dolphins are 4-ft-diameter, 110-ft-long piles that would be driven a minimum of 65 ft (19.8 m) into the seabed. At the end of construction, piles would be cutoff below the sediment surface and removed.

Impact pile driving is scheduled for five days during the first half of August. The contingency time period for dolphin installation is March thru April, working off of ice the following year, if the originally scheduled summer time period becomes infeasible due to unexpected logistical or other constraints (Table 5). Assuming a 20-hour work day, pile driving would average 25% of a 20-hour period, or approximately 5 hours per day. Although the specific model of hammer is not yet known, an average strike per minute rate is 26, resulting in approximately 1,560 strikes per hour.

Vibratory Sheetpile Driving

The sheet piles required to build out the new bulkhead interfacing the temporary bridge with the causeway would be installed using a vibratory hammer (Figure 5). It has not yet been determined what specific hammer would be used for this project. Vibratory work would be scheduled from early June through August 24; however, if work is not completed during this time due to logistical or other constraints, vibratory hammering would be completed during the contingency period(s) of September 16 – October 31 of year 1 and / or May 1 thru June 30 of year two (Table 5). No pile driving would occur during the Nuiqsut whaling period of August 25 - September 15.

Vibratory hammering would occur over a period of approximately 60 days, assuming crews work consecutive 12-hour shifts each day with hammering occurring 40% of the time. This would result in approximately 576 hours of vibratory operation during the 60 day period. A summary of sheet piles to be installed is provided in Table 4.

The proposed bulkhead face would be constructed from a series of Arcs that are tied together with Wye piling and further supported by Tail Walls. The Endwalls are sheet pile Arcs at the end of each individual Wall (2 each for the North Wall and 2 each for the South Wall). The Endwalls and Sheetpile Arcs are both generally on the seaward face of the bulkheads. The Tailwalls form the tie-backs that provide additional support for the seaward sheet piling and are connected to the Arcs at the Wye piling. The Tailwalls would typically be driven into fill and would be landward of the bulkhead face. It is usual industry practice to install the face piling and Tailwall piling at the same time; however, the Tailwall piling would generally be installed into fill and would not be driven in the water. The fill material, more so than the face piling, would attenuate the propagation of the sound of the Tailwall sheet pile driving.

The existing bulkhead would interfere with the installation of the Tailwalls and tying in the new bulkhead to the old bulkhead, so removal of 60 feet of existing sheetpile would be necessary. This work would be performed concurrently with the installation of the new bulkhead and would be limited to removing only those piles that are in conflict with the new bulkhead and Tailwalls. The anticipated gap would be 5 ft at each point of interference, and the sloughing of the existing fill should be minimal since the majority of the fill behind the existing bulkhead would be frozen. Work would occur in late April in Prudhoe Bay. Preliminary designs indicate that there are up to 6 points of interference between the existing bulkhead and the proposed new bulkhead and Tailwalls. Assuming that the existing sheet pilings are not damaged, it should take less than 1 hour per point of interference to extract the piling, for a total of 6 hours of hammer operation.

Table 4. Location, Type, Quantity, Length of Sheetpile to be Installed.

Description	Total Quantity	Linear Ft of Installation (Horizontal Ft)
South Barge Bridge Abutment		
Sheetpile Arc - PS27.5 Type x 55' Long x 21 each	21	34
Sheetpile Arc - PS27.5 Type x 55' Long x 19 each	266	436
Sheetpile - PS27.5 Type x 55' Long Tailwall x 8 each	144	236
Sheetpile - PS27.5 Type x 45' Long Tailwall x 13 each	234	384
Sheetpile - PS27.5 Type x 40' Long Tailwall x 8 each	144	236
Sheetpile Arc Endwall - PS27.5 Type x 55' Long - End Wall 15	93	153
Sheetpile Arc Endwall - PS27.5 Type x 55' Long - End Wall 3	49	80
Anchor Pile HP 14 x 89 x 40' Long	18	21
1/2 Section Sheetpile at Anchor Pile x 40' Long	18	15
North Barge Bridge Abutment		
Sheetpile Arc - PS27.5 Type x 55' Long x 19 each	247	405
Sheetpile - PS27.5 Type x 55' Long Tailwall x 8 each	120	197
Sheetpile - PS27.5 Type x 45' Long Tailwall x 13 each	195	320
Sheetpile - PS27.5 Type x 40' Long Tailwall x 8 each	120	197
Sheetpile Arc Endwall - PS27.5 Type x 55' Long - End Wall 15	93	153
Sheetpile Arc Endwall - PS27.5 Type x 55' Long - End Wall 3	49	80
Anchor Pile HP 14 x 89 x 40' Long	13	15
1/2 Section Sheetpile at Anchor Pile x 40' Long	13	11
TOTALS (Installed)	1,837	2,973 ft.

Screeding and Gravel Placement

Screeding consists of a shallow-draft vessel slowly towing a beam across the ocean floor to level the area. Screeding would occur in the dredge area and at the 1.5 acre area of the temporary barge bridge. The temporary barge bridge area would be screeded twice, first in winter when the area is cut or ground free of ice and before the gravel fill is placed, and second, just prior to

placing the barges in summer. The areas would be leveled and any high spots would be smoothed to create an area for the barges to be safely ballasted. Screeding at DH3 would take 7 days or less. Screeding at the barge bridge would take 14 days or less for each instance.

Up to 25,000 cubic yards of gravel would be placed in up to 1.5 acres of tidal waters, matching the footprint of the barge bridge, to create a level pad for the barge bridge. This would occur in the spring, using equipment working from an ice pad. The gravel would be imported from a North Slope material source, such as Put-23.

Barge Bridge

The first two barges to offload modules would be used to span the 650-ft causeway breach. These barges would be used to form the temporary bridge, paralleling the existing weight-limited bridge spanning the breach. The barge bridge would be able to withstand the weight of modules being transported to the GCF construction location.

One at a time, barges would be positioned in the proper place using shallow-draft tugs. The first barge would be positioned flush against two of the mooring dolphins and secured to those dolphins. Barges would take on seawater into ballasting tanks within the hull and would come to rest on the gravel at the seafloor. The second barge would then move into place and follow the same procedures. The barges, already secured to dolphins, would be secured to each other and to the bulkheads with reinforced ramps and tie-offs. Once offload of all modules is completed, ramps would be removed and de-ballasting would occur by pumping water out of ballast tanks. Barges would again float, would be detached from mooring dolphins and would be towed away.

The two ballasted barges would be placed bow-to-bow when resting on the seafloor. The barge rakes would angle upward and touch at their adjoining point, leaving a 52.5 ft gap at the sea-floor between the barges. The stern of each barge would angle sharply upward at each end of the bridge, leaving an additional 10 ft gap at the seafloor at each end. The height of the deck would be at 14 ft elevation when ballasted to the sea floor. The barges would have a 20 ft side shell, and when ballasted to -6 ft, the deck would be at 14 ft above MLLW. When empty, barges are assumed to draw 2 ft depth of water.

Construction of the temporary barge bridge is expected to take 3 days. The temporary bridge would be in place for as little as 21 days and as many as 39 days, depending on weather conditions and logistics.

Vessel Transit

Barges carrying materials for the GCF will travel through the Bering, Chukchi, and Beaufort seas to the barge marshalling area in Prudhoe Bay. The marine transit route would follow established shipping lanes.

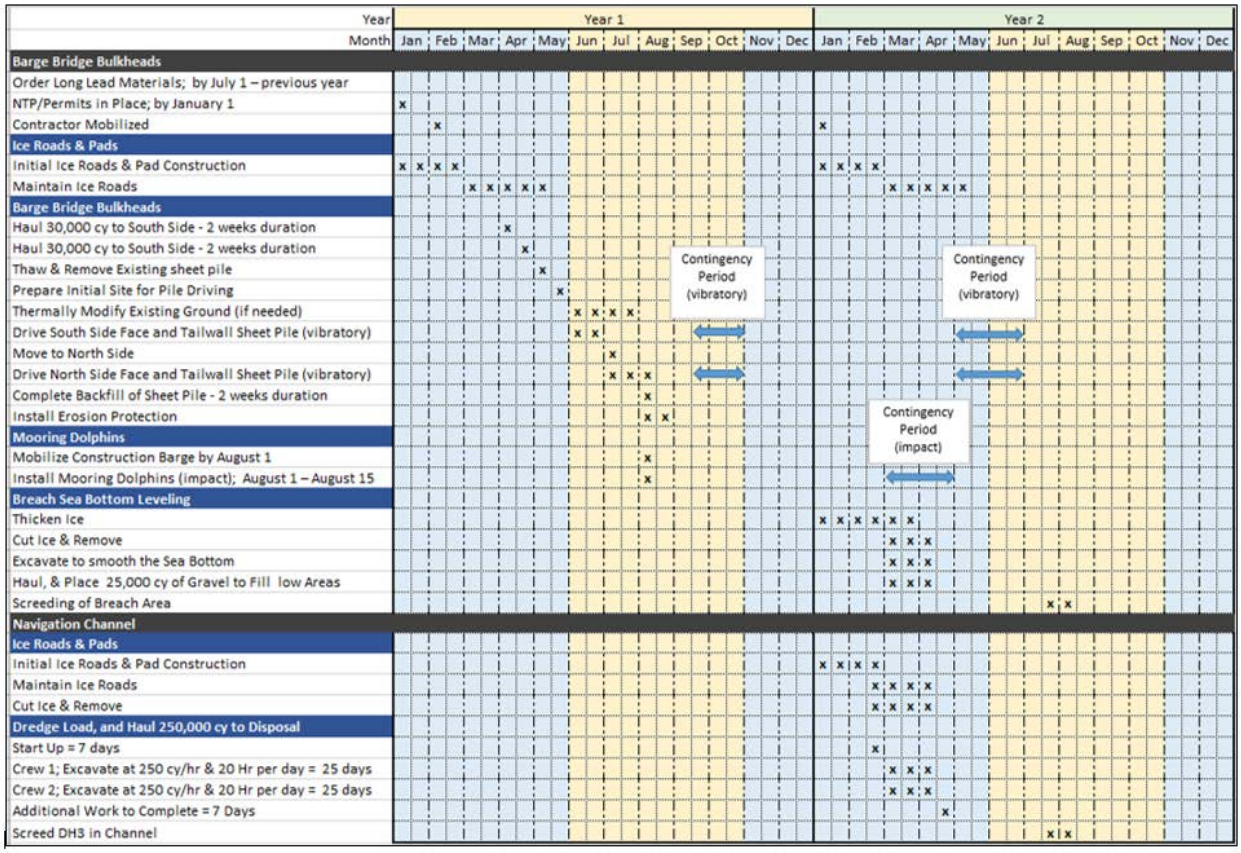
There would be vessel transit and noise in the action area, from the marshalling area to West Dock. The 23 barges would stage at the marshalling yard, and three barges at a time would rotate in to offload at DH3. The barge marshalling area is located 3 to 5 miles (4.8 to 8 km) offshore of West Dock (Figure 2). Offloading is scheduled to occur between August 1 and September 15. In

order to offload, the barges would be ballasted so that they settle on the substrate to create a stable platform for offloading. Once unloaded, the barges would travel back to Dutch Harbor using established shipping lanes.

Timing

A schedule of West Dock construction activities is shown, below, in Table 5. Collectively, all West Dock modifications would occur over a period of less than two years. The activities described include equipment mobilization, ice road and pad construction and maintenance, bulkhead construction (pile driving, back filling, erosion protection, etc.), mooring dolphin installation, ice cutting, gravel placement and smoothing, dredging, hauling, and disposal of dredge material.

Table 5. Schedule of West Dock Construction Activities



Action Area
The action area is defined in the ESA regulations (50 CFR 402.02) as the area within which all direct and indirect effects of the project will occur. The action area is distinct from and larger than the project footprint because some elements of the project may affect listed species some distance from the project footprint. The action area, therefore, extends out to a point where no measurable effects from the project are expected to occur.

Since 1997 NMFS has used generic sound exposure thresholds to determine whether an activity produces underwater sounds that might result in impacts to marine mammals (70 FR 1871). NMFS recently developed comprehensive guidance on sound levels likely to cause injury to marine mammals through onset of permanent and temporary threshold shifts (PTS and TTS; Level A harassment) (81 FR 51693). NMFS is in the process of developing guidance for behavioral disruption (Level B harassment). However, until such guidance is available, NMFS uses the following conservative thresholds of underwater sound pressure levels[1], expressed in root mean square[2] (rms), from broadband sounds that cause behavioral disturbance, and referred to as Level B harassment under section 3(18)(A)(ii) of the Marine Mammal Protection Act (MMPA):

- impulsive sound: 160 dB re 1 μPa_{rms}
- continuous sound: 120 dB re 1μPa_{rms}

Under the PTS/TTS Technical Guidance, NMFS uses the following thresholds for underwater sounds that cause injury, referred to as Level A harassment under section 3(18)(A)(i) of the MMPA (NMFS 2016b). These acoustic thresholds are presented using dual metrics of cumulative sound exposure level (L_E) and peak sound level (L_{pk}) for impulsive sounds and L_E for non-impulsive sounds:

Hearing Group	**PTS Onset Acoustic Thresholds* (Received Level)**	
	Impulsive	**Non-impulsive**
Low-Frequency (LF) Cetaceans	$L_{pk,flat}$: 219 dB $L_{E,LF,24h}$: 183 dB	$L_{E,LF,24h}$: 199 dB
Mid-Frequency (MF) Cetaceans	$L_{pk,flat}$: 230 dB $L_{E,MF,24h}$: 185 dB	$L_{E,MF,24h}$: 198 dB
High-Frequency (HF) Cetaceans	$L_{pk,flat}$: 202 dB $L_{E,HF,24h}$: 155 dB	$L_{E,HF,24h}$: 173 dB
Phocid Pinnipeds (PW) (Underwater)	$L_{pk,flat}$: 218 dB $L_{E,PW,24h}$: 185 dB	$L_{E,PW,24h}$: 201 dB

[1] Sound pressure is the sound force per unit micropascals (μPa), where 1 pascal (Pa) is the pressure resulting from a force of one newton exerted over an area of one square meter. Sound pressure level is expressed as the ratio of a measured sound pressure and a reference level. The commonly used reference pressure level in acoustics is 1 μPa, and the units for underwater sound pressure levels are decibels (dB) re 1 μPa.
[2] Root mean square (rms) is the square root of the arithmetic average of the squared instantaneous pressure values.

Hearing Group	PTS Onset Acoustic Thresholds* (Received Level)	
	Impulsive	Non-impulsive
Otariid Pinnipeds (OW) (Underwater)	$L_{pk,flat}$: 232 dB $L_{E,OW,24h}$: 203 dB	$L_{E,OW,24h}$: 219 dB

* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.
Note: Peak sound pressure (L_{pk}) has a reference value of 1 µPa, and cumulative sound exposure level (L_E) has a reference value of $1\mu Pa^2s$. The subscript "flat" is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (i.e., varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.

The action area for ASAP is defined as the applicant's project area (Figure 6) plus the marine transit route with a sound buffer. The action area includes the following:

1. The footprint of the pipeline and ancillary features, and the footprint of the GCF, including the footprint of all discharges of dredged or fill material in waters of the U.S. (Figure 6).
2. In Prudhoe Bay, the action area includes areas that would be directly and indirectly affected by noise and construction activities (Figure 6). The action area includes 185 square miles surrounding the West Dock Causeway, the navigational channel, the temporary barge bridge, a barge marshalling area, and the dredge disposal site summarized in the ASAP West Dock Dredge and Disposal Plan (AGDC 2015, AGDC 2016), as well road improvements and gravel pads to be constructed in support of the transportation and construction of the GCF (Figure 6).
3. The marine transit route from Dutch Harbor to Prudhoe Bay with a 225 m buffer along the route of travel that includes waters exposed to sounds greater than 120 dB re 1 μPa_{rms}.

NMFS defines the action area for this project as the area within which project-related noise levels are ≥120 dB re $1\mu Pa_{rms}$ (i.e., the point where no measurable effect from the project would occur). The marine transit route includes waters within the Bering, Chukchi, and Beaufort seas through which vessels will transit between Dutch Harbor and Prudhoe Bay. For the marine transit route, the source level of approximately 167 dB at 1 meter (m) is associated with oceanic tug boat noise and is anticipated to decline to 120 dB re 1µPa rms within 225 m of the source, assuming a spherical spreading loss coefficient of 20 (Austin et al. 2013). Therefore, the action area for the marine transit route extends 225 m around the vessel as it transits.

However, if AGDC in coordination with NMFS chooses to perform a sound source verification study to determine the actual area that would be ensonified to at least 120 dB re $1\mu Pa_{rms}$, the size of the action area (and thus the area within which effects to listed species are expected) may be altered to reflect those site-specific measurements.

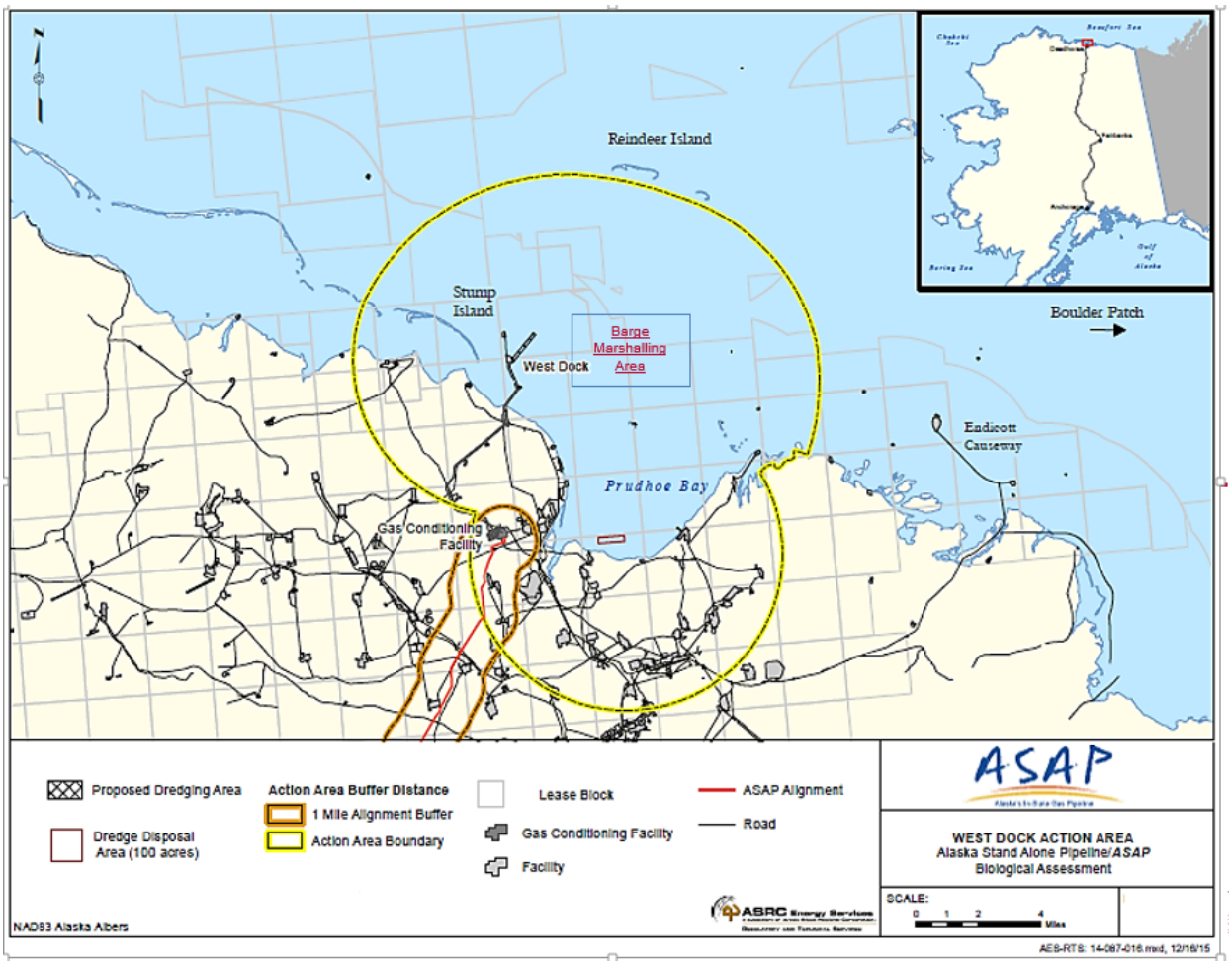


Figure 6. The action area for ASAP in Prudhoe Bay, Alaska.

Mitigation Measures

The USACE informed NMFS via email on August 22, 2018, that the project would incorporate mitigation measures to avoid impacts to bowhead whales, Beringia 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 habitat for Steller sea lions and North Pacific right whales. AGDC will implement the mitigation measures outlined in Enclosure 1.

Listed Species and Critical Habitat

ESA listed species may occur in the action area of the ASAP project. Endangered bowhead whales, threatened Beringia DPS bearded seals, and threatened Arctic ringed seals may occur in or adjacent to the project area. Endangered blue whales, endangered fin whales, endangered Western North Pacific gray whales, endangered Western North Pacific DPS humpback whales, threatened Mexico DPS humpback whales, North Pacific right whales, endangered sperm whales, and endangered Western DPS Steller sea lions may occur in or adjacent to the marine

transit route. Critical habitat has been designated for North Pacific right whales (Figure 11) and the Steller sea lion (Figure 12), but has not been designated for the other listed species. The action area along the marine transit route may cross through North Pacific right whale critical habitat and the Bogoslof foraging area of Steller sea lion critical habitat. The nearest major rookeries or haul-outs to the marine transit route portion of the action area are on Akutan Island, Old Man Rocks, and Cape Sedanka.

Bowhead Whale

The bowhead whale was listed as endangered under the Endangered Species Conservation Act (ESCA) on December 2, 1970 (35 FR 18319), and continued to be listed as endangered following passage of the ESA. Bowhead whales in Alaskan waters comprise the Western Arctic stock. Western Arctic bowhead whales are distributed in seasonally ice-covered waters of the Arctic and near-Arctic, generally north of 60°N and south of 75°N. Critical habitat has not been designated for the bowhead whale.

Information on bowhead whale biology and habitat is available at:
https://www.fisheries.noaa.gov/species/bowhead-whale
https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock

Western Arctic bowhead whales are distributed in seasonally ice-covered waters of the Arctic and near-Arctic, generally north of 60°N and south of 75°N in the western Arctic Basin (Braham 1984, Moore and Reeves 1993). During winter and spring, bowhead whales are closely associated with pack ice or in polynyas (large, semi-stable open areas of water within the ice), and move north as the sea ice breaks up and recedes during the spring. During summer, most of the population is in relatively ice-free waters in the southeastern Beaufort Sea; however, some whales move back and forth between the Alaskan and Canadian Beaufort Sea during the summer feeding season (Quakenbush et al. 2010).

The majority of the Western Arctic stock migrates annually from wintering areas (December to March) in the northern Bering Sea, through the Chukchi Sea in the spring (April through May), to the eastern Beaufort Sea where they spend much of the summer feeding (June through early to mid-October) before returning again to the Bering Sea in the fall (September through December) to overwinter (Figure 7) (Muto et al. 2017).

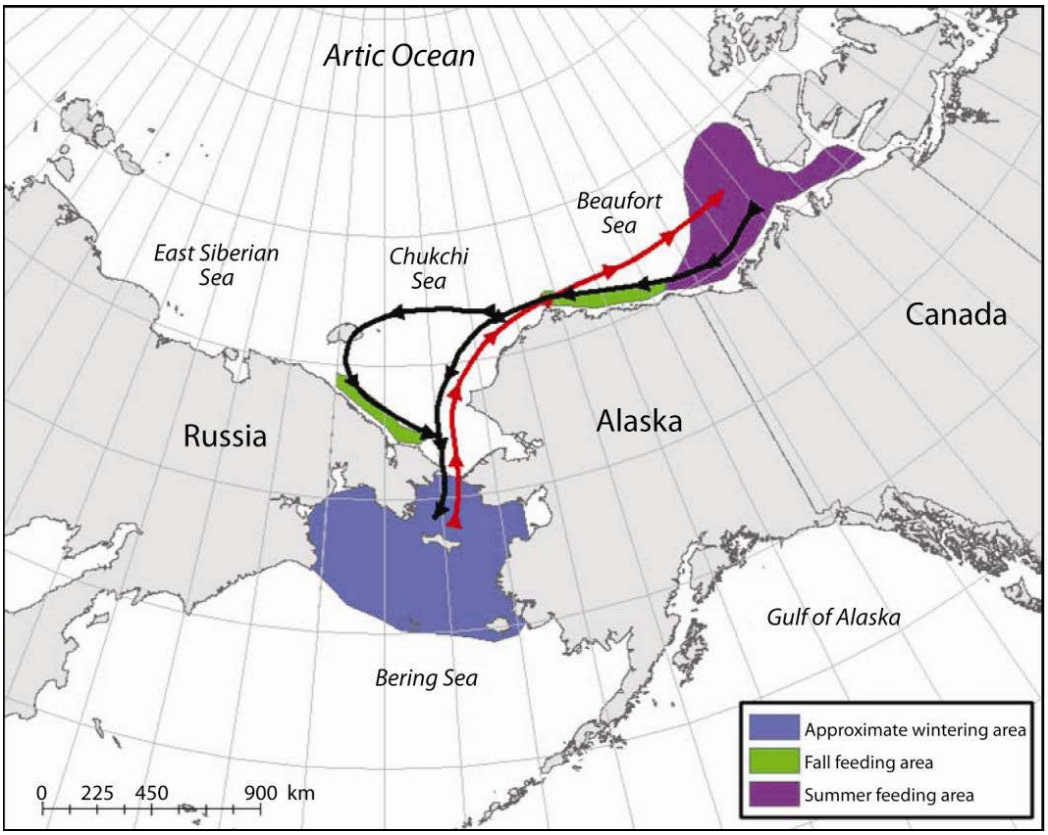


Figure 7. Generalized migration route, feeding areas, and wintering area for Western arctic bowhead whale (Moore and Laidre 2006)

The vast majority of the bowhead population migrates to the Bering Sea during the fall and does not return eastwards through the Beaufort Sea again until the spring. During the eastward (spring) migration, the whales are distributed far offshore. While a few whales may occur in the central Beaufort Sea area throughout the summer, most of the population spends the summer in the eastern Beaufort Sea before passing through again during the latter part of summer and fall as bowheads migrate west to over winter in the Bering Sea. Bowhead whales are most likely to be encountered during the fall migration when bowhead whales travel closer to shore (than during the spring migration) in water ranging from 15 to 200 m deep (50 to 656 ft; Miller et al. 2002, Clarke et al. 2012). The fall migration trajectory varies annually and is influenced by ice presence (Moore and Reeves 1993); during years with less ice the whales tend to migrate closer to shore, along the barrier islands. Bowhead whale sightings during the fall migration are also lower in heavy ice years. Treacy et al. (2006) found that the main migration corridor for bowhead whales during the fall migration was 73.4 km (46 mi) offshore in years of heavy ice conditions, 49.3 km (31 mi) offshore during moderate ice conditions, and 31.2 km (19 mi) off shore during light ice conditions.

The Aerial Surveys of Arctic Marine Mammals (ASAMM) project is a continuation of the Bowhead Whale Aerial Survey Project (BWASP) and Chukchi Offshore Monitoring in Drilling Area (COMIDA) marine mammal aerial survey project. Through these projects, aerial surveys have been conducted in the Alaska Beaufort Sea in late summer and autumn since 1979 (Ljungblad et al. 1986, Ljungblad et al. 1987, Monnett and Treacy 2005, Treacy et al. 2006,

Clarke et al. 2012, 2013a, Clarke et al. 2013b). Figure 8 and Figure 9 display bowhead whale sightings near the ASAP project area. The ASAMM database and annual reports are available from the NMFS Marine Mammal Laboratory (MML) web page: http://www.afsc.noaa.gov/NMML/cetacean/.

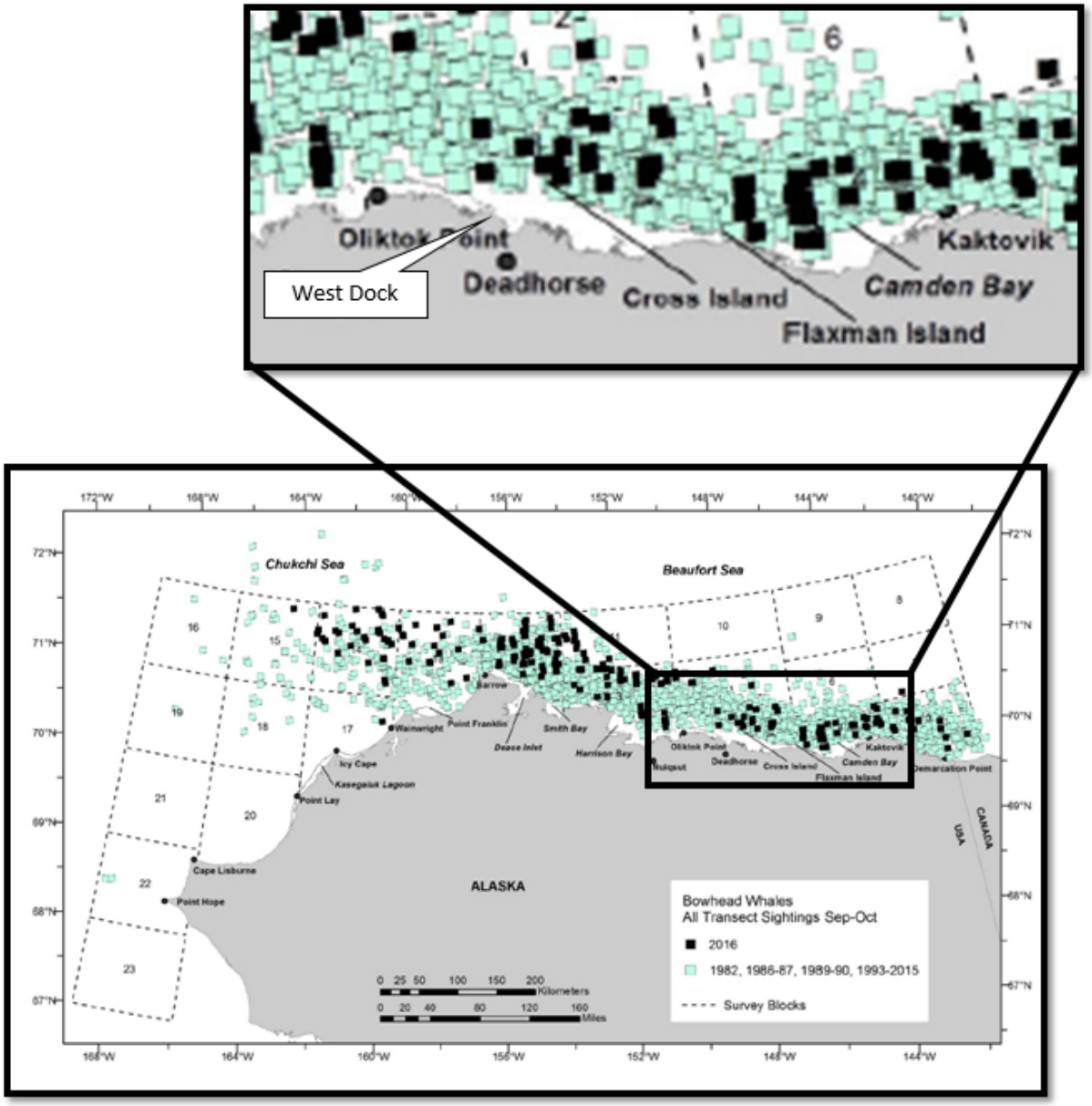


Figure 8. ASAMM bowhead sightings on transect, September-October, in years with light sea ice cover: 182, 1986-1987, 1989-1990, 1993-2015, and 2016

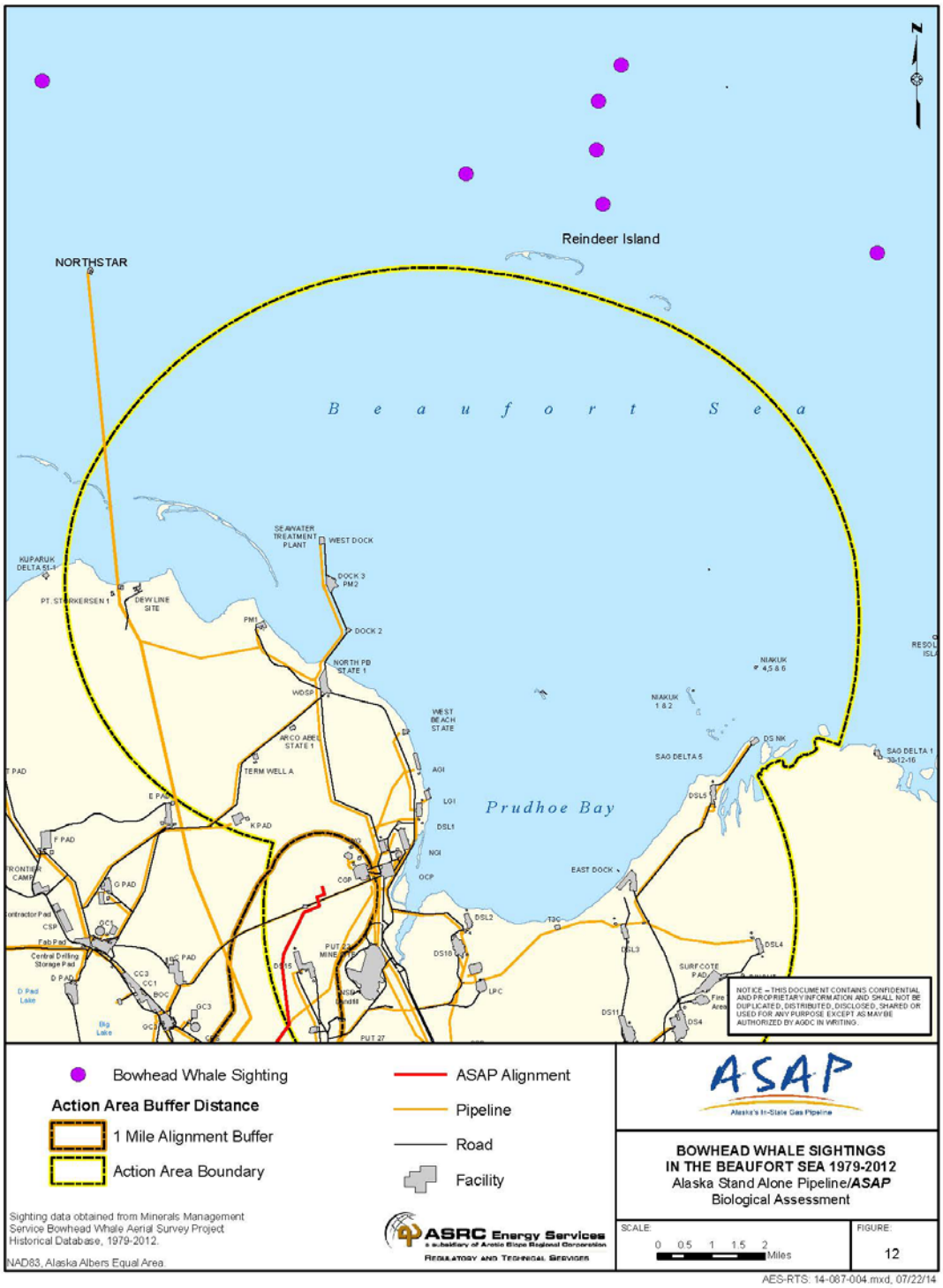


Figure 9. Bowhead whale sighting in the Beaufort Sea 1979-2012 near the action area

NMFS categorizes bowhead whales in the low-frequency cetacean (i.e., baleen whale) functional hearing group, with an estimated hearing range of 7 Hz to 35 kHz (NMFS 2018). Inferring from their vocalizations, bowhead whales should be most sensitive to frequencies between 20 Hz and 5 kHz, with maximum sensitivity between 100 Hz and 500 Hz (Erbe 2002b).

Bearded Seal (Beringia DPS)

Bearded seals are circumpolar throughout the Arctic. They can be found in continental shelf waters of the Bering, Chukchi, and Beaufort seas (Burns 1981). They are closely associated with sea ice, and specifically with pack ice during their breeding, whelping, nursing, molting and resting periods. Seasonal movements and distribution of bearded seals are linked to seasonal changes in ice conditions.

Information on bearded seal biology and habitat is available at:
https://www.fisheries.noaa.gov/species/bearded-seal
https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock

No precise population estimates for the Beringia DPS are available due to lack of surveys in portions of their range and variability among techniques for the surveys that have occurred. In the status review, the population of the DPS was estimated to have 155,000 individuals (Cameron et al. 2010); however, NMFS considers this a crude estimate and the population trend for Beringia DPS bearded seals is unknown.

Bearded seals are generally associated with pack ice, and only rarely use shorefast ice. Bearded seals generally move north in late spring and summer as the ice edge retreats; seals then move south in the fall as sea ice forms and continue to remain associated with sea ice (Burns 1967, Fay 1974, Burns and Frost 1979, Burns 1981, Simpkins et al. 2003, Frost et al. 2008). They winter in the Bering Sea along the ice front, but as the ice recedes in the spring, bearded seals migrate from their winter grounds in the Bering Sea north through the Bering Strait (mid-April to June) to areas along the margin of the multi-year ice in the Chukchi Sea or to nearshore areas of the central and western Beaufort Sea (Allen and Angliss 2015). Some bearded seals may overwinter in the Chukchi and Beaufort seas.

Pupping occurs on the ice from late-March through May, primarily in the Bering and Chukchi seas. Pupping can also occur on moving pack ice in the Beaufort Sea. Bearded seals do not form herds, but can form loose aggregations. As observed during spring surveys along the Alaskan coast, bearded seals prefer areas of 70 to 90 percent sea ice coverage. Studies indicate that bearded seals generally prefer areas of water that are less than about 200 feet deep along the continental shelf (Stirling et al. 1977, Stirling et al. 1982).

During summer, bearded seals are present in both the Chukchi and Beaufort seas, to a lesser extent the Beaufort Sea in high ice coverage areas along the pack ice edge (Burns 1981, Simpkins et al. 2003, Bengtson et al. 2005, Allen and Angliss 2015).

Aerial surveys indicated that bearded seals are commonly found in Beaufort Sea waters offshore; and therefore, could potentially approach the action area at West Dock; however, no sightings have been detected in the Project's action area (Figure 10). Bearded seal vocalizations (produced

by adult males) have been recorded nearly year-round in the Beaufort Sea (MacIntyre et al. 2013, MacIntyre et al. 2015), however, most bearded seals overwinter in the Bering Sea. During the open-water period, the Beaufort Sea likely supports fewer bearded seals than the Chukchi Sea because of the more extensive foraging habitat available to bearded seals in the Chukchi Sea.



Figure 10. Ringed and bearded seal sightings in the Beaufort Sea 1979-2012

Arctic Ringed Seal

Ringed seals are the most abundant marine mammal in the Beaufort, Chukchi, and Bering seas (Frost et al. 1988, Kelly et al. 2010a, Kelly et al. 2010b, Funk et al. 2011). Like bearded seals, ringed seals are circumpolar in distribution, with the Arctic subspecies present year round in the Bering, Chukchi and Beaufort seas off the coast of western and northern Alaska (Kelly et al. 2010b).

Information on bearded seal biology and habitat is available at:
https://www.fisheries.noaa.gov/species/ringed-seal
https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock

There is currently no complete population estimate available for the entire Alaska stock (Muto et al. 2017). Frost and Lowry (1984) estimated 80,000 ringed seals in the Beaufort Sea during summer. In the ringed seal status review (Kelly et al. 2010b), the population of ringed seals in Alaskan waters of the Chukchi and Beaufort seas was estimated to be at least 300,000 individuals, though it is most likely an underestimate of the true population because surveys in the Beaufort Sea were limited to within 40 km of the shore. The population trends for the Arctic subspecies and Alaska stock are unknown.

Ringed seals tend to prefer large ice floes and often inhabit interior pack ice where sea ice covers over 90 percent of the water (Simpkins et al. 2003, Kelly et al. 2010b). In the Beaufort, Chukchi, and Bering seas, ringed seals move seasonally coinciding with the melting and retreating ice pack (Frost and Lowry 1984, Frost 1985, Harwood and Stirling 1992, Kelly et al. 2010b). There is increasing concern about the future of the ringed seal due to loss of sea ice, and associated loss of habitat.

Like the other ice seals, ringed seals are closely associated with sea ice during breeding, pupping, and molting. During the open water season, ringed seals are widely dispersed as single animals or in small groups, and they are known to move into coastal areas (Harwood and Stirling 1992, Frost et al. 2002). Satellite tagging data revealed that ringed seals cover large distances between foraging areas and haulout sites during the open water season (Kelly et al. 2010b). The time that ringed seals spend on haulout sites is much shorter than the time they spend foraging in open water. For example, in July ringed seals spent 70 percent of the time in open water, increasing to greater than 90 percent in August (Kelly et al. 2010b). In winter and spring, the highest densities of ringed seals are found on stable landfast ice. They infrequently use bottomfast ice in areas with cracks or leads that may provide access to nearshore areas.

NMFS proposed critical habitat for the Arctic ringed seal in the northern Bering, Chukchi, and Beaufort seas off of Alaska on December 9, 2014 (79 FR 73010). The proposed rule discusses the following physical and biological features (PBFs) essential to the conservation of Arctic ringed seals: 1) sea ice habitat suitable for the formation and maintenance of subnivean birth lairs; 2) sea ice habitat suitable as a platform for basking and molting; and 3) primary prey resources to support Arctic ringed seals, which are defined to be Arctic cod, saffron cod, shrimps, and Amphipods.

Ringed seals are resident in the Beaufort Sea year-round, and based on results of previous surveys (Aerts et al. 2008, Funk et al. 2008, Savarese et al. 2010, Smultea et al. 2014), and monitoring from Northstar Island (Aerts and Richardson 2009, 2010), they are expected to be the most commonly occurring pinniped in the action area year-round. Figure 10 shows ringed seal sightings near the ASAP action area.

Ringed seals are present in the nearshore Beaufort Sea waters and sea ice year-round, maintaining breathing holes and excavating subnivean lairs in the landfast ice during the ice-covered season. Ringed seals overwinter in the landfast ice in and around the action area. There is some evidence indicating that ringed seal densities are low in water depths of less than 3 m, where landfast ice extending from the shoreline generally freezes to the sea bottom in very shallow waters during the course of the winter (Moulton et al. 2002a, Moulton et al. 2002b, Richardson and Williams 2003). Ringed seal movements during winter and spring are typically quite limited, especially where ice cover is extensive (Kelly et al. 2010c). During April to early June (the reproductive period), radio-tagged ringed seals inhabiting shorefast ice near Prudhoe Bay had home range sizes generally less than 1,336 ac (500 ha) in area (Kelly et al. 2005).

Limited data are available on ringed seal densities in the southern Beaufort Sea during the winter months; however, ringed seals winter ecology studies conducted in the 1980s (Kelly et al. 1986, Frost and Burns 1989) and surveys associated with the Northstar development (Williams et al. 2001) provide information on both seal ice-structure use (where ice structures include both breathing holes and subnivean lairs), and on the density of ice structures. Kelly et al. (1986) found that in the southern Beaufort Sea and Kotzebue Sound, radio-tagged seals used between 1 and at least 4 subnivean lairs. The distances between lairs was up to 4 km (10 mi), with numerous breathing holes in-between (Kelly et al. 1986). While Kelly et al. (1986) calculated the average number of lairs used per seal to be 2.85, they also suggested that this was likely to be an underestimate.

Blue whale

The blue whale was listed as an endangered species under the ESCA on December 2, 1970 (35 FR 18319), and continued to be listed as endangered following passage of the ESA. Critical habitat has not been designated for the blue whale. Blue whales may be present in the action area along the marine transit route to Prudhoe Bay, Alaska.

Information on blue whale biology and habitat is available at:
https://www.fisheries.noaa.gov/species/blue-whale
https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock

Acoustical data suggests two populations of North Pacific blue whales found in the eastern and western north Pacific (Stafford et al. 2001, Stafford 2003, McDonald et al. 2006, Monnahan et al. 2014). The northeastern call predominates in the Gulf of Alaska, the U.S. West Coast, and the eastern tropical pacific, while the northeastern call predominates from the south of the Aleutian Islands to the Kamchatka Peninsula in Russia, overlapping in the Gulf of Alaska (Muto et al. 2017). Individuals from these populations may be present in the action area as vessels transit to Prudhoe Bay.

Fin whale

The fin whale was decimated by commercial whaling in the 1800s and early 1900s. It was listed as an endangered species under the ESCA on December 2, 1970 (35 FR 18319), and continued to be listed as endangered following passage of the ESA. Critical habitat has not been designated for the fin whale. Fin whales may be present in the action area along the marine transit route to Prudhoe Bay, Alaska.

Information on fin whale biology and habitat is available at:
https://www.fisheries.noaa.gov/species/fin-whale
https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock

Coastal and pelagic catch data from the first half of the twentieth century indicate that fin whales were not uncommon near Unalaska Bay and around Unalaska Island (Nishiwaki 1966, Reeves et al. 1985); however, fin whales have been documented infrequently around Unalaska Island since whaling ended (Stewart et al. 1987, Zerbini et al. 2006). Fin whales may be present in the action area along the marine transit route to Prudhoe Bay, Alaska

Fin whales produce a variety of low-frequency sounds in the 10 Hz to 0.2 kHz range (Watkins 1981, Watkins et al. 1987, Edds 1988, Thompson et al. 1992). While there is no direct data on hearing in low-frequency cetaceans, the applied frequency range is anticipated to be between 7 Hz and 35 kHz (NMFS 2016b). Synthetic audiograms produced by applying models to X-ray computed tomography scans of a fin whale calf skull indicate the range of best hearing for fin whale calves to range from approximately 20 Hz to 10 kHz, with maximum sensitivities between 1 to 2 kHz (Cranford and Krysl 2015).

Western North Pacific Gray Whale

The gray whale was listed as an endangered species under the ESCA on December 2, 1970 (35 FR 18319), and continued to be listed as endangered following passage of the ESA. There are two extant populations in the eastern and western North Pacific. The eastern population was delisted in 1994 (59 FR 31094). The western population remains very low, around 200 individuals, and is listed as endangered under the ESA. Critical habitat has not been designated for the gray whale. Gray whales may be present in the action area along the marine transit route to Prudhoe Bay, Alaska.

Information on gray whale biology and habitat is available at:
https://www.fisheries.noaa.gov/species/gray-whale
https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock

Humpback Whale

The humpback whale was listed as endangered under the Endangered Species Conservation Act (ESCA) on December 2, 1970 (35 FR 18319). Congress replaced the ESCA with the ESA in 1973, and humpback whales continued to be listed as endangered. NMFS recently conducted a global status review and changed the status of humpback whales under the ESA. The Western North Pacific DPS (which includes a small proportion of humpback whales found in the Aleutian Islands, Bering Sea, and Gulf of Alaska) is listed as endangered; the Mexico DPS (which

includes a small proportion of humpback whales found in the Aleutian Islands, Bering Sea, Gulf of Alaska, and Southeast Alaska) is listed as threatened; and the Hawaii DPS (which includes most humpback whales found in the Aleutian Islands, Bering Sea, Gulf of Alaska, and Southeast Alaska) is not listed (81 FR 62260; September 8, 2016). Critical habitat has not been designated for the Western North Pacific or Mexico DPSs. Humpback whales may be present in the action area along the marine transit route to Prudhoe Bay, Alaska.

Information on humpback whale biology and habitat is available at:
https://www.fisheries.noaa.gov/species/humpback-whale
https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock

The abundance estimate for humpback whales in the Bering Sea and Aleutian Islands is estimated to be 2,427 (CV= 0.2) animals which includes whales from the Hawaii DPS (86.5%), Mexico DPS (11.3%), and Western North Pacific DPS (4.4%[3]) (NMFS 2016a, Wade et al. 2016).

Unalaska Island is situated between Unimak and Umnak Passes, important humpback whale migration routes and feeding areas. Humpback whales tagged from August to September in Unalaska Bay, the waterbody adjacent to Captains Bay, were detected in Captains Bay (Kennedy et al. 2014). Given the documented presence of humpback whales in and near Captains Bay, we assume humpback whales may be present along the marine transit route during the proposed project activities.

Humpback whales produce a variety of vocalizations ranging from 20 Hz to 10 kHz (Winn et al. 1970, Tyack and Whitehead 1983, Payne and Payne 1985, Silber 1986, Thompson et al. 1986, Richardson et al. 1995, Au 2000, Frazer and Mercado III 2000, Erbe 2002a, Au et al. 2006, Vu et al. 2012). NMFS categorizes humpback whales in the low-frequency cetacean functional hearing group, with an applied frequency range between 7 Hz and 35 kHz (NMFS 2016b).

North Pacific Right whale

The North Pacific right whale was listed as an endangered species under the ESCA on June 2, 1970 (35 FR 8491), and continued to be listed as endangered following passage of the ESA. NMFS later divided the listing into two separate endangered species: North Pacific right whales and North Atlantic right whales (73 FR 120424; March 6, 2008). Only the North Pacific right whale occurs in Alaska. Critical habitat has been designated for the North Pacific right whale (Figure 11). North Pacific right whales may be present in the action area along the marine transit route to Prudhoe Bay, Alaska.

Information on biology and habitat of the North Pacific right whale is available at:
https://alaskafisheries.noaa.gov/pr/npr-whale
http://www.adfg.alaska.gov/index.cfm?adfg=rightwhale.main
https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock

[3] For endangered Western North Pacific DPS we chose the upper limit of the 95% confidence interval from the Wade et al. (2016) estimate in order to be conservative due to their status.

The North Pacific right whale is distributed from Baja California to the Bering Sea with the highest concentrations in the Bering Sea, Gulf of Alaska, Okhotsk Sea, Kuril Islands, and Kamchatka area. They are primarily found in coastal or shelf waters but sometimes travel into deeper waters. In the spring through the fall their distribution is dictated by the distribution of their prey. In the winter, pregnant females move to shallow waters in low latitudes to calve; the winter habitat of the rest of the population is unknown.

Right whales have been consistently detected in the southeastern Bering Sea within and near their designated critical habitat during spring and summer feeding seasons (Goddard and Rugh. 1998, Moore 2000, Moore et al. 2002, Zerbini et al. 2009, Rone et al. 2010, Rone et al. 2012). Of the 184 recent right whale sightings reported north of the Aleutian Islands, 182 occurred within the area designated as critical habitat in the Bering Sea.

Analysis of the data from bottom-mounted acoustic recorders deployed between October 2000, January 2006, May 2006, and April 2007 indicates that right whales remain in the southeastern Bering Sea from May through December with peak call detection in September (Munger and Hildebrand 2004, Stafford and Mellinger 2009). Recorders deployed from 2007 to 2013 have not yet been fully analyzed, but indicate the presence of right whales in the southeastern Bering Sea almost year-round, with a peak in August and a sharp decline in detections in early January (Pers. Comm. Catherine Berchok, AFSC-MML; unpublished data).

A study of right whale ear anatomy indicates a total possible hearing rage of 10 Hz to 22 kHz (Parks et al. 2007). NMFS categorizes right whales in the low-frequency cetacean functional hearing group, with an applied frequency range between 7 Hz and 35 kHz (NMFS 2016b).

North Pacific Right Whale Critical Habitat

Critical habitat for the North Pacific right whale was designated in the eastern Bering Sea and in the Gulf of Alaska on April 8, 2008 (Figure 11, 73 FR 19000). The physical or biological features (PBFs) deemed necessary for the conservation of North Pacific right whales include the presence of specific copepods (*Calanus marshallae*, *Neocalanus cristatus*, and *N. plumchris*), and euphausiids (*Thysanoessa Raschii*) that act as primary prey items for the species, and physical and oceanographic forcing that promote high productivity and aggregation of large copepod patches.

The marine transit route portion of the action area includes designated critical habitat (Figure 11).

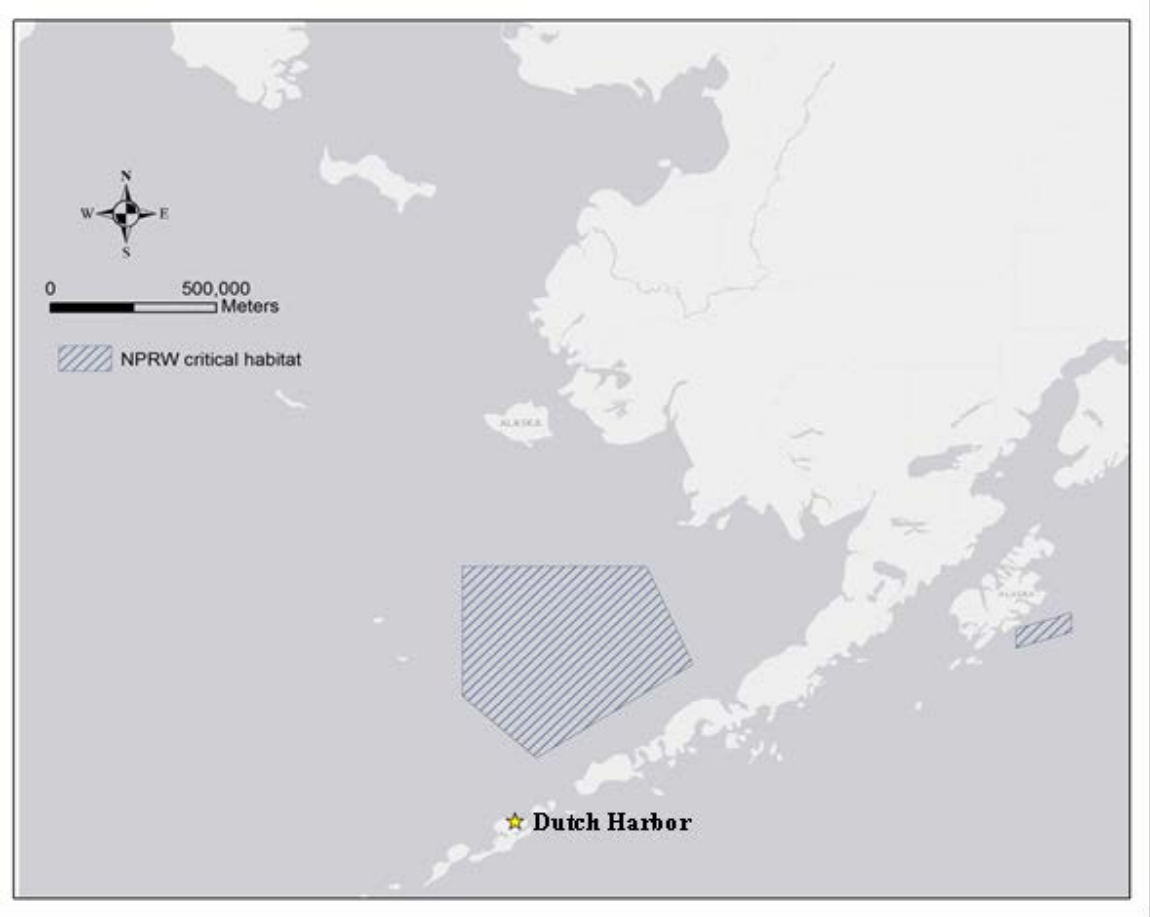


Figure 11. North Pacific right whale critical habitat in the Bering Sea and Gulf of Alaska

Sperm Whale

The sperm whale was listed as an endangered species under the ESCA on December 2, 1970 (35 FR 18319), and continued to be listed as endangered following passage of the ESA. Critical habitat has not been designated for the sperm whale. Sperm whales may be present in the action area along the marine transit route to Prudhoe Bay, Alaska.

Information on sperm whale biology and habitat is available at:
https://www.fisheries.noaa.gov/species/sperm-whale
https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock

Sperm whales are primarily found in deep waters and sightings of sperm whales in water less than 300 m (984 ft) are uncommon. Though sperm whales may occasionally enter Unalaska Bay, we are not aware of documented sightings in Captains Bay; however, sperm whales may be present in the action area along the marine transit route to Prudhoe Bay, Alaska.

Sperm whales produce a variety of vocalizations ranging from 0.1 to 20 kHz (Weilgart and Whitehead 1993, Goold and Jones 1995, Møhl et al. 2003, Weir et al. 2007). Sperm whales are odontocetes (tooth whales) and are considered mid-frequency cetaceans with an applied frequency range of 150 Hz to 160 kHz (NMFS 2016b). The only direct measurement of hearing

was from a young stranded individual from which auditory evoked potentials were recorded and indicated a hearing range of 2.5 to 60 kHz (Carder and Ridgway 1990).

Western DPS Steller sea lions

The Steller sea lion was listed as a threatened species under the ESA on November 26, 1990 (55 FR 49204). In 1997, NMFS reclassified Steller sea lions into two distinct population segments (DPS) based on genetic studies and other information (62 FR 24345); at that time the eastern DPS was listed as threatened and the western DPS was listed as endangered. On November 4, 2013, the eastern DPS was removed from the endangered species list (78 FR 66139). Critical habitat has been designated for the Steller sea lions (Figure 12). Steller sea lions may be present in the action area along the marine transit route to Prudhoe Bay, Alaska.

Information on Steller sea lion biology and habitat (including critical habitat) is available at:
http://alaskafisheries.noaa.gov/pr/steller-sea-lions
https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock

During summer Steller sea lions feed mostly over the continental shelf and shelf edge. Females attending pups forage within 20 nm of breeding rookeries (Merrick and Loughlin 1997), which is the basis for designated critical habitat around rookeries and major haulout sites.

The ability to detect sound and communicate underwater is important for a variety of Steller sea lion life functions, including reproduction and predator avoidance. NMFS categorizes Steller sea lions in the otariid pinniped functional hearing group, with an applied frequency range between 60 Hz and 39 kHz in water (NMFS 2016b).

Steller Sea Lion Critical Habitat

NMFS designated critical habitat for Steller sea lions on August 27, 1993 (Figure 12, 58 FR 45269). In Alaska, designated critical habitat includes the following areas as described at 50 CFR §226.202.

1. Terrestrial zones that extend 3,000 feet (0.9 km) landward from each major haulout and major rookery.
2. Air zones that extend 3,000 feet (0.9 km) above the terrestrial zone of each major haulout and major rookery in Alaska.
3. Aquatic zones that extend 3,000 feet (0.9 km) seaward of each major haulout and major rookery in Alaska that is east of 144° W longitude.
4. Aquatic zones that extend 20 nm (37 km) seaward of each major haulout and major rookery in Alaska that is west of 144° W longitude.
5. Three special aquatic foraging areas: the Shelikof Strait area, the Bogoslof area, and the Seguam Pass area, as specified at 50 CFR §226.202(c).

The action area includes a very small portion of designated Steller sea lion critical habitat. The nearest major rookeries and haulouts to the action area are located on Akutan Island, Old Man Rocks, and Cape Sedanka approximately 15-18 nm away from the action area along the marine transit route. Barging activities will also traverse through the Bogoslof critical habitat foraging area. Mitigation measures to reduce impact on Steller sea lion critical habitat are discussed above

and include that vessel operators will not approach within 3 nm (5.5 km) of any major Steller sea lion rookeries or haulouts except in emergency situations (refer to Mitigation Measures Section).

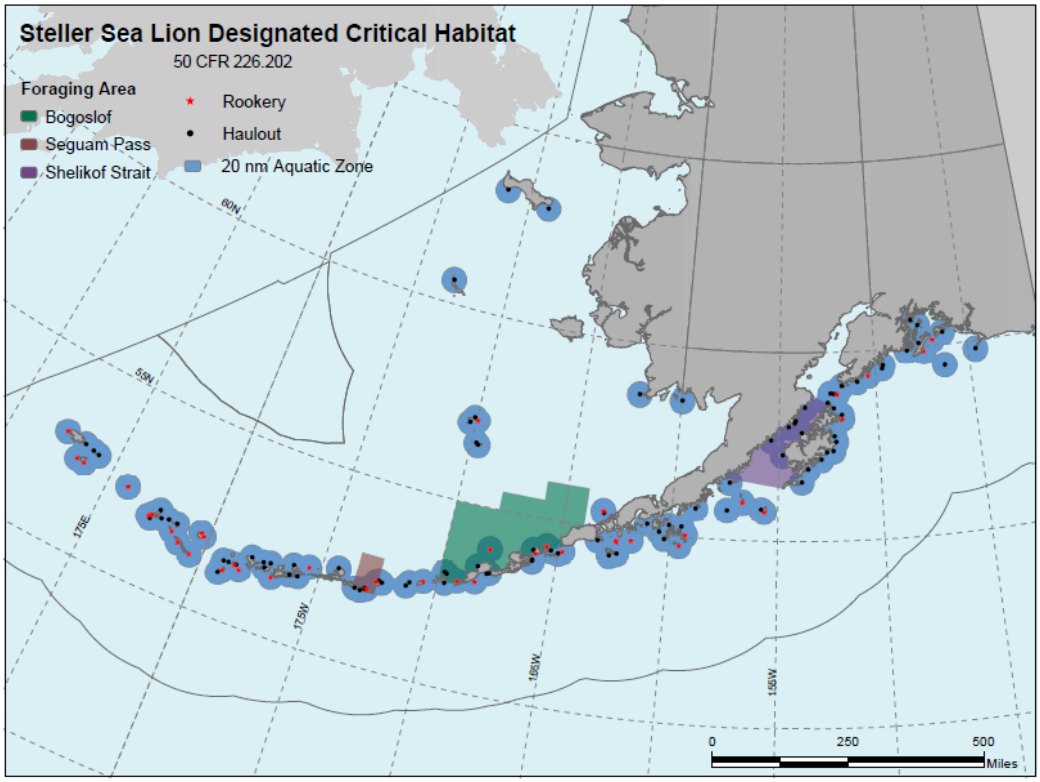


Figure 12. Designated critical habitat for the Steller sea lion (50 CFR 226.202)

Effects of the Action

For purposes of the ESA, "effects of the action" means the direct and indirect effects of an action on the listed species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action (50 CFR 402.02). The applicable standard to find that a proposed action is "not likely to adversely affect" listed species or critical habitat is that all of the effects of the action are expected to be insignificant, discountable, or completely beneficial. Insignificant effects relate to the size of the impact and are those that one would not be able to meaningfully measure, detect, or evaluate, and should never reach the scale where take occurs. Discountable effects are those that are extremely unlikely to occur. Beneficial effects are contemporaneous positive effects without any adverse effects to the species.

This consultation includes recent NMFS guidance on the term "harass," which means to: "create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering" (Wieting 2016).

The potential effects of the proposed action on listed species and critical habitat include acoustic disturbance, physical effects such as vessel collision or ice road and pad disturbance, exposure to potentially harmful materials, effects to prey species, and habitat alteration.

Acoustic Disturbance

Acoustic disturbance to listed species could occur during activities associated with the proposed project. Possible impacts to marine mammals exposed to loud underwater noise include mortality (directly from the noise, or indirectly from a reaction to the noise), injury, and disturbance ranging from severe (e.g., abandonment of vital habitat) to mild (e.g., startle response). Disturbance caused by in-water noise from the pile driving, dredging, ditchwitch, screeding and the associated vessels is the primary concern for the species covered in this consultation.

Pile Driving

Impact pile driving is expected to be the loudest of the pile-driving activities of the proposed action. Impact pile driving can generate pulsed peak (0-p) sound pressure levels of 237 dB re 1µPa at 1 m at frequencies between 0.1 and 1 kHz, though it is important to note that 0-p sound pressure levels are not directly comparable to RMS sound pressure levels (Hildebrand 2009). Vibratory pile driving generates lower peak sound pressure levels than impact pile driving, but the total energy imparted to the pile is somewhat comparable because the vibratory hammer operates continuously and the piles require more time to install (ICF Jones & Stokes and Illingworth and Rodkin Inc. 2012).

Received sound levels associated with impact pile driving of 48-in piles have not been measured in this area; therefore, received sound source levels from impact pile driving of 48-in piles at the Port of Anchorage may be similar to those in the project area. During the Port of Anchorage Test Pile Driving Program (CH2M 2016), hydraulic and diesel hammers' sound source levels were measured at 201.8 dB re 1 µPa at 10 m and 198.6 dB re 1 µPa at 10 m, respectively. Using their calculated transmission loss of 17.5 log R, we calculated a source level for of 221 dB re 1 µPa at 1 m for a hydraulic hammer and a source level of 216.1 dB re 1 µPa at 1 m for a diesel hammer. The sound source levels at 1 m were then averaged, resulting in 218.6 dB re 1 µPa at 1 m. Using the calculated sound source level of 218.6 dB re 1 µPa at 1 m with a transmission loss of 17.5 log R, we calculated 120 dB level B acoustic harassment threshold distance of 2,217 m.

Greene et al. (2008) measured vibratory pile driving in the Beaufort Sea near Prudhoe Bay, Alaska at 143 dB re 1 µPa at 100 m from the source. Using the transmission loss of 17.5 log R, we calculated a source level of 178 dB re 1 µPa at 1 m. Using the calculated sound source level of 178 dB re 1 µPa at 1 m with a transmission loss of 17.5 log R, we calculated 120 dB level B acoustic harassment threshold distance of 2,062 m.

ADGC took a precautionary approach in establishing the outer boundary of the shutdown zone at 2,200 m for both impact and vibratory pile driving (a distance more conservative for vibratory pile driving).

We do not anticipate that this project will expose bowhead whales, ringed seals, or bearded seals to sound pressure levels that reach Level B acoustic thresholds because: 1) we expect few bowhead whales, ringed seals, or bearded seals to be present in the area during pile driving activities, 2) the project incorporates monitoring and mitigation measures that include exclusion zones which minimize the risk of exposure for any individual that enters it, and 3) the project duration is short-term, thereby reducing the likelihood of exposure to listed species. We do not anticipate that bowhead whales, ringed seals, or bearded seals will be exposed to project-related

noise, and if exposure were to occur, mitigation measures would make exposure to sound levels in excess of Level B MMPA take thresholds extremely unlikely. Therefore, we conclude such effects are discountable.

Blue whales, fin whales, Western North Pacific gray whales, humpback whales, North Pacific right whales, sperm whales and Steller sea lions are not likely to be present in the project area where pile driving will occur; therefore, we conclude that the adverse effects from noise associated with pile driving activities on these species is discountable.

Other In-water Activities

Received sound levels associated with dredging and screeding have not been measured in this area; however, dredging or screeding may produce sound source levels similar to underwater backhoe grading. Greene et al. (2008) measured underwater backhoe grading in the Beaufort Sea near Prudhoe Bay, Alaska at 124.8 dB re 1 µPa at 100 m from the source. Using their calculated transmission loss of 26.4 log R, we calculated a source level of 178 dB re 1 µPa at 1 m. Applying the conventional spherical spreading equation (with a transmission loss coefficient of 20) yields a 120 dB level B acoustic harassment threshold distance of 776 m.

Greene et al. (2008) measured underwater ditchwitch in the Beaufort Sea near Prudhoe Bay, Alaska at 122.0 dB re 1 µPa at 100 m from the source. Using their calculated transmission loss of 22.4 log R, we calculated a source level of 167 dB re 1 µPa at 1 m. Applying the conventional spherical spreading equation (with a transmission loss coefficient of 20) yields a 120 dB level B acoustic harassment threshold distance of 472 m.

Due to confounding factors, such as frequency and range dependence of the transmission loss coefficient, the spectral content of the source, and the wide range of measured transmission loss coefficients in this region, the spherical spreading transmission loss coefficient was used. We note, however, that some empirical measurements indicate transmission loss coefficients well below 20 exist within the general area of this project. Consequently, the ASDC took a precautionary approach in establishing the outer boundary of the shutdown zone at 1,000 m for dredging, ditchwitch and screeding (a distance that is somewhat more conservative than that yielded by applying the spherical spreading loss equation to estimated source levels).

Given the proposed mitigation measures, including the use of PSOs and a 1,000 m shutdown zone, the seasonal timing of the project activities, and the duration of the project, any effects to bowhead whales, ringed or bearded seals from dredging, ditchwitch, and screeding are extremely unlikely. Therefore, we consider such effects to be discountable

Blue whales, fin whales, Western North Pacific gray whales, humpback whales, North Pacific right whales, sperm whales and Steller sea lions are not likely present in the project area where dredging, ditchwitch, and screeding will take place and thus adverse effects to these species is extremely unlikely to occur. Therefore, we conclude that the adverse effects from noise associated with dredging, ditchwitch, and screeding activities on these species is discountable.

Vessel Activity

The primary underwater noise associated with the barging operations is the continuous noise produced from propellers and other on-board equipment. Cavitation noise is expected to

dominate vessel acoustic output when tugs are pushing or towing a loaded barge. Other noise sources include onboard diesel generators and the firing rate of the main engine, but both are subordinate to propeller harmonics (Gray and Greeley 1980) and cavitation. Continuous sounds from small ships have been measured at up to 171 dB re 1 μPa rms at 1-m source (broadband), and they emitt dominant frequencies of less than 5 kHz, and generally less than 1 kHz (Miles et al. 1987, Richardson et al. 1995, Simmonds et al. 2004). Visual cues may also contribute to marine mammal's reactions to nearby vessels (Richardson et al. 1995).

The marine transit route includes vessels transiting from Dutch Harbor to Prudhoe Bay. The marine transit route crosses the Bering, Chukchi, and Beaufort seas. For the marine transit route, the source level of approximately 167 dB at 1 m associated with oceanic tug boat noise is anticipated to decline to 120 dB re 1μPa rms within 225 m of the source (Austin et al. 2013). The vessels associated with the proposed action will have a short-term presence within the action area. Given the expected effectiveness of the mitigation measures, the short-term duration of the project, the very low density of listed species along the transit route, and that the low probability of listed species' exposure to vessel noise that may cause disruption of behavioral patterns, adverse effects to blue whales, bowhead whales, fin whales, Western North Pacific gray whales, humpback whales, North Pacific right whales, sperm whales, Beringia DPS bearded seals, Arctic ringed seals, and Western DPS Steller sea lions are extremely unlikely to occur. Therefore, we conclude that adverse effects from vessel noise on these listed species are discountable.

Physical Effects

Marine Transit Route

Barges and tugs transiting the marine environment have the potential to collide with, or strike, marine mammals (Laist et al. 2001, Jensen and Silber 2003). From 1978 to 2012, there were at least 108 recorded whale-vessel collisions in Alaska, with the majority occurring in Southeast Alaska (Figure 13; Neilson et al. 2012). Among larger whales, humpback whales are the most frequently documented victims of ship strikes in Alaska, accounting for 86 percent of all reported collisions. Fin whales accounted for 2.8 percent of reported collisions, gray whales 0.9 percent, and sperm whales 0.9 percent. Six of the whales (5.6 percent) were unidentifiable and the remaining are of non-listed species. The probability of strike events depends on the frequency, speed, and route of the marine vessels, as well as distribution and density of marine mammals in the area. Vanderlaan and Taggart (2007) used observations to develop a model of the probability of lethal injury based upon vessel speed. The projected chance of lethal injury to a whale struck by a vessel travelling at speeds over 15 kn (27.78 km/hr) is approximately 80 percent while for vessels travelling between 8.6 and 15 kn (15.92 km/hr), the probability that a struck whale would be lethally injured was about 20 percent of the time.

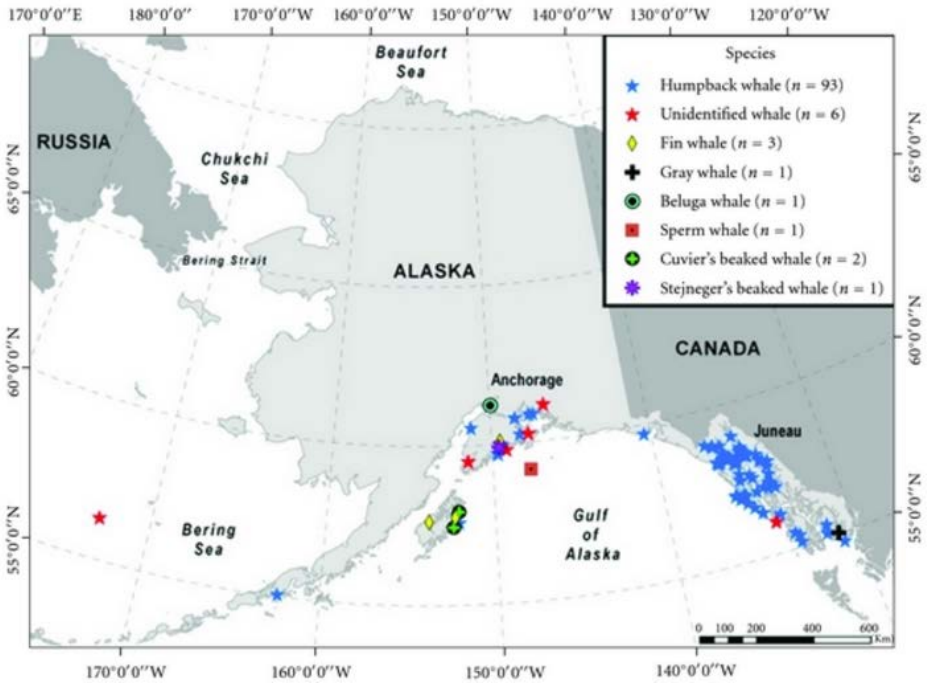


Figure 13. Location of whale-vessel collision reports in Alaska by species 1978–2011 (n = 108) from Nielson et al. (2012)

Although risk of ship strike has not been identified as a significant concern for Steller sea lions (Loughlin and York 2000), the recovery plan for this species states that Steller sea lions may be more susceptible to ship strike mortality or injury in harbors or in areas where animals are concentrated (e.g., near rookeries or haulouts; NMFS 2008). To minimize this risk, project vessels will not travel within 3 nm (5.5 km) of major Steller sea lion haulouts or rookeries.

Project vessels will not approach any species of whales within 100 yd or a North Pacific right whale within 800 m. Collision with pinnipeds is not expected to occur due to their speed and maneuverability and the slow velocity of project vessels. As stated above in the Mitigation Measures, project vessels will either avoid North Pacific right whale designated critical habitat (where encounters with North Pacific right whales are most likely to occur), they will travel through designated critical habitat at speeds less than 10 kn (18.52 km/h) with a trained PSO that will maintain a vigilant watch intended to avoid the occurrence of whale collisions, or in the absence of an on-duty PSO, travel at speeds of 5 kn or less within the boundaries of designated North Pacific right whale critical habitat. Given the expected effectiveness of these measures, the low density of North Pacific right whales and other listed cetaceans, and the ability of pinnipeds to avoid vessels due to their maneuverability, we have determined that the probability of a vessel striking listed species within the action area is very small, and adverse effects are extremely unlikely to occur. Therefore, we conclude that the adverse effects due to vessel strikes are discountable for the following listed marine mammals: blue whales, bowhead whales, fin whales, Western North Pacific gray whales, Western North Pacific DPS humpback whales, Mexico DPS humpback whales, North Pacific right whales, sperm whales, Beringia DPS bearded seals, Arctic ringed seals, and Western DPS Steller sea lions.

Ice Roads and Ice Pads

The construction, maintenance, and decommissioning of the ice pads and ice roads could potentially harm bearded and ringed seals in the area by destroying seal lairs and/or injuring animals in the area. Ringed seals are more likely to be in the area than bearded seal during the construction of ice roads and pads, and therefore, are more likely affected by this activity. However, we do not anticipate ringed seals would be affected by the construction, maintenance, and decommissioning of the ice pads and ice roads because construction would occur prior to March 1, allowing seals to build lairs in alternative areas away from construction. If a ringed seal lair is established in the area prior to the construction of ice roads or ice pads, the seal lair could potentially be destroyed by ice road construction, possibly injuring seals; however, seals would likely hear construction approaching and abandon the lair. Mitigation measure will be incorporated into the project and are expected to prevent disturbance and injury to these listed seal species from construction, maintenance, and decommissioning of the ice pads and ice roads, and therefore, we conclude such effects are discountable. Ice road and ice pad activities are not expected to affect other listed marine mammals.

Effects to Prey Species

ESA-listed species feed on prey species (such as small schooling fish, shrimp, squid, and zooplankton) that could be affected by spills and vessel operation. Prey species could become contaminated during an oil or chemical spill. Bioaccumulation of toxic materials in prey species could also occur; however, most prey species are short lived and do not live long enough to accumulate higher levels of toxins in the body.

Fish can be physiologically and behaviorally affected by noise. The acoustic threshold criteria for physiological impacts on fish were based on impacts from pile driving (Hastings and Popper 2005); however, these criteria are generally applied to other human-generated sound sources. Because there will be no sudden onset of noise related to project vessel activity, the impact to fish from vessel noise is expected to be limited to temporary avoidance of waters in the immediate vicinity (within a few meters) of the vessel.

Barging activities can directly affect plankton, fish eggs, fish larvae, and small fish through hull shear, entrainment through the propulsion system, exposure to turbulence in the propeller wash, and wake stranding (Odom et al. 1992). However, studies indicate it is difficult to detect barge-related mortality (Holland 1986, Odom et al. 1992), and have found fish larvae to be relatively resilient to barge-induced disturbance. Wake stranding, the depositing of fish onto shore by vessel-induced waves, is a function of wave amplitude, which further is a result of vessel size, vessel draft, vessel speed, and distance of vessel from shore (Bauersfeld 1977). Ackerman (2002) studied salmonid strandings in the lower Columbia River and found that shallow-draft tugs pulling barges produced much smaller wake amplitudes (average of 0.52 ft [0.15 m]) than larger, deep-draft ships (1.7 ft [0.52 m]), and all but one of the observed salmonid strandings were associated with deep-draft ships. The distances to shore during this study ranged from 780 to 1,630ft (238 to 497m); much closer to shore than the proposed barging routes for this project. Thus, the ASAP barges are unlikely to produce large enough wakes and are not close enough to shore to cause any significant mortality of marine mammal prey due to wake stranding. Furthermore, the proportion of available prey that may be so affected is miniscule.

Given the low probability of an oil or chemical spill occurring and the very small effects on prey caused by project vessels, effects of vessel-related activity on prey species are either highly improbable or very minor in magnitude, and therefore any effects to marine mammals, including blue whales, bowhead whales, fin whales, Western North Pacific gray whales, humpback whales, North Pacific right whales, sperm whales, Arctic ringed seals, bearded seals and Western DPS Steller sea lions, are extremely unlikely to occur or are immeasurably small. Therefore, we conclude that the adverse effects of these stressors are discountable and/or insignificant.

Habitat Alteration

The installation of piles, dredging, ditchwitch, screeding, disposal of dredged material, and the construction, maintenance, and decommissioning of ice pads and ice roads have the potential to alter the habitat in the immediate vicinity of the ASAP project area.

Blue whales, fin whales, Western North Pacific gray whales, humpback whales, North Pacific right whales, sperm whales and Steller sea lions are not likely present in the project area and their habitat will not be affected.

Suspension of sediment

Ringed and bearded seals may be exposed to increased turbidity due to dredging or screeding, but the effects resulting from the sediment suspension will be temporary, on the order of minutes to a few hours, and localized in space, well within the confines of the 1000 m-radius shutdown area.

Because of the small spatial and temporal scale at which this project may affect habitat due to turbidity, we do not expect this action to impact bowhead habitat to a measurable degree. Nearly all bowheads will remain outside of the vicinity of the project area.

Placement of Fill

The fill from this project will be placed in up to 1.5 acres of tidal waters, matching the footprint of the barge bridge, to create a level pad for the barge bridge, resulting in only very small impacts to the marine environment. Fill will not reduce the foraging quality of surrounding waters (i.e., local prey availability) for bowhead whales or bearded or ringed seals in a way that can be meaningfully measured.

Disposal of Dredging Material

Dredged material will be placed in a disposal area in southwestern Prudhoe Bay in the nearshore environment over bottomfast ice, landward of the Territorial Sea boundary (Figure 3). Due to the seasonal timing, the location, the amount of disposed material, and the implementation of mitigation measures, the impact from this type of habitat alteration is very minor. Effects to habitat will be limited to 100 acres in the Beaufort Sea, and biologically inconsequential because of the small amount of disposed material that will be similar to the existing substrate.

Construction of Ice Pads and Roads

Bowhead whales winter in the Bering Sea, and therefore, are unlikely to be present during the time when ice roads and ice pads are constructed, maintained, and decommissioned. Any project effects to their habitat, however minor, will have dissipated before the few bowheads that may use waters within the project area move into that area as ice melts.

We do not anticipate bearded or ringed seals would be affected by the construction, maintenance, and decommissioning of the ice pads and ice roads because of the implementation of the mitigation measures that will prevent disturbance or destruction of seal lairs during ice road and ice pad activities. In addition, the impacts to the habitat affected by these activities is very minor, and thus adverse effects to these species will be immeasurably small. Therefore, we conclude that the adverse effects from this type of habitat alternation on bearded or ringed seals is insignificant.

Summary of Project Effects to Bowheads and Ringed and Bearded Seals via Habitat Effects
Effects of project related suspended sediment, fill placement, dredge disposal, and construction of ice pads will have very minor impacts on bowhead whales, ringed seals, or bearded seals, and adverse effects will be immeasurably small. Therefore we conclude that adverse impacts to these species due to these habitat-related stressors are insignificant.

Effects on Critical Habitat

North Pacific Right Whale
The potential effects of the action that may overlap with North Pacific right whale critical habitat include: vessels transiting to and from Dutch Harbor and Prudhoe Bay, exposure to spilled or otherwise-discharged fuel or other chemicals, and acoustic disturbance. While vessels associated with the action may enter designated critical habitat, vessel traffic is not anticipated to affect aggregations of copepods or euphausiids, and therefore will not affect the PBFs associated with North Pacific right whale critical habitat. In addition, given the short-term duration of the project and the low likelihood of a spill occurring, we find it extremely unlikely that a fuel spill, other chemical spill, or discharge will occur as a result of this vessel traffic that would have more than a de minimis effect on the PBF for the critical habitat. Even if a small spill were to occur in this critical habitat, it would be expected to evaporate, dissipate, or become entrained within 24 hours, such that any effects to this PBF would be insignificant. We also do not expect that noise from transiting project vessels would result in effects on the PBF of the critical habitat that could be meaningfully measured or detected. We therefore conclude that the effects of the proposed project on North Pacific right whale critical habitat, including the planktonic prey that comprise the PBF of this critical habitat, are insignificant (small fuel spills, vessel traffic noise) and discountable (large fuel spills, non-fuel hazardous chemical spills).

Steller Sea Lion Critical Habitat
NMFS identified physical and biological features essential for conservation of Steller sea lions in the final rule to designate critical habitat (58 FR 45269; August 27, 1993) including terrestrial, air, and aquatic habitats (as described at 50 CFR §226.202) that support reproduction, foraging, rest, and refuge. Construction of the proposed project may impact Steller sea lion critical habitat through the marine transit route by causing disturbance at the rookeries, haul-outs or foraging area. We evaluate effects to each of the physical or biological features below.

1. *Terrestrial zones that extend 3,000 feet (0.9 km) landward from each major haulout and major rookery in Alaska.*

Project activities are not located in a terrestrial zone that is 3,000 ft (0.9 km) landward from a major haulout or rookery (Figure 14), and any effects are extremely unlikely to occur in those areas. Therefore, effects to the terrestrial zones are discountable.

2. *Air zones that extend 3,000 feet (0.9 km) above the terrestrial zone of each major haulout and major rookery in Alaska.*

Project activities are not located in an air zone that is 3,000 ft (0.9 km) above a major haulout or rookery (Figure 14), and any effects are extremely unlikely to occur in those areas. Therefore, effects to the air zones are discountable.

3. *Aquatic zones that extend 3,000 feet (0.9 km) seaward of each major haulout and major rookery in Alaska that is east of 144º W longitude.*

Project activities are not located in an aquatic zone that is 3,000 ft (0.9 km) seaward of a major haulout or rookery east of 144º W longitude (Figure 14) and any effects are extremely unlikely to occur in those areas. Therefore, effects to these aquatic zones are discountable.

4. *Aquatic zones that extend 20 nm (37 km) seaward of each major haulout and major rookery in Alaska that is west of 144º W longitude.*

A small portion of the proposed marine transit route overlaps with or is adjacent to parts of the 20-nm aquatic zones in the Bering Sea, including near Dutch Harbor (Figure 14). In addition, depending on the routes vessels take to transit through the Bering Strait, they may also overlap with critical habitat designated on the Pribilof Islands, St. Matthew Island, or St. Lawrence Island.

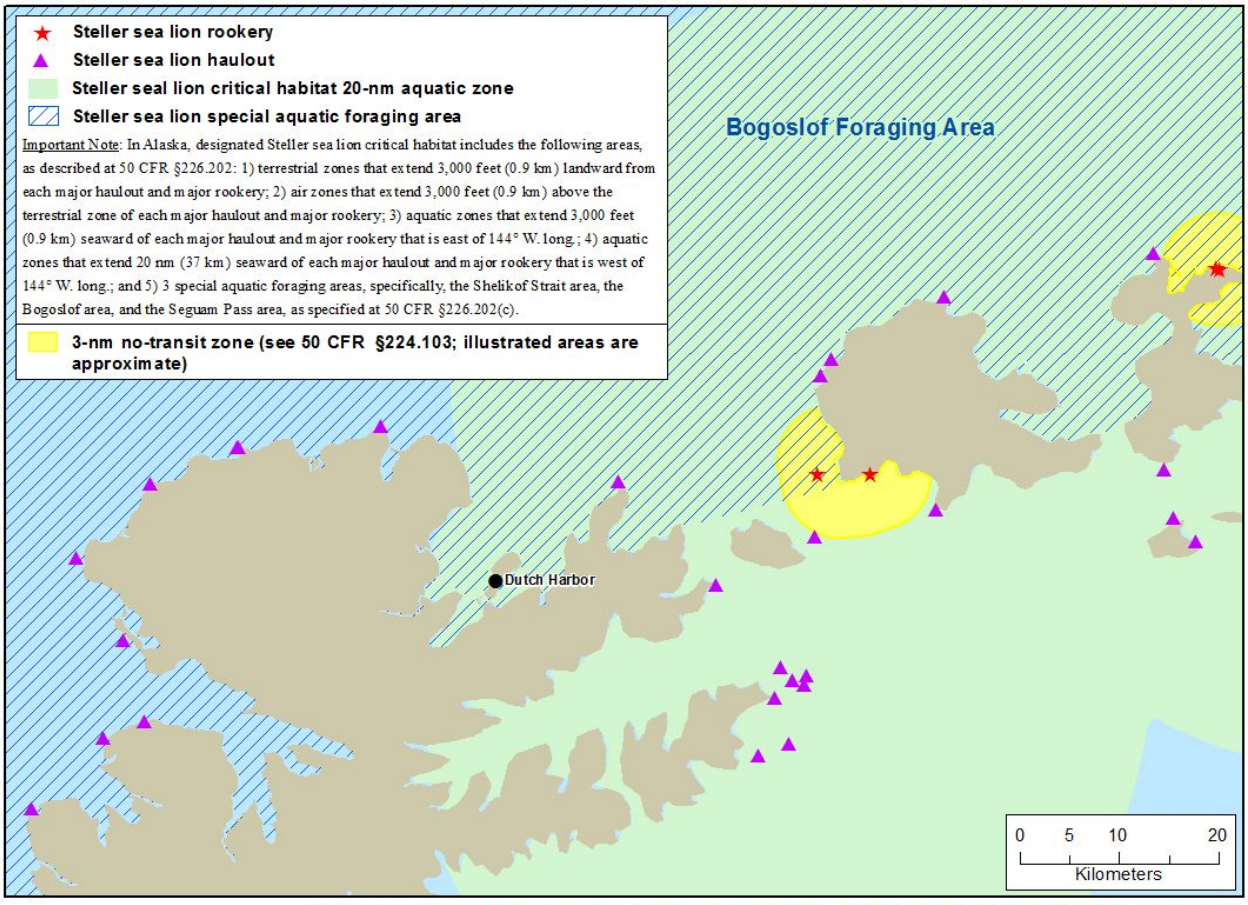
Waters near Unalaska and Unimak Pass are frequently used by many ocean-going and commercial fishing vessels. Despite all of the existing traffic in and around rookery and haulout locations near Dutch Harbor, the Steller sea lion population in and around Dutch Harbor has been increasing at about 3% per year (Fritz 2012).

The incremental increase in vessel traffic due to this action will be extremely small. Transiting project vessels will be present within or adjacent to the aquatic zones for a very short period of time (about 3 hours), and they will most likely travel only along the outermost edges of these zones. Additionally, project vessels will not travel within 3 nm (5.5 km) of all Steller sea lion rookery or major haulout (see 50 CFR 224.103(c)). Given the minimum distance to be maintained from these sites, as well as the limited overlap of the marine transit route with the aquatic zones, we find it extremely unlikely that the proposed vessel traffic will cause visual or acoustic disturbance to Steller sea lion rookeries or major haulouts. We also consider the probability of a spill or other discharge occurring that would have more than a de minimus effect on the aquatic zones to be very small. Moreover, if a small fuel spill occurred in these waters, within 24 hours it would be expected to evaporate, dissipate, or become entrained and diluted to a degree that its effects on this PBF would be immeasurable. For these reasons, we conclude that the proposed project will have insignificant and discountable effects on this PBF.

5. Three special aquatic foraging areas: the Shelikof Strait area, the Bogoslof area, and the Seguam Pass area, as specified at 50 CFR §226.202(c).

Dutch Harbor is located within the Bogoslof special aquatic foraging area (Figure 14); consequently, transiting project vessels will travel through this designated area. Waters within the Bogoslof foraging area are frequently used by many ocean-going and commercial fishing vessels. As discussed above, the incremental increase in vessel traffic due to this action will be extremely small (as there will only be a maximum of two vessels per year for certain years of the project). Project vessels will be present within the Bogoslof foraging area for about 20 hours per traverse.

Transiting project vessels are not expected to have adverse impacts on Steller sea lion prey that occur in this foraging zone. For the reasons discussed above with respect to the 20-nm aquatic zones, the small number of vessels transiting through the Bogoslof foraging area are also not expected to have other adverse impacts upon these waters, including effects due to spills. Therefore we conclude that the proposed project will have insignificant and discountable effects on this PBF.



Projection: *Alaska Albers Equal Area Conic;* ***Map date:*** *April 3, 2018;* ***Project file name:*** *20180403_Liberty_SSL*

Figure 14. Designated Steller sea lion critical habitat and known Steller sea lion rookeries and haulouts near Dutch Harbor.

Conclusion

Based on this analysis, NMFS concurs with your determination that the proposed action in the project area may affect, but is not likely to adversely affect, bowhead whales, Beringia DPS bearded seals, or Arctic ringed seals. We also agree that the action is not likely to adversely affect blue whales, fin whales, Western North Pacific gray whales, Western North Pacific DPS humpback whales, Mexico DPS humpback whales, North Pacific right whales, sperm whales, Western DPS Steller sea lions, or critical habitat for North Pacific right whales or Steller sea lions. Reinitiation of consultation is required where discretionary federal involvement or control over the action has been retained or is authorized by law and if: (1) take of listed species occurs, (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered, (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this concurrence letter, or (4) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16).

Please direct any questions regarding this letter to Lindsey Kendall at lindsey.kendall@noaa.gov or 907-271-5172.

Sincerely,



Jonathan M. Kurland
Assistant Regional Administrator
for Protected Resources

Enclosure: Mitigation Measures

cc: Katherine McCafferty (Katherine.A.McCafferty2@usace.army.mil)
Jason Berkner (Jason.R.Berkner@usace.army.mil)
Kalb Stevenson (KStevenson@agdc.us)

References

Ackerman, N.K. 2002. Effects of vessel wake stranding of juvenile salmonids in the lower Columbia River,2002 – a pilot study. S.P. Cramer & Associates report to USACOE, Portland. 47 pp.

Aerts, L., M. Blees, S. Blackwell, C. Greene, K. Kim, D. Hannay, and M. Austin. 2008. Marine mammal monitoring and mitigation during BP Liberty OBC seismic survey in Foggy Island Bay, Beaufort Sea, July-August 2008: 90-day report. Report from LGL Alaska Research Associates Inc., LGL Ltd., Greeneridge Sciences Inc. and JASCO Research Ltd. for BP Exploration Alaska.

Aerts, L., and W. J. Richardson. 2009. Monitoring of industrial sounds, seals, and bowhead whales near BP's Northstar Oil Development, Alaskan Beaufort Sea, 2008: Annual Summary Report. Anchorage, AK.

Aerts, L., and W. J. Richardson. 2010. Monitoring of industrial sounds, seals, and bowhead whales near BP's Northstar Oil Development, Alaskan Beaufort Sea, 2009: Annual Summary Report. Anchorage, AK.

Alaska Gas Development Corp (AGDC). 2011. Biological Assessment. Support Alaska Stand Alone Pipeline (ASAP) Draft 1. Prepared by Arctic Slope Regional Corp (ASRC) for AGDC. Anchorage, Alaska.

AGDC. 2015. Alaska Stand Alone Pipeline (ASAP) Joint Application for Permit. December 29, 2015.

AGDC. 2016. Alaska Stand Alone Pipeline (ASAP) West Dock Dredge and Disposal Plan. ASAP-22-PLN-WWW-DOC-00004. July 12, 2016.

Allen, A., and R. P. Angliss. 2015. Alaska marine mammal stock assessments, 2014. U.S. Dep. Commer., NOAA Tech Memo. NMFS-AFSC-301, 304 p. http://dx.doi.org/10.7289/V5NS0RTS.

Au, W. W. L. 2000. Hearing in whales and dolphins: An overview. Pages 1-42 *in* W. W. L. Au, A. N. Popper, and R. R. Fay, editors. Hearing by Whales and Dolphins. Springer-Verlag, New York.

Au, W. W. L., A. A. Pack, M. O. Lammers, L. M. Herman, M. H. Deakos, and K. Andrews. 2006. Acoustic properties of humpback whale songs. Journal of the Acoustical Society of America **120**:1103-1110.

Austin, M., A. McCrodan, C. O'Neill, Z. Li, and A. MacGillivray. 2013. Underwater Sound Measurements. (Chapter 3) In: Marine mammal monitoring and mitgation during exploratory drilling by Shell in the Alaskan Chukchi and Beaufort seas, July - November 2012: Draft 90-Day Report.

Bauersfeld, K. 1977. Effects of peaking (stranding) of Columbia River Dams on juvenile anadromous fishes below The Dalles Dam, 1974 and 1975. State of Washington Department of Fisheries report to the U.S. Army Corps of Engineers, Contract DACW 57-74-C-0094, 32 pp.

Bengtson, J. L., L. M. Hiruki-Raring, M. A. Simpkins, and P. L. Boveng. 2005. Ringed and bearded seal densities in the eastern Chukchi Sea, 1999–2000. Polar Biology **28**:833-845.

Braham, H. W. 1984. The bowhead whale, Balaena mysticetus. Marine Fisheries Review **46**:45-53.

Bureau of Ocean Energy Managemant (BOEM). 2018. BOEM Response to NMFS Questions Regarding On-Ice Activities, Impacts to Ice Seals, and Best Management Practices

Associated with Liberty Development and Production Project. Email received from Frances Mann (BOEM) to Alicia Bishop (NMFS) on June 22, 2018.
Burns, J. J. 1967. The Pacific bearded seal. Pittman-Robertson Project Report, W-6-R and W-14-R. State of Alaska, Department of Fish and Game.
Burns, J. J. 1981. Bearded seal, *Erignathus barbatus* Erxleben, 1777. Handbook of marine mammals **2**:145-170.
Burns, J. J., and K. J. Frost. 1979. The natural history and ecology of the bearded seal, *Erignathus barbatus*. Environmental Assessment of the Alaskan Continental Shelf, Final Reports **19**:311-392.
Cameron, M. F., J. L. Bengtson, P. L. Boveng, J. K. Jansen, B. P. Kelly, S. P. Dahle, E. A. Logerwell, J. E. Overland, G. L. Sabine, G. T. Waring, and J. M. Wilder. 2010. Status review of the bearded seal (*Erignathus barbatus*). National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Alaska Fisheries Science Center.
Carder, D. A., and S. H. Ridgway. 1990. Auditory brainstem response in a neonatal sperm whale, *Physeter* spp. Journal of the Acoustical Society of America **88**:S4.
CH2M. 2016. Anchorage Port Modernization Program Test Pile Program Report of Findings. Prepared for Municipality of Anchorage, Port of Anchorage. Prepared by CH2M Engineers, Inc., Anchorage, Alaska.
Clarke, J. T., C. L. Christman, A. A. Brower, and M. C. Ferguson. 2012. Distribution and relative abundance of marine mammals in the Alaskan Chukchi and Beaufort Seas, 2011. Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE), Alaska OCS Region, Anchorage, AK.
Clarke, J. T., C. L. Christman, A. A. Brower, and M. C. Ferguson. 2013a. Distribution and relative abundance of marine mammals in the northeastern Chukchi and western Beaufort seas, 2012.
Clarke, J. T., K. M. Stafford, S. Moore, B. Rone, L. Aerts, and J. L. Crance. 2013b. Subarctic Cetaceans in the Southern Chukchi Sea. Oceanography **26**:136.
Cranford, T. W., and P. Krysl. 2015. Fin whale sound reception mechanisms: skull vibration enables low-frequency hearing. PLoS ONE **10**:e0116222.
Edds, P. L. 1988. Characteristics of finback Balaenoptera physalus vocalizations in the St. Lawrence Estuary. Bioacoustics **1**:131-149.
Erbe, C. 2002a. Hearing abilities of baleen whales. Defense Research and Development Canada.
Erbe, C. 2002b. Hearing Abilities of Baleen Whales. Defense Research and Development Canada, Ottawa, Ont.
Fay, F. H. 1974. The role of ice in the ecology of marine mammals of the Bering Sea. Oceanography of the Bering Sea:383-399.
Fechhelm, R.G., L.R. Martin, B.J. Gallaway, W.J. Wilson, and W.B. Griffiths. 2001. “Estimating the Hydrographic Effects of Prudhoe bay Causeway Breaches Using the Before-After Control-Impact (BACI) Analysis.” Arctic 54(2): 162-173.
Frazer, L. N., and E. Mercado III. 2000. A sonar model for humpback whale song. IEEE Journal of Oceanic Engineering **25**:160-182.
Fritz, L. 2012. Traffic impacts to Steller sea lions and designated critical habitat around Dutch Harbor. Email from Lowell Fritz (NMML) to Alicia Bishop (NMFS AKR). Received April 6, 2012.

Frost, K., L. Lowry, and J. Burns. 1988. Distribution, abundance, migration, harvest, and stock identity of beluga whales in the Beaufort Sea. Beaufort Sea (Sale 97) information update. OCS Study MMS:86-0047.

Frost, K., A. Whiting, M. Cameron, and M. Simpkins. 2008. Habitat use, seasonal movements and stock structure of bearded seals in Kotzebue Sound, Alaska. Tribal Wildlife Grants Program, Fish and Wildlife Service, Tribal Wildlife Grants Study U-4-IT. Final report from the Native Village of Kotzebue, Kotzebue, AK, for US Fish and Wildlife Service, Anchorage, AK:1-16.

Frost, K. J. 1985. The ringed seal (*Phoca hispida*). Pages 79-87 *in* J. J. Burns, K. J. Frost, and L. F. Lowry, editors. Marine Mammals Species Accounts. Alaska Department of Fish and Game, Juneau, AK.

Frost, K. J., and J. J. Burns. 1989. Winter Ecology of Ringed Seals (Phoca hispida) in Alaska

Frost, K. J., and L. F. Lowry. 1984. Trophic relationships of vertebrate consumers in the Alaskan Beaufort Sea.

Frost, K. J., L. F. Lowry, G. Pendleton, and H. R. Nute. 2002. Monitoring distribution and abundance of ringed seals in northern Alaska. OCS Study MMS **43**.

Funk, D., D. Hannay, D. Ireland, R. Rodrigues, and W. R. Koski. 2008. Marine mammal monitoring during open water seismic exploration by Shell Offshore, Inc. in the Chukchi and Beaufort Seas, July-November 2007: 90 day report. Prep. By LGL Alaska Research Assoc., Inc., Anchorage, AK; LGL Limited environmental research associates, King City, Ont. Canada; and Greenridge Sciences and JASCO Applied Sciences for Shell Offshore, Inc., NMFS and USFWS., LGL Alaska Research Assoc., Inc., Anchorage, AK.

Funk, D., C. Reiser, D. Ireland, R. Rodrigues, and W. Koski. 2011. Joint monitoring program in the Chukchi and Beaufort seas, 2006–2010. LGL Alaska Draft Report P1213-1, Report from LGL Alaska Research Associates, Inc., LGL Ltd., Greeneridge Sciences, Inc., and JASCO Research, Ltd., for Shell Offshore, Inc. and Other Industry Contributors, and National Marine Fisheries Service, US Fish and Wildlife Service.

Goddard, P. D., and D. J. Rugh. 1998. A group of right whales seen in the Bering Sea in July 1996. Marine Mammal Science **14**:344-349.

Goold, J. C., and S. E. Jones. 1995. Time and frequency domain characteristics of sperm whale clicks. Journal of the Acoustical Society of America **98**:1279-1291.

Gray, L.M. and D.S. Greeley. 1980. Source level model for propeller blade rate radiation for the world's merchant fleet. Journal of the Acoustical Society of America 67:516–522.

Greene, C. R., S. B. Blackwell, and M. W. McLennan. 2008. Sounds and vibrations in the frozen Beaufort Sea during gravel island construction. The Journal of the Acoustical Society of America **123**:687-695.

Hastings MC, Popper AN 2005. Effects of Sound on Fish. California Department of Transportation Contract 43A0139, Task Order 1.

Harwood, L. A., and I. Stirling. 1992. Distribution of ringed seals in the southeastern Beaufort Sea during late summer. Canadian Journal of Zoology **70**:891-900.

Hildebrand, J. A. 2009. Anthropogenic and natural sources of ambient noise in the ocean. Marine Ecology Progress Series **395**:5-20.

Holland, L.E. 1986. Effects of barge traffic on distribution and survival of ichthyoplankton and small fishes in the upper Mississippi River. Trans. Am. Fish. Soc. 115:162-165.

ICF Jones & Stokes, and Illingworth and Rodkin Inc. 2012. Technical guidance for assessment and mitigation of the hydroacoustic effects of pile driving on fish. Final report prepared

by ICF Jones & Stokes, Sacramento, California, and Illingworth and Rodkin, Inc., Petaluma, California, for California Department of Transportation.
Jensen, A.S. and G.K. Silber. 2003. Large whale ship strike database. U.S. Department of Commerce, NOAA Technical Memorandum. NMFS-OPR-25.
Kelly, B. P., O. H. Badajos, M. Kunnasranta, J. R. Moran, M. Martinez-Bakker, D. Wartzok, and P. Boveng. 2010a. Seasonal home ranges and fidelity to breeding sites among ringed seals. Polar Biology **33**:1095-1109.
Kelly, B. P., J. Bengtson, P. Boveng, M. Cameron, S. Dahle, J. Jansen, E. Logerwell, J. Overland, C. Sabine, and G. Waring. 2010b. Status review of the ringed seal (*Phoca hispida*). U.S. Department of Commerce.
Kelly, B. P., J. L. Bengtson, P. L. Boveng, M. F. Cameron, S. P. Dahle, J. K. Jansen, E. A. Logerwell, J. E. Overland, C. L. Sabine, G. T. Waring, and J. M. Wilder. 2010c. Status review of the ringed seal (*Phoca hispida*). U.S. Department of Commerce, Seattle, WA.
Kelly, B. P., O. R. Harding, M. Kunnasranta, L. Quakenbush, and B. D. Taras. 2005. Correction factor for ringed seal surveys in Northern Alaska, Final Report.
Kelly, B. P., L. Quakenbush, and J. R. Rose. 1986. Ringed seal winter ecology and effects of noise disturbance. Institute of Marine Science, Fairbanks, Alaska.
Kennedy, A. S., A. N. Zerbini, B. K. Rone, and P. J. Clapham. 2014. Individual variation in movements of satellite-tracked humpback whales *Megaptera novaeangliae* in the eastern Aleutian Islands and Bering Sea. Endangered Species Research **23**:187-195.
Laist, D.W., A.R. Knowlton, J.G. Mead, A.S. Collet, M. Podesta. 2001. Collisions between ships and whales. Marine Mammal Science, 17:35-75.
Ljungblad, D. K., S. E. Moore, J. T. Clarke, and J. C. Bennett. 1987. Distribution, Abundance, Behavior, and Bioacoustics of Endangered Whales in the Western Beaufort and Northeastern Chukchi Seas, 1979-86. NOSC, San Diego, CA for USDOI, MMS, Alaska OCS Region, Anchorage, AK, NOSC, San Diego, CA.
Ljungblad, D. K., S. E. Moore, T. J. Clarke, ., and J. C. Bennett. 1986. Aerial surveys of endangered whales in the Northern Bering, Eastern Chukchi and Alaskan Beaufort Seas, 1985: with a seven year review, December 2011 Effects of Oil and Gas Activities in the Arctic Ocean Draft Environmental Impact Statement 7-64 References 1979-85. USDOI, MMS, Alaska OCS Region, Anchorage, AK.
Loughlin and York 2000 Loughlin, T. R., and A. E. York. 2000. An accounting of the sources of Steller sea lion, *Eumetopias jubatus*, mortality. Marine Fisheries Review 62:40-45.
MacIntyre, K. Q., K. M. Stafford, C. L. Berchok, and P. L. Boveng. 2013. Year-round acoustic detection of bearded seals (Erignathus barbatus) in the Beaufort Sea relative to changing environmental conditions, 2008–2010. Polar Biology **36**.
MacIntyre, K. Q., K. M. Stafford, P. B. Conn, K. L. Laidre, and P. L. Boveng. 2015. The relationship between sea ice concentration and the spatio-temporal distribution of vocalizing bearded seals (Erignathus barbatus) in the Bering, Chukchi, and Beaufort Seas from 2008 to 2011. . Progress in Oceanography **136**:241-249.
McDonald M.A., Hildebrand J.A., Mesnick S.L. 2006. Biogeographic characterization of blue whale song worldwide: using song to identify populations. Journal of Cetacean Research and Management 8: 55–65.
Merrick, R.L. and T.R. Loughlin. 1997. Foraging behavior of adult female and young-of-the-year Steller sea lions in Alaskan waters. Canadian Journal of Zoology. 75(5): 776-786.
Miles, P.R., C.I. Malme, and W.J. Richardson. 1987. Prediction of drilling site-specific interaction of industrial acoustic stimuli and endangered whales in the Alaskan Beaufort

Sea. Report prepared by BBN Laboratories Inc., Cambridge, MA and LGL Ltd., King City, ON for the U.S. Department of the Interior Minerals Management Service, Alaska OCS Office, Anchorage, AK.
Miller, G., R. Elliott, T. Thomas, V. Moulton, and W. Koski. 2002. Distribution and numbers of bowhead whales in the eastern Alaskan Beaufort Sea during late summer and autumn, 1979-2000. Richardson, WJ and DH Thomson (eds):2002-2012.
Møhl, B., M. Wahlberg, P. T. Madsen, A. Heerfordt, and A. Lund. 2003. The monopulsed nature of sperm whale clicks. Journal of the Acoustical Society of America **114**:1143-1154.
Monnahan, C. C., Branch, T. A., Stafford, K. M., Ivashchenko, Y. V., & Oleson, E. M. 2014. Estimating historical eastern North Pacific blue whale catches using spatial calling patterns. PloS one, 9(6), e98974.
Monnett, C., and S. D. Treacy. 2005. Aerial surveys of endangered whales in the Beaufort Sea, fall 2002-2004. Page 153 *in* Minerals Management Service, editor., Anchorage, Alaska.
Moore, S. 2000. Detecting right whales using passive acoustics in SE Bering Sea.
Moore, S. E., and R. R. Reeves. 1993. Distribution and movement Pages 313-386 *in* J. Burns, J. J. Montague, and C. J. Cowles, editors. The Bowhead Whale. Society of Marine Mammalogy.
Moore, S. E., J. M. Waite, N. A. Friday, and T. Honkalehto. 2002. Cetacean distribution and relative abundance on the central-eastern and the southeastern Bering Sea shelf with reference to oceanographic domains. Progress in Oceanography **55**:249-261.
Moore, S. E., and K. L. Laidre. 2006. Trends in sea ice cover within habitats used by bowhead whales in the western Arctic. Ecological Applications **16**:932-944.
Moulton, V. D., R. E. Elliott, W. J. Richardson, and T. L. McDonald. 2002a. Fixed-wing aerial surveys of seals near BP's Northstar and Liberty sites in 2001 (and 1997-2001 combined).
Moulton, V. D., W. J. Richardson, T. L. McDonald, R. E. Elliott, and M. T. Williams. 2002b. Factors influencing local abundance and haulout behavior of ringed seals (*Phoca hispida*) on landfast ice of the Alaskan Beaufort Sea. Canadian Journal of Zoology-Revue Canadienne De Zoologie **90**:1900-1917.
Munger, L., and J. Hildebrand. 2004. Final Report: Bering Sea Right Whales: Acoustic recordings and public outreach. NPRB Grant T-2100.
Muto, M. M., V. T. Helker, R. P. Angliss, B. A. Allen, P. L. Boveng, J. M. Breiwick, M. F. Cameron, P. J. Clapham, S. P. Dahle, M. E. Dahlheim, B. S. Fadely, M. C. Ferguson, L. W. Fritz, R. C. Hobbs, Y. V. Ivashchenko, A. S. Kennedy, J. M. London, S. A. Mizroch, R. R. Ream, E. L. Richmond, K. E. W. Shelden, R. G. Towell, P. R. Wade, J. M. Waite, and A. N. Zerbini. 2017. Alaska marine mammal stock assessments, 2016. NOAA Tech. Memo. NMFS-AFSC-355, Alaska Fisheries Science Center 7600 Sand Point Way N.E. Seattle, WA 98115.
Neilson, J.L., C.M. Gabriele, A.S. Jensen, K. Jackson, and J.M. Straley. 2012. Summary of reported whale vessel collisions in Alaskan waters. Journal of Marine Biology 2012:1-18.
Niedoroda, A., H. Chin, and P. Mangarella. 1980. Addendum to Environmental Studies Associated with the Prudhoe Bay Dock- Physical Oceanography and Benthic Ecology. The 1978 Studies. Prepared by Woodward-Clyde Consultants, Anchorage, Alaska, for ARCO Alaska, Inc.

Nishiwaki, M. 1966. Distribution and migration of the larger cetaceans in the North Pacific as shown by Japanese whaling results. Pages 171-191 Whales, Dolphins and Porpoises. University of California Press, Berkeley.

NMFS. 2008. Recovery Plan for the Steller sea lion (*Eumatopia jubatus*). National Marine Fisheries Service, Juneau, Alaska.

NMFS. 2016a. Occurrence of Distinct Population Segments (DPSs) of Humpback Whales off Alaska. National Marine Fisheries Service, Alaska Region. Revised December 12, 2016.

NMFS. 2016b. Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing: Underwater Acoustic Thresholds for Onset of Permanent and Temporary Threshold Shifts. U.S. Dept. of Commer., NOAA. NOAA Technical Memorandum NMFS-OPR-55, 178 p.

NMFS. 2018. Revision to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0): Underwater Acoustic Thresholds for Onset of Permanent and Temporary Threshold Shifts. U.S. Dept. of Commer., NOAA. NOAA Technical Memorandum NMFS-OPR-55, 178 p.

NOAA. 2016. Nautical Chart 16061 for Greater Prudhoe Bay, Alaska. Office of Coast Survey, Last Corrected 12/12/2016. Website accessed 5/13/2017: http://www.charts.noaa.gov/OnLineViewer/16061.shtml.

Odom, M.C., D.J. Orth, and L.A. Nielsen. 1992. Investigation of barge-associated mortality of larval fishes in the Kanawha River. Virginia Journal of Science 43:41-45.

Parks, S.E., D.R. Ketten, J.T. O'Malley, and J. Arrunda. 2007. Anatomical predictions of hearing in the North Atlantic right whale. The Anatomical Record. 290: 734-744.

Payne, K., and R. Payne. 1985. Large scale changes over 19 years in songs of humpback whales in Bermuda. Zeitschrift fur Tierpsychologie **68**:89-114.

Quakenbush, L., J. Citta, J. C. George, R. J. Small, M. P. Heide-Jorgensen, L. Harwood, and H. Brower. 2010. Western Arctic bowhead whale movements and habitat use throughout their migratory range: 2006–2009 satellite telemetry results. Page 108 Alaska Marine Science Symposium, Anchorage, Alaska.

Reeves, R. R., S. Leatherwood, S. A. Karl, and E. R. Yohe. 1985. Whaling results at Akutan (1912-39) and Port Hobron (1926-37), Alaska. Report of the International Whaling Commission **35**:441-457.

Richardson, W. J., C. R. Greene Jr., C. I. Malme, and D. H. Thomson. 1995. Marine Mammals and Noise. Academic Press, San Diego, California.

Richardson, W. J., and M. T. Williams. 2003. Monitoring of industrial sounds, seals, and bowhead whales near BP's Northstar Oil Development, Alaskan Beaufort Sea, 1999–2002. Anchorage, Alaska.

Rone, B. K., C. L. Berchok, J. L. Crance, and P. J. Clapham. 2012. Using air-deployed passive sonobuoys to detect and locate critically endangered North Pacific right whales. Marine Mammal Science **28**:E528-E538.

Rone, B. K., A. Zerbini, A. S. Kennedy, and P. J. Clapham. 2010. Aerial surveys in the southeastern Bering Sea: Occurrence of the endangered North Pacific right whale (Eubalaena japonica) and other marine mammals during the summers of 2008 and 2009. Page 149 Alaska Marine Science Symposium, Anchorage, Alaska.

Sanzone, D., Streever, B., Burgess, B., and Lukin, J. (editors). 2010. Long-Term Ecological Monitoring in BP's North Slope Oil Fields: 2009 Annual Report. BP Exploration (Alaska) Inc., Anchorage, Alaska

Savarese, D. M., C. M. Reiser, D. S. Ireland, and R. Rodrigues. 2010. Beaufort Sea vessel-based monitoring program. Pages 6-1 - 6-53 *in* D. W. Funk, D. S. Ireland, R. Rodrigues, and W. R. Koski, editors. Joint Monitoring Program in the Chukchi and Beaufort seas, open water seasons, 2006–2008.

Silber, G. K. 1986. The relationship of social vocalizations to surface behavior and aggression in the Hawaiian humpback whales (*Megaptera novaeangliae*). Canadian Journal of Zoology **64**:2075-2080.

Simmonds, M., S. Dolman, and L. Weilgart. 2004. Ocean of noise – A WDCS Science report. Whale and Dolphin Conservation Society. 164 pp.

Simpkins, M. A., L. M. Hiruki-Raring, G. Sheffield, J. M. Grebmeier, and J. L. Bengtson. 2003. Habitat selection by ice-associated pinnipeds near St. Lawrence Island, Alaska in March 2001. Polar Biology **26**:577-586.

Smultea, M. A., K. Lomac-MacNair, P. Haase, and C. E. Bacon. 2014. 90-Day Report for Marine Mammal Monitoring and Mitigation during BPXA Liberty Shallow Geohazard Seismic and Seabed Mapping Survey, Beaufort Sea, Alaska, July-August 2014. .

Stafford, K. M., S. L. Nieukirk, and C. G. Fox. 2001. Geographic and seasonal variation of blue whale calls in the North Pacific. Journal Cetacean Research and Management. 3:65-76.

Stafford, K.M. 2003. Two types of blue whale calls recorded in the Gulf of Alaska. Marine Mammal Science 19(4):682-693.

Stafford, K. M., and D. K. Mellinger. 2009. Analysis of acoustic and oceanographic data from the Bering Sea, May 2006 – April 2007. North Pacific Research Board Final Report, NPRB Project #719, 24 pp.

Stewart, B. S., S. A. Karl, P. K. Yochem, S. Leatherwood, and J. L. Laake. 1987. Aerial surveys for cetaceans in the former Akutan, Alaska, whaling grounds. Arctic **40**:33-42.

Stirling, I., W. R. Archibald, and D. DeMaster. 1977. Distribution and abundance of seals in the eastern Beaufort Sea. Journal of the Fisheries Board of Canada **34**:976-988.

Stirling, I., M. Kingsley, and W. Calvert. 1982. The distribution and abundance of seals in the eastern Beaufort Sea, 1974-79. Environment Canada, Canadian Wildlife Service.

Thompson, P. O., W. C. Cummings, and S. J. Ha. 1986. Sounds, source levels, and associated behavior of humpback whales, Southeast Alaska. Journal of the Acoustical Society of America **80**:735-740.

Thompson, P. O., L. T. Findley, and O. Vidal. 1992. 20-Hz pulses and other vocalizations of fin whales, *Balaenoptera physalus*, in the Gulf of California, Mexico. Journal of the Acoustical Society of America **92**:3051-3057.

Treacy, S. D., J. S. Gleason, and C. J. Cowles. 2006. Offshore distances of bowhead whales (*Balaena mysticetus*) observed during fall in the Beaufort Sea, 1982-2000: an alternative interpretation. Arctic **59**:83-90.

Tyack, P., and H. Whitehead. 1983. Male competition in large groups of wintering humpback whales. Behaviour **83**:132-154.

USACE. 2012. Final Environmental Impact Statement. Alaska Stand Alone Pipeline. Released October 2012. In cooperation with Alaska Department of Natural Resource, State Pipeline Coordinator's Office, U.S. Coast Guard, U.S. Department of the Interior, National Park Service, U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, and U.S. Environmental Protection Agency.

Vanderlaan, A.S.M., and C.T. Taggart. 2007. Vessel collisions with whales: The probability of lethal injury based on vessel speed. Marine Mammal Science, 23:144-156.

Vu, E. T., D. Risch, C. W. Clark, S. Gaylord, L. T. Hatch, M. A. Thompson, D. N. Wiley, and S. M. Van Parijs. 2012. Humpback whale song occurs extensively on feeding grounds in the western North Atlantic Ocean. Aquatic Biology **14**:175-183.

Wade, P. R., T. J. Quinn II, J. Barlow, C. S. Baker, A. M. Burdin, J. Calambokidis, P. J. Clapham, E. Falcone, J. K. B. Ford, C. M. Gabriele, R. Leduc, D. K. Mattila, L. Rojas-Bracho, J. Straley, B. L. Taylor, J. Urbán R., D. Weller, B. H. Witteveen, and M. Yamaguchi. 2016. Estimates of abundance and migratory destination for North Pacific humpback whales in both summer feeding areas and winter mating and calving areas. Paper SC/66b/IA21 submitted to the Scientific Committee of the International Whaling Commission, June 2016, Bled, Slovenia.

Watkins, W. A. 1981. Activities and underwater sounds of fin whales. Scientific Reports of the Whales Research Institute **33**:83-117.

Watkins, W. A., P. Tyack, K. E. Moore, and J. E. Bird. 1987. The 20-Hz signals of finback whales (*Balaenoptera physalus*). Journal of the Acoustical Society of America **82**:1901-1912.

Weilgart, L. S., and H. Whitehead. 1993. Coda communication by sperm whales (*Physeter macrocephalus*) off the Galápagos Islands. Canadian Journal of Zoology **71**:744-752.

Weir, C. R., A. Frantzis, P. Alexiadou, and J. C. Goold. 2007. The burst-pulse nature of 'squeal' sounds emitted by sperm whales (*Physeter macrocephalus*). Journal of the Marine Biological Association of the United Kingdom **87**:39-46.

Wieting, D. 2016. Interim Guidance on the Endangered Species Act Term "Harass". National Marine Fisheries Service, Office of Protected Resources. Silver Spring, MD. October 21, 2016.

Williams, M. T., J. A. Coltrane, and C. J. Perham. 2001. On-ice location of ringed seal structures near Northstar, December 1999 and May 2000.*in* W. J. Richardson and M. T. Williams, editors. Monitoring of industrial sounds, seals, and whale calls during construction of BP's Northstar Oil Development, Alaskan Beaufort Sea, 2000-2001

Winn, H. E., P. J. Perkins, and T. C. Poulter. 1970. Sounds of the humpback whale. Pages 39-52 Seventh Annual Conference on Biological Sonar and Diving Mammals, Stanford Research Institute, Menlo Park, California.

Zerbini, A. N., A. S. Kennedy, B. K. Rone, C. Berchok, P. J. Clapham, and S. E. Moore. 2009. Occurrence of the critically endangered North Pacific right whale (*Eubalaena japonica*) in the Bering Sea (Abstract). Pages 285-286 18th Bienn. Conf. Biol. Mar. Mamm, Québec, Canada.

Zerbini, A. N., J. M. Waite, J. L. Laake, and P. R. Wade. 2006. Abundance, trends and distribution of baleen whales off Western Alaska and the central Aleutian Islands. Deep Sea Research Part I: Oceanographic Research Papers **53**:1772-1790.

Enclosure 1: ASAP Mitigation Measures

Protected Species Observers (PSOs), will be located onsite throughout pile driving, dredging, ditchwitch and screeding activities. PSOs will monitor the relevant zones indicated for each activity listed in Table 1. Where requirements for immediate actions/responses are noted, the requirements do not apply if they would create an imminent and serious threat to a person, vessel, or aircraft. In that event, actions/responses will be taken as soon as possible.

Table 1. Monitoring Zones for Each Activity

Activity	Zone Radius (m)
Pile driving	2,200[a]
Non-pile driving activities – dredging, ditchwitch, and screeding	1,000[b]
[a]The 2,200 m zone radius is a shutdown zone, and AGDC must order shutdowns of impact and vibratory pile driving whenever marine mammal(s) are expected to enter or are observed within the 2,200 m zone. [b]The 1,000 m zone radius is a shutdown zone, and AGDC must order shutdowns of dredging, ditchwitch, and screeding activities whenever marine mammal(s) are expected to enter or are observed within the 1,000 m zone.	

Protected Species Observer Protocols

1. Protected Species Observers (PSOs) will be in good physical condition and be able to withstand harsh weather conditions for an extended period of time. They must have vision correctable to 20-20.
2. PSOs will have the experience and ability sufficient to conduct field observations and data collection according to assigned protocols.
3. PSOs will have experience or training in field identification of marine mammals and marine mammal behavior. PSO will be able to accurately identify marine mammals in Alaskan waters by species.
4. PSOs must be able to accurately identify and distinguish between species of cetaceans and pinnipeds under field conditions.
5. PSOs will have writing skills sufficient to prepare understandable reports of observations and technical skills to complete data entry forms accurately.
6. Prior to the transportation season, PSOs will attend a PSO training course (taught by an experienced trainer following a course syllabus approved by NMFS). Training may be delivered by video using the same syllabus. This course will: a) provide ecological information on Alaska's marine mammals and specifics on the ecology and management concerns of those marine mammals; b) teach proper equipment use and methodologies in marine mammal observation and recording; and c) provide instruction in marine mammal identification, PSO roles and responsibilities, and proper reporting protocols and techniques.
7. PSO will work in shifts lasting no longer than 4 hours with at least a 1-hour break from marine mammal monitoring duties between shifts. PSOs will not perform PSO duties for more than 12 hours in a 24-hour period (to reduce fatigue). Note that during the 1-hour

break for a PSO, a crew member can be assigned to be the observer as long as they do not have other duties at that time and they have received instructions and tools to allow them to make marine mammal observations.

8. PSOs will be positioned such that the entire monitoring zone of activities is visible.
9. PSOs will have the ability to effectively communicate orally, by radio and in person, with project personnel to provide real-time information on marine mammals, and will have the ability and authority to order appropriate mitigation responses to avoid takes of all marine mammals.
10. The PSOs will have the following equipment to address their duties:
    a. Range finder;
    b. Annotated chart and compass;
    c. Inclinometer;
    d. Two-way radio communication, or equivalent, with onsite project manager;
    e. Appropriate personal protective equipment;
    f. Daily tide tables for the project area;
    g. Watch or chronometer;
    h. Binoculars (7x50 or higher magnification) with built-in rangefinder or reticles (rangefinder may be provided separately);
    i. Handheld global positioning system;
    j. A copy of this LOC and all appendices, printed on waterproof paper and bound;
    k. Observation Record forms printed on waterproof paper, or weatherproof electronic device allowing for required PSO data entry.
11. PSOs will record observations on data forms or into electronic data sheets, electronic copies of which will be submitted to NMFS in a digital spreadsheet format on a monthly basis.
12. PSOs will have stop-work authority during pile driving, dredging, ditchwitch, or screeding in the event a listed-marine mammal is observed in, or is determined by the PSO to be likely to enter the monitoring zone.
13. If a listed marine mammal is observed within a monitoring zone or is otherwise harassed, harmed, injured, or disturbed (see Item 74), PSOs will report that occurrence to NMFS using the contact specified in Item 75. Alternately, crew members may report incidences of harassment, harm, injury, or disturbance of marine mammals to a PSO who has been designated as the point of contact between crew members and NMFS.
14. PSOs will have no other primary duties beyond watching for, acting on, and reporting events related to marine mammals. For crew members, this mitigation measure only applies during the time the crew member must assume the duties of the PSO due to the absence of a qualified PSO.
15. Prior to commencing in-water work or at changes in watch, PSOs should establish contact with the construction foreman / superintendent / PIC and operators (i.e., pile

driving, dredging, ditchwitch, and screeding). The PSO will brief the foreman / superintendent as to the shutdown procedures if the listed species are observed likely to enter or within the monitoring zone, and shall request that the foreman instruct the crew to notify the PSO when a listed species is observed. If the foreman/superintendent goes "off shift" and delegates his duties, the designated PIC should contact the PSO on duty to update the point of contact.

16. PSOs will use NMFS-approved Observation Records. Observation Records will be used to record the following:
    a. Date and time that activity and observation efforts begin and end;
    b. Weather parameters (e.g., percent cloud cover, percent glare, visibility) and sea state where the Beaufort Wind Force Scale will be used to determine sea-state (https://www.weather.gov/mfl/beaufort);
    c. Species, numbers, and, if possible, sex and age class of observed marine mammals, along with the date, time, and location of the observation;
    d. The predominant sound-producing activities occurring during each marine mammal sighting;
    e. Marine mammal behavior patterns observed, including bearing and direction of travel;
    f. Behavioral reactions of marine mammals just prior to, or during sound producing activities;
    g. Location of marine mammals, distance from observer to the marine mammal, and distance from the predominant sound-producing activity or activities to marine mammals;
    h. Whether the presence of marine mammals necessitated the implementation of mitigation measures to avoid acoustic impact, and the duration of time that normal exploration operations were affected by the presence of marine mammals;

In-Water Activity

17. For in-water activities listed in Table 1, at least two PSOs with stop-work authority will be working alternating shifts. At least one will monitor the 2,200 m monitoring zone during pile driving and the 1,000 m monitoring zone during dredging, ditchwitch and screeding activities. To effectively monitor the zones, PSOs will be positioned at the best practical vantage points that will provide a 360-degree view. This location, with optimal viewing of the monitoring zones, will be verified prior to pile driving start up procedures or initiation of other activities.

18. Prior to commencing pile driving (installation or removal), dredging, ditchwitch and screeding activities, PSOs will scan waters within the pile driving, dredging, ditchwitch and screeding monitoring zones and confirm no listed marine mammals are observed to be present within the monitoring zones for 30 minutes prior to initiation of activity. If one or more listed marine mammals are observed within the monitoring zones, pile driving will not begin until the marine mammals exit the monitoring zones of their own accord, and the zones have remained clear of marine mammals for 30 minutes immediately prior to activity.

19. If no listed marine mammals are observed within the pile driving monitoring zone for 30 minutes, soft-start procedures will be implemented immediately prior to operational impact or vibratory pile driving activities to provide a chance for marine mammals to leave the monitoring zone prior to pile driving at operational power. For impact pile driving, a soft-start is comprised of an initial set of three strikes from the hammer at about 40 percent energy, followed by a 30-second waiting period, then two subsequent three-strike sets with associated 30-second waiting periods at the reduced energy. For vibratory pile driving, a soft-start requires pile driving operators to initiate sound from vibratory hammers for fifteen seconds at reduced energy followed by a 1 minute waiting period, with the procedure repeated two additional times. Following this soft-start procedure, impact or vibratory pile driving at operational power may commence provided marine mammals remain absent from the pile driving monitoring zone.

20. The PSOs will continuously monitor the monitoring zones during pile driving, dredging, ditchwitch and screeding operations for the presence of marine mammals, and will order the pile driving, dredging, ditchwitch and screeding activities to immediately cease if one or more marine mammals appears likely to enter the monitoring zones.

21. Pile driving, dredging, ditchwitch or screeding operations will cease immediately when the PSO indicates that marine mammals are likely to enter, or are observed within, the monitoring zones (Table 1). When a marine mammal or other protected species is observed approaching an applicable monitoring zone, the PSO on duty will immediately call or radio the operators and initiate a shutdown of pile driving, dredging, ditchwitch or screeding activities. If direct communication with the operators is not practical, the foreman/superintendent will relay the shutdown order to the equipment operators.

22. To the extent practicable, AGDC will begin pile driving as early in the day as conditions allow for effective monitoring of the entire monitoring zone (visibility greater than 2,200 m and Beaufort Sea state of 4 or less) in an attempt to complete most or all of the pile driving in a single day prior to nightfall.

23. Monitoring will take place during daylight conditions with adequate visibility (6 km or greater) and Beaufort Sea state (4 or less), starting 30 minutes before soft-start procedure begins.

24. If visibility degrades to less than 2,200 m during pile driving, AGDC may continue to drive the section of pipe that was being driven when visibility fell below 2,200 m to its target depth, but will not drive additional sections of piling. If pile driving is suspended (to weld on a new section, for example) when the monitoring zone is not visible, AGDC will not resume pile driving until visibility exceeds 2,200 m and the PSO has indicated that the zone has remained devoid of marine mammals for 30 minutes prior to additional pile driving.

25. If visibility degrades to less than 1,000 m during dredging, ditchwitch or screeding activities, AGDC will cease activity until the monitoring zone visibility exceeds 1,000 m and the PSO has indicated that the zone has remained devoid of marine mammals for 30 minutes prior to additional activity.

26. Following a lapse of pile driving, dredging, ditchwitch or screeding activities of more than 30 minutes (due to time spent welding a new section of pipe, low visibility

conditions, shutdown due to presence of marine mammals, mechanical delays or other causes), the PSO will authorize resumption of activities (using soft-start procedures for pile driving) only after the PSO provides assurance that listed marine mammals have not been present in the monitoring zones for at least 30 minutes immediately prior to resumption of operations.

27. Following shutdown of pile driving, dredging, ditchwitch or screeding activities for less than 30 minutes due to the presence of marine mammals in the monitoring zone, pile driving may commence when the PSO provides assurance that listed marine mammals were observed exiting the monitoring zones or have not been seen in the monitoring zones for 30 minutes (for cetaceans) or 15 minutes (for pinnipeds).
28. PSOs will have immediate communication with the equipment operator (or other person in charge [PIC] if direct communication is not practical), either by radio or phone to ensure timely shutdowns to avoid takes and prevent prolonged sound exposure to marine mammals.
29. Shutdown procedures will be initiated at the PSO's direction when warranted due to the presence of marine mammals; the PSO will authorize resumption of pile driving (using soft-start protocols, if necessary), dredging, ditchwitch or screeding activities only when the PSO visually observes the marine mammal(s) as having left the monitoring zone, or when the PSO has not seen the animal(s) within the monitoring zone for 15 minutes (for pinnipeds) or 30 minutes (for cetaceans).

Marine Transit Route

30. The applicant will implement measures to minimize risk of spilling hazardous substances. These measures will include: avoiding operation of watercraft in the presence of sea ice to the extent practicable and using fully-operational vessel navigation systems composed of radar, chartplotter, sonar, marine communication systems, and satellite navigation receivers, as well as Automatic Identification System (AIS) for vessel tracking.
31. Relative to designated North Pacific right whale critical habitat, project watercraft will either:
    a. avoid transiting through designated North Pacific right whale critical habitat (73 FR 19000);
    b. in the absence of on-duty PSOs, travel at speeds of 5 knots (kn) or less within the boundaries of designated North Pacific right whale critical habitat; or
    c. implement mitigation measures 31(c)(i)-31(c)(iv) while traveling within North Pacific right whale critical habitat at speeds greater than 5 kn.
        i. Operators will maintain a ship log indicating the time and geographic coordinates at which vessels enter and exit North Pacific right whale critical habitat.
        ii. Vessels will travel at speeds of 10 kn (or less) with Protected Species Observers (PSOs) while traveling within the boundaries of designated North Pacific right whale critical habitat.
        iii. At least one PSO or trained crew members will be present during travel

through North Pacific right whale critical habitat. PSOs or trained crew members will maintain a constant watch for marine mammals from the bridge or other similar vantage points. At least one observer will vigilantly scan for whales at all times.

iv. PSOs or trained crew members will maintain direct contact with the vessel pilot, advising the pilot/operator of the position of all observed marine mammals as soon as they are observed.

32. When project vessels are traveling through North Pacific right whale critical habitat in a manner that requires the use of a PSO (see measure 31), at least one PSO will alternate shifts during travel through North Pacific right whale critical habitat. PSOs will maintain a constant watch for all marine mammals from the bridge or other similar vantage points. At least one PSO will vigilantly scan for whales at all times. PSOs will maintain direct contact with the vessel pilot, advising the pilot/operator of the position of observed marine mammals as soon as they are observed.

33. When project vessels are travelling through North Pacific right whale critical habitat in a manner that requires the use of a PSO (see measure 31), PSOs will record marine mammals observed within North Pacific right whale critical habitat using NMFS-approved observation forms. Sightings of North Pacific right whales will be transmitted to NMFS within 24 hours. These sighting reports will include the following information:

    a. Date, time, and geographic coordinates of the sighting(s).

    b. Species observed, number of animals observed per sighting event; and number of adults/juveniles/calves per sighting event (if determinable).

    c. Because sightings of North Pacific right whales are uncommon, and photographs that allow for identification of individual whales from markings are extremely valuable, photographs will be taken if feasible, but in a way that does not involve disturbing the animal (e.g., if vessel speed and course changes are not otherwise warranted, they will not take place for the purpose of positioning a photographer to take better photos). Photographs taken of North Pacific right whales will be submitted to NMFS.

34. The vessel operator will not purposely approach within 3 nautical miles (nm; 5.5 km) of major Steller sea lion rookeries or haulouts where vessel safety requirements allow and/or where practicable. Vessels will remain 3 nm (5.5 km) from all Steller sea lion rookery sites listed in paragraph 50 CFR 224.103 (d)(1)(iii).

35. Though take of marine mammals by vessel collision is not authorized, if a listed marine mammal is struck by a vessel, it must be reported to NMFS within 24 hrs. The following will be included when reporting vessel collisions with marine mammals:

    a. Information that would otherwise be listed in the PSO vessel report (see measure 72).

    b. Number and species of marine mammals involved in collision.

    c. The date, time, and location of the collision.

    d. The cause of the take (e.g., vessel strike).

e. The time the animal(s) was first observed and last seen.

f. Mitigation measures implemented prior to and after the animal was taken.

g. Contact information for PSO on duty at the time of the collision, ship's Pilot at the time of the collision, or ship's Captain.

Vessels Will Adhere to Applicable Marine Mammal Disturbance Reduction Guidelines

Vessels directly supporting the project will adhere to several applicable marine mammal-disturbance reduction guidelines, including the following:

36. Vessels will stay at least 300 m away from cow-calf pairs, feeding aggregations, or whales that are engaged in breeding behavior.

37. The vessel operator will avoid: i) direct approach of whales; ii) or operate in a way to separate members of a group of whales or sea lions from other members of that group; iii) causing a whale of any species to make multiple changes in direction; and iv) pursue marine mammals.

38. If a whale approaches the vessel and if maritime conditions safely allow, the engine will be put in neutral and the whale will be allowed to pass beyond the vessel. If the vessel is taken out of gear, vessel crew will ensure that no whales are within 50 m of the vessel when propellers are re-engaged, thus minimizing risk of marine mammal injury.

39. Outside of the North Pacific right whale habitat noted above (Conditions 31-33), vessels will comply with legal requirements associated with marine vessel operations. In addition, vessel operators will maintain a vigilant watch for marine mammals to avoid vessel strikes. When whales other than North Pacific right whales are sighted, vessel operators will observe direction of travel and attempt to maintain distances of 100 yards or greater between the whale and the vessel by working to alter course or slowing the vessel. If a North Pacific right whale is sighted, avoidance measures will be taken to maintain at least 800 m distance between the whale and the vessel.

Ice-Covered Season Mitigation Measures

Unless otherwise noted, these measures apply to offshore activities that involve ringed or bearded seals. It includes ice road and ice pad activities when they are conducted offshore and when the ice is not ground fast.

<u>Wildlife Training</u>

40. Prior to initiation of ice-road or ice trail-related activities, relevant project personnel will receive training developed in coordination with NMFS on Ice Road and Ice Trail BMPs. Training rosters or electronic training records will be available for review and inspection by the designated NMFS official. ASAP project-specific training also includes reviewing the project's Wildlife Interaction Plan. In addition to the BMPs, other topics in the Wildlife Interaction Plan may include:

    a. Ringed Seal Lair Ecology

        i. Physical Environment (habitat characteristics and how to potentially identify habitat)

ii. Physiology of Seal Lair Use (timing, location, etc.)
iii. Potential Effects of Disturbance
iv. Importance of Lairs to Ringed Seals

b. Brief Summary of Applicable Laws and Regulatory Requirements
i. MMPA
ii. ESA

c. Communication Plan (i.e., what to do if a seal is observed).

<u>General BMPs to Be Implemented Throughout the Ice Road/Ice Trail Season</u>

41. Ice road and ice trail speed limits will be 25 miles per hour (mph) for light duty vehicles, 15 mph for trucks, and 5 mph for all vehicles crossing over bridges.
42. Delineators will be placed at appropriate intervals that clearly mark the edges of ice roads and ice trails. Vehicles must travel in between these delineators.
43. Corners of vehicle mats, steel plates, and other materials used to bridge sections of hazardous ice, will be clearly marked.
44. Project personnel will be advised that interactions with or approaching ringed or bearded seals is prohibited.
45. Personnel will be instructed to remain in the vehicle and continue moving if they encounter a seal while driving on the road.
46. If a seal is observed or moves within approximately 500 ft of the center of an ice road or ice trail, a Field Environmental Specialist will be notified.
    a. If activities other than transit are continuing in the area, an Environmental Specialist or designated person will hourly monitor the seal until it moves a minimum of 150 ft from the ice road or ice trail. Activities including work that is occurring when the seal is observed and the behavior of the seal will be documented until the animal leaves the area or is no longer observed.
    b. If only transit is continuing in the area, others traveling through the area will be advised of the location of the seal and will provide updates on location.
    c. If no further activity is planned in the area, no further action is required.
47. Following seal or seal lair disturbance events on ice roads or ice trails, traffic will either be:
    a. re-routed to alternate ice road or ice trails if they are available, or
    b. for ice roads, routed to the far lane for 500 ft to each side of the disturbance site (or maximum distance if another lane exists for only part of that distance).
48. Blading and snow blowing will be limited to the delineated road and shoulder work areas. Snow will be blown from the road surface onto and the adjacent shoulder area to the extent practicable.
49. Ice road and ice trail construction, maintenance, and decommissioning will be performed from within the boundaries of the ice road shoulders, with work occurring within the project footprint and most work on the roadway itself. Rolling stock and equipment must travel in between the road delineators (Figure 1).

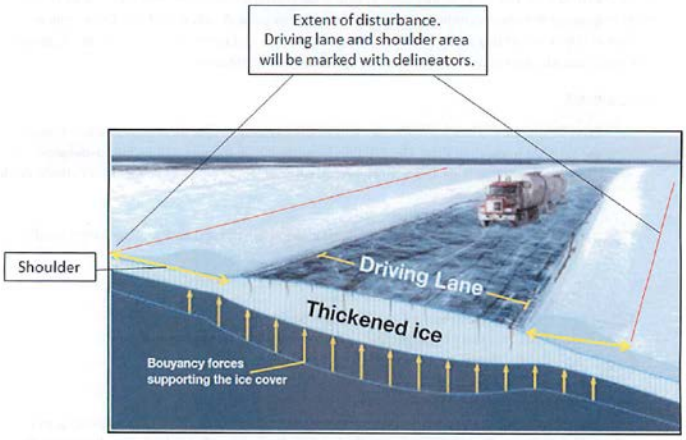


Figure 1. Ice road schematic indicating shoulder and driving lane that will be delineated with markers (BOEM 2018)

50. An observer (not the vehicle operator) will conduct a survey along offshore ice roads to observe if any ringed seals are within 500 ft of the roadway corridor, and either document the location of observed seals and seal lairs, or document that no seals or lairs were observed in this area. This will be done once per day. Observers for ice road and ice trail activities need not be trained PSOs, but they must understand the Wildlife Interaction Plan and Communication Plan. In addition, they must be capable of observing and monitoring seal presence and behaviors, and accurately and completely recording data (see measures 59-66).
51. Construction and decommissioning activities associated with ice roads and trail will not occur within 150 ft radius of an identified seal, but may proceed as soon as the seal, of its own accord, leaves the 150-foot area around those activities, or has not been observed within that radius for at least 12 hours. Maintenance of the ice roads may proceed as-needed and will not occur outside the project footprint. It is anticipated ice will be thickened to the extent of the project footprint, and maintenance will not occur outside that area. Maintenance that includes snow blowing will not include blowing snow toward a known seal or seal lair. In the event snow is accumulating on a road within a 150 ft. radius of an identified downwind seal or seal lair, operational measures will be used to avoid seal impacts, such as pushing snow further down the road before blowing it off the roadway. Vehicles will not stop within 150 ft of identified seals or within 500 ft of known seal lairs.
52. To decommission the road after it has been closed to traffic, delineators will be removed using a standard delineator puller attached to a loader.

<u>BMPs to be Implemented After March 1st</u>

Winter ice-road construction will begin as early as possible (typically December 1 through mid-February). It is anticipated that ice road construction activities will likely be initiated prior to March 1st, before the time when female ringed seals establish birth lairs. If after March 1st, ice road, ice trail, or pad construction is required in previously undisturbed areas, with water depths of greater than about 3m Mean Low Water, take of ringed seals may occur. After March 1st, the following BMPs will be implemented:

53. Prior to conducting any on-ice activities in undisturbed areas after March 1st, AGDC will consult with NMFS to incorporate mitigation measures to reduce impacts to seals.

54. When construction or decommissioning work must be performed within 150 ft of a known seal lair, a dedicated observer is required to maintain a watch of the lair until work is complete, and adhere to reporting measures 59-66 while maintaining the watch.

55. When construction or decommissioning work must be performed within 150 ft of an ice road bridge, a dedicated observer is required to maintain a watch of the 150 ft area until work is complete, and adhere to reporting measures 59-66 while maintaining the watch.

Ice Road and Ice Pad Observer Requirements and Responsibilities

56. Observers for ice road and ice trail activities need not be trained protected species observers, but they must understand the Wildlife Interaction Plan and Communication Plan, and must be capable of seeing and monitoring seal locations and behaviors, and accurately and completely recording data described in measures 59-66.

57. Observers will have sufficient equipment to aid in observing marine mammals, determining the location of observed marine mammals, and recording observations.

58. Observers or other designated personnel will submit a monitoring report in a digital and format to NMFS that can be queried within 90 days of the cessation of use of the ice road or ice trail. The report will provide details about marine mammal observations and interactions that occurred during ice road / ice trail use. At a minimum, the report will contain the information described in measures 59-66.

59. Observers will record the date, time, species, number, and geographic coordinate of seals observed within 500 ft of the edge of ice roads or ice trails. If weather or light conditions are limited such that some of this information cannot be collected, observers will identify that fact and list the information they can collect without disturbing the seals.

60. Observers will provide an account of interactions, or lack of apparent interaction, between humans (including human operated equipment) and seals or seal lairs that are within approximately 500 ft of ice roads or ice trails, noting seal and behavioral reactions to all human activities occurring within approximately 500 ft of the seal or seal lair.

61. Observers will provide a record of monitoring efforts, including date, time, duration of observation efforts, duration of time during which seals or seal lairs were known to be present within approximately 500 ft of human activities, and the behaviors exhibited by the seals during those observation periods.

62. Observers will record the approximate minimum distance between human activities and seals or seal lairs.

63. For seal lairs located within approximately 500 ft of ice roads or ice trails, observers will provide an account of the status of lairs through time.

64. Observers will describe measures taken to avoid disturbance of each seal and seal lair that occurred within approximately 150 ft and 500 ft of the roadway, respectively.

65. Observers will record the date, time, duration, and circumstances surrounding interrupted ice road or ice trail operations due to the presence of seals or seal lairs.

66. Monitoring reports and instances of seal and seal lair disturbance shall be provided or otherwise made available to Greg Balogh, NMFS PRD ANC supervisor, at greg.balogh@noaa.gov.

Reporting

North Pacific Right Whale Reporting

67. When project vessels are travelling through North Pacific right whale critical habitat in a manner that requires the use of PSOs (see measure 31), PSO's will collect, organize, and report on vessel travel within North Pacific right whale critical habitat and marine mammal observations that occur within that critical habitat. These reports will be submitted to NMFS (see measure 73 and 75) by the end of the calendar year during which records were made. The end-of-year report will outline the following information:
    a. Ship logs (time and location for when a vessel entered and exited North Pacific right whale critical habitat).
    b. Species, date, and time for each observation.
    c. Number of animals per sighting event; and number of adults/juveniles/calves per sighting event (if determinable).
    d. Geographic coordinates for the observed animals, with the position recorded by using the most precise coordinates practicable (coordinates must be recorded in decimal degrees, or similar standard (and defined) coordinate system).
    e. Environmental conditions as they existed during each sighting event, including sea conditions, weather conditions, visibility (km/mi), lighting conditions, and percent ice cover.
    f. Photographs and video obtained.

Ice Seal Reporting

68. Seals and seal lairs observed or identified within 500 ft of the edge of the ice road shoulder or ice trail will be reported to appropriate project personnel as described in item 59-66.

69. If activities other than transit are continuing in the area and seals are observed within 150 ft of the center of the ice road or ice trail, NMFS will be notified and the seals will be monitored via checks approximately every two hours during daylight hours until the seal is at least 150 ft from the roadway or has not been observed for at least 12 hours.

70. Operators who disrupt an occupied seal lair or hauled-out seal will report details of the disruption to NMFS as soon as reasonably possible but no later than 48 hours (items 59-66). Observations will continue approximately every two hours until the seal has not been observed at the site for at least 12 hours.

Final Report

71. PSO records associated with all marine mammals observed during pile driving, dredging, ditchwitch or screeding activities must be transmitted to NMFS (see measure 75) by the

end of the calendar year during which observations were made. These records will contain the information specified in measure 72.

72. For PSO effort that occurs during pile driving, dredging, ditchwitch or screeding activities, PSOs will record:

    a. The date and start and stop time for each PSO shift;

    b. Date and time of each significant event (e.g., a marine mammal sighting, operation shutdown, reason for operation shutdown, change in weather)

    c. Species, date, time, and duration for each sighting event.

    d. Number of animals per sighting event; and number of adults/juveniles/calves per sighting event.

    e. Primary, and, if observed, secondary behaviors of the marine mammals in each sighting event.

    f. Geographic coordinates for the observed animals, with the position recorded by using the most precise coordinates practicable (coordinates must be recorded in decimal degrees, or similar standard, and defined coordinate system).

    g. Time of the most recent pile-driving or other project activity prior to marine mammal observation.

    h. If in-water work ceases due to the presence of a marine mammal, the time work ceased and when work was resumed will be recorded.

73. A final report will be submitted to NMFS within 90 calendar days of the completion of the project summarizing the data recorded as per measure 72 and submitted to Greg Balogh, NMFS PRD ANC supervisor, at greg.balogh@noaa.gov.

74. If a listed marine mammal is determined by the PSO to have been disturbed, harassed, harmed, injured, or killed (e.g., a listed marine mammal(s) is injured or killed or is observed entering the 2,200 meter pile driving monitoring zone or the 1,000 m monitoring zone for dredging, ditchwitch, and screeding before operations can be shut down), it must be reported to NMFS within one business day (contact listed below, Item 75). These PSO records must include:

    a. Information that must be listed in the PSO report (see measure 72).

    b. Number of listed animals affected.

    c. The date and time of each event.

    d. The cause of the event (e.g., ringed seal approached within 2200 m of an impact hammer while in operation).

    e. The time the animal(s) entered the monitoring zone, and, if known, the time it exited the zone.

    f. Mitigation measures implemented prior to and after the animal entered the monitoring zone.

75. Digital, queryable documents containing PSO observations and records, and digital,

queryable reports will be submitted to: Greg Balogh at greg.balogh@noaa.gov and to Verena Gill at verena.gill@noaa.gov. In the event that this contact information becomes obsolete, call 907-271-5006 for updated reporting contact information.

76. If PSOs observe an injured, sick, or dead marine mammal (i.e., stranded marine mammal), they shall notify the NMFS Alaska Region Marine Mammal Stranding Network at 1-877-925-7333. The PSOs will submit photos and data that will aid NMFS in determining how to respond to the stranded animal. Data submitted to NMFS in response to stranded marine mammals will include date/time, location of stranded marine mammal, species and number of stranded marine mammals, description of the stranded marine mammal's condition, , event type (e.g., entanglement, dead, floating), and behavior of live-stranded marine mammals.

77. In the event of an oil spill in the marine environment, the permittees shall immediately report the incident to: the U.S. Coast Guard 17th District Command Center at 907-463-2000, and NMFS AKR, Protected Resources Division Oil Spill Response Coordinator at 907-586-7630 and/or email (sadie.wright@noaa.gov).

- Page Intentionally Left Blank -

Appendix D

Section 106 Programmatic Agreement

- Page Intentionally Left Blank -

PROGRAMMATIC AGREEMENT
Among the
U.S. Army Corps of Engineers, Alaska District
United States Department of the Interior, Bureau of Land Management
Alaska State Historic Preservation Officer
And
National Park Service, Alaska Regional Office
And
Alaska Gasline Development Corporation
Regarding the
Alaska Stand Alone Pipeline Project

WHEREAS, the proposed Undertaking includes the construction, operation, maintenance, and reclamation of the Alaska Stand Alone Pipeline (ASAP) project (Project). The purpose of the Project is to make natural gas available to Fairbanks, Southcentral Alaska, and other communities within Alaska; and

WHEREAS, the Project, as described in the developing Cultural Resource Management Plan (CRMP), incorporated by reference, has been analyzed in a Supplemental Environmental Impact Statement (SEIS) under the National Environmental Policy Act of 1969, 42 U.S.C. 4321-4347, as amended, (NEPA) with a Record of Decision (ROD) proposed to be signed in December 2018; and

WHEREAS, the U.S. Army Corps of Engineers, Alaska District (USACE), as the lead federal agency, has determined in consultation with the Alaska State Historic Preservation Officer (SHPO) that the undertaking, provisionally, will adversely affect historic properties; and has consulted with the SHPO pursuant to 36 CFR Part 800, the regulations implementing Section 106 (54 U.S.C. § 306108) of the National Historic Preservation Act (NHPA) (54 U.S.C. § 300101 et seq.) and 33 CFR § 325 Appendix C; and

WHEREAS, Section 106 of the National Historic Preservation Act (Section 106) requires each federal agency, prior to any federal or federally sponsored, assisted, or authorized undertaking, to take into account the effect of the proposed undertaking on historic properties, which are properties that are listed in or eligible for listing in the National Register of Historic Places (NRHP), and to afford the Advisory Council on Historic Preservation (ACHP) an reasonable opportunity to comment regarding such Undertaking; and

WHEREAS*,* the Project is regional in scope, is proposed to be constructed in corridors and over large land areas, and the USACE has determined that effects to historic properties from the Project anticipated by the Bureau of Land Management (BLM), National Park Service (NPS), USACE, SHPO, and the Permittee (Alaska Gasline Development Corporation) will not be fully determined prior to a final permit decision for the Undertaking by USACE; and

WHEREAS, the USACE has determined that a Programmatic Agreement (PA) is necessary to fulfill Section 106 obligations and that identification of historic properties, assessment of project effect, and resolution of adverse effects shall be completed in phases and USACE will provide Consulting Parties an opportunity to comment pursuant to 36 CFR § 800.4, 36 CFR § 800.5, and 36 CFR § 800.6; and

WHEREAS, the Signatories hereto have determined that review of this Undertaking under Section 106 and implementing regulations (36 CFR Part 800) and procedures of applicable federal agencies and the ACHP will be governed by this PA, negotiated and executed pursuant to 36 CFR § 800.14(b); and

WHEREAS, the USACE, in consultation with the Consulting Parties, has established the undertaking's area of potential effects (APE), as defined in 36 CFR 800.16(d), which encompasses direct and indirect effects on historic properties for agency-permitted alternatives. The APE established for direct effects includes the 350-foot-wide right-of-way (ROW) corridor for pipeline construction and the proposed footprint for all other project components (*e.g.*, work camps, storage areas, gravel, material sources, and the gas conditioning facility [GCF]), plus a 90-foot buffer area. The area established for indirect effects, including visual impacts, is contained within a one mile perimeter that surrounds the direct APE; and

WHEREAS, House Bill 369, passed by the 26th Alaska Legislature in April 2010, tasked the Alaska Housing Finance Corporation (AHFC) with developing a Project plan, and AHFC established the Alaska Gasline Development Corporation (AGDC) to pursue the Project; and

WHEREAS, AGDC and/or a successor Project Proponent are herein referred to as the Permittee; and

WHEREAS, on July 21, 2016, as amended, the Permittee submitted a revised permit application to the USACE for a permit to discharge dredged and fill material into waters of the United States, including wetlands, and to conduct work within navigable waterways; and

WHEREAS, the USACE has determined that issuance of a permit for the Project pursuant to Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, (33 USC § 403), and/or Section 103 of the Marine Protection, Research, and Sanctuaries Act of 1972 (33 USC 1413) is a federal action that makes the Project an Undertaking subject to review under Section 106 for the USACE; and

WHEREAS, the BLM has determined that a portion of the Project will cross public lands administered by the BLM and that the pipeline will require authorization under Section 28 of the Mineral Leasing Act (MLA) of 1920,
(30 USC 185, as amended), making the project an Undertaking subject to review under Section 106 for the BLM. Furthermore, the MLA right-of-way (ROW) grant will cover all federal lands in the ROW except National Park Service (NPS) managed lands. As such, USACE has invited BLM to sign this PA as a Signatory; and

WHEREAS, the Project crosses and, provisionally, will adversely affect the nationally significant Iditarod National Historic Trail (INHT) (TYO-00084), which was designated by the U.S. Congress under National Trails System Act (Public Law 90-543 as amended) on non-federal lands, and the BLM is the designated Trail Administrator for the INHT; and

WHEREAS, the Project will, provisionally, adversely affect the Gallagher Flint Station National Historic Landmark (NHL), and the NPS has participated as a consulting party in the Section 106 consultation in regard to its authority to comment on effects to NHLs pursuant to 36 C.F.R § 800.10(c); and

WHEREAS, the USACE through its permit application evaluation process may select the Denali National Park and Preserve (DNPP) Route as the least environmentally damaging practicable alternative (LEDPA), the pipeline will require National Park Service (NPS) authorization pursuant to the Denali National Park Improvement Act (Public Law 113-33) in accordance with the Alaska National Interest Lands Conservation Act (ANILCA) Title XI and regulations at 36 CFR 14, making the Project an Undertaking subject to review under Section 106 for the NPS; and

WHEREAS, the BLM has designated the USACE as the lead federal agency pursuant to 36 C.F.R. § 800.2(a)(2) to fulfill its responsibilities under Section 106; and

WHEREAS, in the event that the DNPP Route is selected, the NPS designates the USACE as the lead federal agency pursuant to 36 C.F.R. § 800.2(a)(2); and

WHEREAS, pursuant to 36 C.F.R. § 800.2(a)(2), the USACE has agreed to carry out lead agency responsibilities for Section 106; and

WHEREAS, if the DNPP Route is not selected, the USACE invites the NPS to sign this agreement as a concurring party, but if the DNPP Route is selected, the USACE invites the NPS to sign this agreement as an Invited Signatory; and

WHEREAS, the USACE in consultation with the SHPO has determined that there are currently 159 known historic properties, including pre-historic sites, historic sites, trails, and roads identified within the APE which may be adversely affected and for which site-specific treatment plans will be developed to resolve adverse effects; and

WHEREAS, the USACE in consultation with the SHPO has determined that there are 56 sites listed in the Alaska Heritage Resources Survey (AHRS) database within the APE that may be directly impacted by the undertaking and 883 AHRS sites within the APE that may be indirectly impacted by the undertaking that have not been evaluated for eligibility in the NRHP or are pending evaluation, and additional cultural resources are likely to be identified in conjunction with the implementation of this PA; and

WHEREAS, the USACE, BLM and NPS recognize the request from Federally recognized Indian Tribes to coordinate on a government-to-government basis, as those Tribes may attach religious and cultural significance to historic properties that may be affected by the proposed undertaking and will continue to coordinate with Federally recognized Tribes regarding their concerns; in addition, the BLM, NPS, and USACE will comply with the American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act (NAGPRA) as it applies to lands under federal control, and Executive Orders 13007 and 13175; and

WHEREAS, the USACE has invited potentially affected federally recognized Indian Tribes as defined in
36 C.F.R. § 800.16(m) and listed in Appendix B of this PA to participate in consultation required under Section 106 as a result of the proposed Undertaking; and

WHEREAS, the USACE has invited Alaska native villages, regional corporations, and village corporations as defined in Section 3 of the Alaska Native Claims Settlement Act (43 U.S.C. § 1602) and listed in Appendix B of this PA to participate as Tribes; and

WHEREAS, the USACE has provided Tribes the opportunity to provide information about historic properties of concern to Tribes within the Project APE; and

WHEREAS, the USACE invited Tribes to sign as Concurring Parties to this PA, consistent with 36 C.F.R. §§ 800.2(c)(2) and 800.6(c)(3); and

WHEREAS, under 36 CFR § 800.2(c)(2)(ii), the USACE has made a good faith effort to consult with and coordinate with Tribes, as appropriate, and has invited the Tribe's governing body or designated representative to participate as Consulting Parties in the identification and evaluation of historic properties and to provide input regarding (a) the Project, (b) any historic properties of religious and traditional importance to the Tribe that may be affected by the Project, and (c) the Tribe's desires to protect such properties from disclosure that would cause significant invasion of privacy, risk of harm to historic properties, or impede the use of a traditional religious sites by practitioners; and

WHEREAS, the USACE has identified representatives of state agencies and local governments with jurisdiction in the APE, and individuals and organizations with a demonstrated interest in the Project and its potential effects on historic properties and has invited these agencies entities to participate in this Section 106 consultation as Consulting Parties (Appendix B); and

WHEREAS, the Knik Tribal Council, the Chickaloon Village Traditional Council, the Kenaitze Indian Tribe, Ahtna, Inc., and Doyon Limited have notified USACE that they wish to participate in the Section 106 review and development of this PA as Consulting Parties and the USACE has invited them to sign this PA as Concurring Parties; and

WHEREAS, the USACE has consulted with the SHPO in the development of this PA, and the SHPO is a mandatory Signatory for the execution of this PA in accordance with 36 CFR 800.14(b)(3) and 800.6(c)(1); and

WHEREAS, the USACE has afforded the ACHP opportunity to comment with regard to the Project and to consult in the development of this PA, and the ACHP has provided technical assistance although declined to participate as a Signatory; and

WHEREAS, the USACE has invited the Permittee to participate in the development of this PA and has invited the Permittee to sign this PA as an Invited Signatory pursuant 36 CFR 800.6(c)(2); and

WHEREAS, a CRMP is being developed in accordance with the Secretary of Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716, September 29, 1983) to support the implementation of this PA;

WHEREAS, the requirements under this PA are triggered by the issuance of a DA permit, the Permittee may not proceed with any activities requiring authorization pursuant to Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, (33 USC 403), and/or Section 103 of the Marine Protection, Research, and Sanctuaries Act of 1972 (33 USC 1413), until the PA is signed and a DA permit is issued. If a DA permit is issued, implementation of the PA and CRMP will be included as special conditions of the permit authorization.

NOW THEREFORE, the USACE, BLM, NPS, SHPO, and the Permittee (collectively the ("Signatories") and Concurring Parties agree that the Project shall be implemented in accordance with the following Stipulations in order to take into account the effects of the Undertaking on historic properties and fulfill the requirements of Section 106 of the NHPA.

STIPLATIONS

The USACE shall ensure that the following measures are carried out:

I. **Administrative**

A. In the event of a favorable decision on the permit application, the USACE will attach and incorporate this PA into the DA Permit POA-2009-00651, as a Special Condition, and require the Permittee comply with its terms.

B. The Permittee shall ensure contractors working on construction activities authorized under DA permit POA-2009-00651, ASAP, are made aware of and comply with requirements under this PA.

C. USACE shall ensure that the procedures described in the PA are implemented in a phased process to identify historic properties located within the APE including properties to which Tribes attach religious and/or cultural significance.

D. Electronic mail (e-mail) shall serve as the official correspondence method for all communications regarding this PA and its provisions, with an alternative method of postal mail delivery if the contacts do not have reliable e-mail. The CRMP will contain a list of contacts and email addresses, along with postal mail addresses for those contacts who indicate they do not have reliable E-mail. It is the responsibility of each Signatory and Concurring Party to immediately inform USACE of any change in name, address, e-mail address, or phone number of any point-of-contact. The USACE will forward this information to all Signatories and Concurring Parties by e-mail or mail as will be specified in the CRMP.

E. Should the USACE disapprove the application for the Project, or should the Permittee abandon the Project and withdraw the Section 404 permit application prior to a final permit decision by USACE, or should the Permittee abandon the project after a final permit decision by USACE, then the USACE will determine through consultation with and concurrence from the other Signatories the extent and duration of additional data collection activities, taking into account the need for completing post-fieldwork activities.

F. This PA may be executed in counterparts, with a separate page for each Signatory and Invited Signatory.

II. **Federal Agency Responsibilities**

A. To comply with Section 106, the Signatories shall incorporate this PA into their decisional process on any permit or authorization they may issue for the Project, and will require that the Permittee abide by the responsibilities assigned to the Permittee under this PA.

B. The appropriate Federal land managing agency, in consultation with SHPO, is responsible for confirming to USACE, via email, that identification, evaluation, and mitigation of known historic properties are completed and measures to implement avoidance and minimization are in place prior to NTP for construction activities that have potential to impact those sites. USACE will be responsible for confirming these activities have been completed for all other lands prior to NTP, or equivalent notice. This provision is subject to phased site work and buffer zones as identified in VIII.I.

C. The Signatories shall each attach this PA to any Record(s) of Decision, approved permits, or other condition(s) issued for this Project.

D. The USACE shall be responsible for ongoing consultation with Consulting Parties, including Tribes, in connection with the Project, including:

i. The USACE shall make a good faith effort to consult with Tribes that attach religious or cultural significance to historic properties potentially affected by the Project and solicit input from Tribes regarding effects resulting from the Project and the resolution of adverse effects to such properties. A good faith effort to consult with Tribes will include reaching out by e-mail or mail, as needed; follow-up phone calls to ensure the receipt of important documents; and meetings at the request of Tribes.

ii. Consulting Parties, including Tribes, are identified in Appendix B, in particular Tribes that are local to or have ancestral ties to the area of the Project or parties that have expressed an interest in being notified of Project activities in particular areas will be consulted. Consultation efforts will be organized by Construction Spread, as will be identified in the CRMP. This effort will include:

a. The list of Consulting Parties contained in Appendix B should be used as a starting point for future consultation efforts and shall be included in the consultation process throughout the life of the PA. It is anticipated that additional parties will be identified during the life of the agreement. Parties may request inclusion as a Consulting Party from the USACE pursuant 36 CFR § 800.3(f)(3); and

b. The USACE will contact Consulting Parties, including Tribes within the appropriate Construction Spread via mail, e-mail, and follow-up

phone calls at least 90 days[1] prior to field identification efforts to consult regarding historic properties including traditional cultural properties (TCPs) potentially located within the APE; and

c. The USACE will provide a meaningful opportunity for Consulting Parties, including Tribes, to participate in resolving adverse effects, including soliciting input on options and involvement in treatment plan development; and

d. The USACE, in keeping with Section 304 of the NHPA, will mail and/or email to Consulting Parties, including Tribes, within the appropriate Construction Spread a copy or redacted copy of the following: Avoidance, Minimization and Treatment Plan, Annual Survey and Evaluation Plan, Annual Survey and Evaluation Report, Site Treatment Plan, Site Treatment Result Report, and Construction Spread Finding of Effect and request their review and comment concurrent with Signatory review as identified in this PA. USACE will conduct follow-up phone calls before the review and comment period has closed to ensure that the Tribes have received the document(s); and

e. The USACE will invite Consulting Parties, including Tribes to the Annual PA Meeting and provide each a copy of the Annual Report for review and comment concurrent with Signatory review, as identified in this PA; and

f. The USACE will direct the Permittee to invite each Tribe identified in Appendix B to participate in the Construction Contractor Cultural Resource Awareness Training for the appropriate Construction Spread and incorporate that participation into the Training curriculum.

E. The Signatories reserve the right to seek qualified independent expert (as referenced in Section XV) consultation through a third-party contractor in order to fulfill their responsibilities under this PA.

F. At the time the Project moves from the construction phase into operations, maintenance, and/or reclamation, the role of lead federal agency may transfer to the appropriate federal land managing agency. At least six months prior to the completion of work authorized by DA Permit POA-2009-00651, the USACE will initiate consultation concerning an amendment to identify and incorporate the successor lead federal agency into this PA.

[1] Throughout the PA, 'days' refers to calendar days.

G. The Signatories shall ensure that consultation is an ongoing process throughout the implementation of the PA as guided by the protocols that will be set forth in the CRMP. The parties may consult with each other at any time.

III. **Permittee Responsibilities**

A. The Permittee will be responsible for supporting, assisting and conducting, either directly or through qualified consultants or contractors as defined in Section XV, the requirements of the stipulations herein, and protocols that will be set forth in the CRMP, and as directed by the USACE. These include, but are not limited to, survey, identification, recommendations for NRHP eligibility, oral history recordation, record searches, recommendations for assessment of effects, development of recommendations for resolution of adverse effects, pre-construction data recovery, report preparation and submittal to USACE, required monitoring of construction, preparing and submitting artifacts and records for curation, and ensuring that all such activities are conducted in a professional manner and consistent with the stipulations of this PA.

B. The Permittee will require that persons supervising cultural resources work on their behalf meet appropriate standards as referenced in Stipulation XV and possess any required cultural resources investigation permit(s) for archaeological inventory and other cultural resources investigations, and meet legal requirements, including applicable requirements in 36 CFR Part 61 Appendix A, for that work.

C. The Permittee or its contractors will obtain all permits required to conduct cultural resource investigations under the following regulations, prior to the beginning of investigation:

Archaeological Resources Protection Act of 1979 (ARPA) (36 CFR 79) provides for the protection of archaeological resources on federal and Indian lands and requires federal land managers to issue permits for the excavation or removal of archaeological resources from lands under their jurisdiction. Each federal land managing agency within or near the project area has its own ARPA permitting program. The BLM, which is the primary federal land managing agency within the project area, requires investigators to submit an Application for the Permit for Archaeological Investigations (DI Form 1926) and acquire a BLM Fieldwork Authorization (OMB No. 1024-0037). For NPS lands, NPS requires investigators to submit an application to acquire a Permit for Archeological Investigations (DI Form 1991 (Rev Sept 2004; OMB No. 1024-0037).

i. The Alaska Historic Preservation Act (AHPA); The AHPA (AS 41.35) was implemented in 1971 and regulates the treatment of historic, prehistoric, and archaeological resources on State of Alaska land or lands threatened by public (state) construction. The State of Alaska requires cultural resource investigators to submit an Alaska Cultural Resource Permit

Application and acquire a State Cultural Resource Investigation Permit.

ii. North Slope Borough (NSB) Regulations; The Land Management Regulation (LMR) Division of the NSB reviews land use permits and monitors compliance with applicable regulations. The North Slope Borough requires cultural resource investigators to submit a Form 400 Study Permit Application and acquire an approved Study Permit.

IV. Agency Coordination

Because of both singular and overlapping legal authorities and purviews among the Signatories regarding individual Undertaking components or activities, any or all of these agencies may be responsible to carry out the terms of this PA for a given Undertaking component or activity. That agency or agencies that has/have purview over a given Undertaking component or activity is referred to in this PA as the "responsible agency(ies)," herein. The USACE will remain the lead federal agency and will consult with and seek concurrence from appropriate Federal land managing agencies (NPS, BLM) on its decisions, as appropriate.

A. The Signatories shall enforce the terms of this PA. A Signatory shall notify the other Signatories if there is an instance of possible non-compliance with the terms and conditions of this PA or permit conditions as they relate to this PA. In such case, the responsible agency(ies) shall require compliance consistent with its/their legal authorities and consult with the other agencies, as needed.

V. Cultural Resources Management Plan

A. Content of the Plan

i. A CRMP is being developed in accordance with the Secretary of Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716, September 29, 1983). The CRMP will include, but not limited to the following:

a. Previous cultural resource investigations conducted within the APE;

b. Historic properties identified to-date;

c. A monitoring plan;

d. A detailed plan for future consultation efforts with Signatories and Consulting Parties, including organization-specific protocols and issues of interest; and

e. A detailed plan including processes and expected content to complete a Data Gap Analysis, and methods for drafting content for

Annual Survey and Evaluation Plans, Construction Spread Assessments, Construction Spread Findings of Effect, Avoidance, Minimization and Treatment Plans (with annual updates), Monitoring Plans, Monitoring Reports, and Contractor Cultural Resources Awareness Training Curriculum Annual Review.

B. Preparation and Finalization of the CRMP

i. Final preparation of the CRMP (draft attached as Appendix A) will be done through consultation with the Signatories and Consulting Parties. The draft CRMP is not interim guidance and cannot be used to implement the PA until the document is finalized. The Permittee will facilitate meetings, incorporate comments/revisions, and provide revised draft documents to the Signatories and Consulting Parties. The USACE, in consultation with the Signatories, will prepare a timeline for CRMP finalization within two months of PA execution to complete regular review and revisions of the draft CRMP.

ii. The CRMP review and revisions will occur between two and ten months following PA execution, and may require multiple iterations for all Signatories to reach agreement on the final document. Revised documents will be sent to all Consulting Parties by the USACE or Permittee at least 15 days prior to consultation meetings. The Consulting Parties will prepare comments in a Comment Matrix, consolidated by agency or entity, and be prepared to discuss revisions at consultation meetings. The USACE or Permittee will address all comments within 30 days of receipt. Additional time to review documents or incorporate revisions may be negotiated through consultation, or as determined by the timeline for CRMP finalization.

iii. The final CRMP must be approved in consultation with the Signatories in accordance with Amendments XVIII.A, within one year of the PA execution. Following completion, the USACE will append it as the final version of Appendix A within 30 days. The USACE will log the amendment in the Appendix E (Amendment Log) and distribute digital, and hard copies upon request, of the final PA and final CRMP to the Signatories and Consulting Parties via mail and email (where available).

C. Future Amendment of the CRMP

i. After initial approval, the CRMP will require future revision in conjunction with the implementation of this PA to include, but not be limited to, updated information from completed data gap analyses, changes to the list of contacts, and in response to unforeseen events. However, neither the USACE nor Permittee shall alter any plan or other document that has been

reviewed and commented on pursuant to this PA (except to finalize documents commented on in draft form), without first affording Consulting Parties the opportunity to review the proposed change and provide comment.

ii. A revised CRMP will not be incorporated into this PA until written concurrence is provided by Signatories in accordance with the Amendment clause found in Stipulation XVIII.A and the amendment is logged in Appendix E (Amendment Log).

VI. **Identification of Historic Properties**

A. Level of Effort

i. Data Gap Analysis: The Permittee has completed identification surveys for a portion of the APE, as will be noted in the CRMP. The Permittee will complete a Data Gap Analysis to determine where further identification efforts within the APE are needed. The Data Gap Analysis will include data gaps as well as methods for requisite field, archival and ethnographic data acquisition and analysis, including testing for deeply buried archaeological sites where there is a high potential for their presence. The Permittee shall provide the USACE the Data Gap Analysis for the entire project within six months following a Final Investment Decision (FID) or an Authorization for Expenditure (AFE) to construct the Project. The USACE will distribute the Data Gap Analysis to the Signatories and Consulting Parties for a 60-day review and comment period. The Permittee will provide the USACE the revised Analysis within 30 days of the closure of the comment period. Review and revision period lengths may be extended through negotiation. The Data Gap Analysis will not be considered final until Signatories provide written approval consistent with Stipulation XVIIIA. USACE will then update Appendix E of this PA and will append the Data Gap Analysis to Appendix F of this PA within 12 months of FID/AFE.

ii. Annual Survey and Evaluation Plans: The Permittee will develop Annual Survey and Evaluation Plans based on a phased approach for identification and evaluation of areas within the APE and will take into account the final Data Gap Analysis. The level and scope of identification efforts shall be consistent and commensurate with the previous methods used on the project and will be determined through consultation with the Signatories and Consulting Parties. Signatories to include SHPO and applicable land managing agency must concur on the level of effort recommended for further identification of historic properties.

iii. The Permittee will facilitate consultation for the development of the Plans on an annual basis, which will detail the scope and scale of identification and evaluation efforts for the upcoming year. Additional details regarding the content and implementation of the Plans will be described in the CRMP. The USACE will distribute the Plan to the appropriate Signatories for a 30-day review and comment period. The Permittee will revise the Plan, as appropriate, within 30 days after the end of the comment period based on timely comments received. Review and revision period lengths may be extended through negotiation. Annual Survey and Evaluation Plans will not be considered final until Signatories to include SHPO and applicable land managing agency provide written approval pursuant Amendments clause XVIII.D. The USACE will append the final Annual Survey and Evaluation Plans to Appendix F within 30 days of receipt of concurrence and update Appendix E.

iv. The USACE will require that the Permittee complete identification surveys for all areas identified in the Annual Survey and Evaluation Plan.

v. The USACE will require that identification and evaluation of historic properties conform to Federal and State guidelines for cultural resource fieldwork in Alaska, are compatible with previous investigations for this Undertaking, and may include a phased approach to testing and evaluation.

vi. The USACE will require that identification efforts are performed regardless of land ownership (public or private) within the Project's APE; the Permittee shall be responsible for gaining access to non-federal lands.

vii. Where the Permittee cannot gain access for the purpose of historic property identification, these efforts may be deferred until access is gained.

B. Evaluation of Identified Cultural Resources

i. As of 11/14/2018, there are 204 documented AHRS sites within the direct APE. A summary of the NRHP eligibility is as follows, 70 have been determined to be eligible for listing in the NRHP, have been listed in the NRHP, or are to be treated as eligible and are, therefore, considered historic properties; 79 have been determined not eligible for listing in the NRHP; 30 have eligibility determinations pending with the SHPO; one is a paleontological site, and the remaining 25 were determined to have insufficient data at this time and will be evaluated as defined under the terms of the PA and CRMP.

ii. The USACE, in consultation with the appropriate land managing agency, shall require that known or newly discovered cultural resources are

evaluated regarding eligibility for listing in the NRHP based on the criteria established in 36 CFR § 60.4. These evaluations may be conducted in a phased manner consistent with the Construction Spread schedule.

iii. Annual Survey and Evaluation Report: The Permittee will complete a Survey and Evaluation Report annually describing the previous year of identification and evaluation efforts. The report will contain NRHP recommendations of eligibility for each unevaluated cultural resource identified or considered within the Report. The Permittee will submit the report to the Signatories, which will include NRHP recommendations. The USACE will distribute the Annual Survey and Evaluation Report to Consulting Parties by December 31 of each year for a 60-day review and comment period. The Permittee will provide to the USACE a revised, as appropriate, Annual Survey and Evaluation Report within 30 days of the comment period based on timely comments received. Review and revision period lengths may be extended through negotiation.

iv. The Permittee will provide the revised NRHP eligibility recommendations to the USACE or the responsible land manager for their use in preparing determinations of NRHP eligibility. The USACE or the responsible land manager shall submit determinations to the SHPO within 30 days prior to April 1. The SHPO will have 30 calendar days to respond to the USACE or the applicable land management agency after receiving the Annual Survey and Evaluation Report and request for concurrence. Review and revision period lengths may be extended through negotiation.

v. If the information provided is determined by the USACE, the land managing agency, or SHPO to be inadequate for determining a resource's NRHP eligibility status, the USACE shall require the Permittee to conduct additional investigations to gather adequate information to make a determination of eligibility.

vi. The USACE shall consult with Tribes concerning the NRHP eligibility status of any cultural resource that would be affected by the Project to which an Indian Tribe(s) attaches religious and cultural significance. Tribes will have 30 days to respond.

vii. If USACE, the land managing agency (if applicable), and/or the SHPO cannot reach an agreement through consultation regarding the NRHP eligibility status of a resource within 45 days, the USACE shall seek a formal determination of eligibility from the Keeper of the NRHP (Keeper).

viii. If USACE and a Tribe(s) cannot reach an agreement through consultation relating to NRHP eligibility for a property to which that Tribe attaches religious and cultural significance and based upon consultation with SHPO, the Tribe(s) may request the USACE or the SHPO to obtain a formal determination of

eligibility from the Keeper.

ix. The National Park Service Bulletin *How to Apply the National Register Criteria for Evaluation* will be used as a guideline by the Signatories and the Permittee for making NRHP eligibility determinations.

x. SHPO, land managing agencies, and Tribes can request additional time to respond to determinations of eligibility for up to 30 days per potential historic property.

VII. Assessing Effects on Historic Properties

A. Finding of Effect: After the steps in Section VI of this PA are complete, the USACE will prepare a Finding of Effect for each Construction Spread. The USACE shall provide documentation specified in 36 CFR § 800.11(d) or 36 CFR § 800.11(e) in their Finding of Effect. The USACE will consult with appropriate Consulting Parties and Signatories in accordance with the consultation plan in the CRMP on the finding of effect and seek concurrence from the SHPO. If SHPO does not respond to the USACE's Finding of Effect within 30 days, then concurrence will be assumed. If SHPO objects to the Finding of Effect within 30 days, the disagreement will be resolved pursuant 36 CFR § 800.4(d).

B. Signatories and Consulting Parties can request additional time to respond to Findings of Effect for up to 30 days per Finding of Effect.

VIII. Resolving Effects on Historic Properties

A. The USACE shall consult with Consulting Parties, Signatories, and the public on ways to avoid, minimize, or resolve adverse effects to historic properties specified in 36 CFR § 800.6.

B. The CRMP will contain lists of options and implementation plans for treatment measures to mitigate adverse effects to historic properties (e.g. data recovery), such as:

i. standard mitigation options,

ii. projects/resources, and

iii. site-specific and/or resource-specific mitigation measures.

C. Mitigation methodology and standards will be discussed in more detail in the CRMP. Standard mitigation options may include, but are not limited to:

i. Research plans and data recovery, including artifact analysis and

curation;

ii. HABS/HAER documentation of historic structures adversely affected by the Undertaking;

iii. Preparation of ethnographic overviews that include place name studies and oral histories.

D. In lieu of standard mitigation approaches (i.e., data recovery), the Permittee, under the direction of the USACE, and in consultation with SHPO and the land managing agency/land owner as appropriate, may identify and develop treatment plans that adopt other alternative approaches to avoid, minimize or mitigate effects to historic properties. Whenever feasible, these types of mitigation measures will focus on the communities associated with the types and locations of adversely affected historic properties. Furthermore, the scope of the treatment plans will be determined through consultation with these communities and Consulting Parties after adverse effects to historic properties are identified. Some additional examples of creative mitigation measures are listed in the CRMP (Appendix A).

E. Creative mitigation measures may include, but are not limited to:

i. Assisting in the development of tribal or community historic preservation plans, developing detailed historic contexts for the region;

ii. Developing educational materials or programs;

iii. Providing improvements to or maintenance for historic trails;

iv. Purchasing properties containing historic resources or historic trail rights-of-way;

v. Developing historic property management plans;

vi. Creation of a website with videos, digitized artifacts, and other information on the cultural resources found;

vii. Creation of K-12 curriculum related to the history or prehistory of Alaska or Construction Spread/region;

viii. Public presentations related to the history or prehistory of communities along the project area.

F. The Permittee will prepare an Avoidance, Minimization and Treatment Plan for each of the Construction Spreads. These plans will identify possible site-

specific avoidance and minimization measures, a listing of historic properties to be avoided, and proposed mitigation measures (standard and/or alternative) for historic properties found to be adversely affected by the Undertaking. The plans will contain individual or specific treatment plans for each adversely affected historic property.

G. These measures will be drafted in consultation with appropriate Signatories, Consulting Parties, interested Tribes, and the interested public. Consultation, in accordance with the consultation plan in the CRMP will begin no later than six months prior to the anticipated due date for the final draft of an Avoidance, Minimization and Treatment Plan.

H. For each Construction Spread, the USACE will distribute draft Avoidance, Minimization and Treatment Plans to the Signatories and Consulting Parties, according to the consultation plan in the CRMP, for a 60-day review and comment period. The Permittee will revise the Avoidance, Minimization and Treatment Plan within 30 days of the end of the comment period. Review and revision period lengths may be extended through negotiation. The USACE will seek concurrence on the plans from the appropriate Signatories. The SHPO and appropriate land managing agency must approve the plans per Amendment clause XVIII.D. The USACE will append the plans to the PA in Appendix F (Plans), log the amendment in Appendix E (Amendment Log), and distribute both digital and hard copies of the final PA to the Signatories and Consulting Parties via mail and email (where available).

I. The plans will be updated annually, as necessary, to include newly identified historic properties. Annual updates will follow the process outlined for initial approval, including PA amendment under Stipulation XVIII.D. Under the direction of the USACE, the Permittee shall carry out mitigation measures contained in the Avoidance, Minimization and Treatment Plan(s). The Permittee shall not commence construction activities with potential to impact known historic properties unless on-site avoidance, minimization and mitigation measures are implemented. A construction buffer of at least 500 ft. must be provided from the outer extent of known historic properties until on-site mitigation is complete. The CRMP will include a process to coordinate concurrent construction and completion of measures contained in the Avoidance, Minimization and Treatment Plans.

J. USACE may require the Permittee to develop individual site-specific plans to minimize or resolve adverse effects to historic properties outside the annual plan review schedule to accommodate unforeseen circumstances. Site-specific plans can include standard approaches described in the CRMP or alternative approaches recommended and prepared by the Permittee. USACE shall notify Consulting Parties and Signatories of the need for action outside the annual plans and provide opportunity for Consulting Party comment. Individual site-specific plan approval shall follow the process

outlined for annual plans.

IX. Contractor Training

A. The Permittee will conduct annual Contractor Cultural Resources Awareness training as will be outlined in the CRMP. The Permittee will develop the training curriculum in consultation with the Signatories and Consulting Parties. At least 90 days prior to construction initiation, the Permittee will provide the USACE, SHPO and Tribes a copy of the curriculum for a 30-day review and comment period. The Permittee will revise the curriculum within 15 days. Review and revision period lengths may be extended through negotiation. The USACE will provide a copy of the final curriculum to Signatories and Consulting Parties for informational purposes.

B. The curriculum will provide information on the following topics:

i. Legal context for cultural resources protection and applicable federal, state, and local laws;

ii. Penalties for disturbing cultural resources and human remains;

iii. Cultural resources likely to be found in the project area;

iv. Applicable buffer areas;

v. Monitoring procedures, including safety around heavy equipment, buffer areas, hand signals between monitors and equipment operators;

vi. The Inadvertent Discovery Plan; and

vii. The Human Remains Discovery Protocol.

X. Plan for the Treatment of Human Remains, Funerary Objects, Sacred Objects, and Objects of Cultural Patrimony

A. By law, the procedures for treatment of human remains and objects of cultural patrimony are determined by land ownership and ancestry. On federal land, the federal land manager must comply with the Native American Graves and Repatriation Act (25 USC 3001–3013). The requirements regarding the implementation of NAGPRA are set forth in 43 CFR 10.3, 10.4, 10.5 and 10.6. NAGPRA covers both intentional excavation and inadvertent discoveries. In addition, several State laws are applicable to the discovery of human remains in Alaska; and the State Medical Examiner (SME) has jurisdiction over all human remains in the state (with rare exceptions, such as military aircraft deaths), regardless of age. If human remains, funerary objects, sacred objects, or objects of cultural patrimony are found, all work

shall stop within 100 feet of the discovery, and the Permittee shall follow the procedures for the Treatment of Human Remains, Funerary Objects, Sacred Objects, and Objects of Cultural Patrimony located in Appendix C of this PA.

XI. Plan for the Inadvertent Discovery of Other Cultural Resources

A. Appendix D of this PA contains a protocol in case of the inadvertent discovery of cultural resources, which identifies a clear chain of command for the notification of discovery, including the names, responsibilities and contact information for each entity that will be involved in notification and consultation for the discovery; detailed site protection measures to be implemented in the event of a discovery, including who will be allowed access in the area of the discovery, and where, when and how construction will be able to resume in the area of discovery. It also includes a schedule for the investigation, evaluation and consultation regarding the NRHP eligibility of the discovery, and provisions for implementation. If there is an inadvertent discovery of cultural resources during project activities, all work shall stop within 100 feet of the discovery, and the Permittee shall follow the procedures in Appendix D of this PA.

XII. Monitoring Plan

A. The USACE shall consult with appropriate Signatories and Consulting Parties about where monitoring will occur, and this consultation process will be further developed in the CRMP. Monitoring plans shall be consistent with the Alaska Office of History and Archaeology Historic Preservation Series 15 *Monitoring Guidelines.*

B. The Permittee, in consultation with the appropriate Signatories and Consulting Parties, will develop monitoring plans. Monitoring plans will include, but not be limited to:

i. Reporting requirements and schedule to track progress and monitoring results,

ii. Stop work protocol for monitors,

iii. Collection and curation protocols,

iv. Hand signals for monitors and equipment operators,

v. Procedures and safety around heavy equipment, and

vi. Qualification standards.

C. The monitoring plans shall be reviewed by appropriate Signatories and land owners under 30-day review periods. USACE will take into consideration timely comments received. Signatories must approve the final monitoring plans per Amendment clause XVIII.A. The USACE shall append the plans to

the PA in Appendix F (Plans), log the amendment in Appendix E (Amendment Log), and distribute digital copies of the final PA to the Signatories and Consulting Parties via e-mail (where available) and hard copies upon request or where e-mail is not available.

D. The USACE and land managing agency, as appropriate, will require the Permittee adheres to all requirements in the monitoring plan.

E. The Permittee shall prepare a monitoring report describing the results of the monitoring activities, and it shall be provided to Signatories within six months of field work completion.

F. In cases where historic properties are not directly impacted by construction, but construction activities are anticipated to take place nearby, it may be appropriate to have monitors present to confirm impacts to such properties are avoided. Monitors may also be appropriate at historic properties previously subjected to data recovery, since there is a possibility for a discovery of significant features or other cultural materials in previously unexcavated areas. All monitors shall be subject to the monitoring stipulations described above. The CRMP and annual plans will provide details pertaining to the requirements and procedures that will be followed in monitoring construction activities.

XIII. **Annual Meeting and Reports**

A. Annual Meeting: USACE shall hold a meeting of the Signatories, and Consulting Parties, within one year of the AFE/FID, and each year by that same date, thereafter, to discuss the previous year's activities, and activities scheduled for the upcoming year. The meeting shall be held in Anchorage at the Alaska Office of History and Archaeology, or at another location by consensus of the Signatories. The parties may participate by telephone if they so desire. The Annual Meeting will discuss all the major components of the Annual Report, outlined below in C. Meeting minutes will be distributed by the USACE within 30 days of the meeting. The USACE shall amend the minutes as a result of comments received within 15 days and distribute finalized minutes within 15 days.

B. Additional Meetings: If a Signatory or Consulting Party deems a meeting necessary, in addition to the annual meeting described above, USACE shall decide whether to convene additional meetings, in consultation with the other Signatories.

C. Annual Report: The Permittee shall prepare an annual report within one year of the AFE/FID on the progress of implementation of the stipulations of this PA, and shall distribute it to Signatories, Concurring Parties, and Consulting Parties to this PA at least 45 days prior to the Annual Meeting to allow time for review and comment. The USACE may direct the Permittee to make revisions to the report following receipt of comments. A template for the Annual Report will be included in the CRMP. The annual report shall include the following:

i. A description of the past year's activities, including presentation of and revisions to training materials;

ii. Proposed revisions to methods based on findings or results from the previous year(s);

iii. A projection of the upcoming year's activities, including information about possible Project modifications;

iv. A summary of the past year's and anticipated upcoming efforts to identify, evaluate, and protect historic properties, including references for cultural resource reports and results of DOEs;

v. A summary of any historic properties affected, as well as any testing, remediation, or mitigation efforts;

vi. A summary of artifacts or other archaeological or historic materials encountered, including representative photographs or drawings, a description of analyses, and other recordation documents as appropriate;

vii. A summary of artifacts sent to an approved facility for curation, or returned to the landowner, as appropriate;

viii. Clear maps of areas surveyed or monitored, cultural resources identified, and alternative routes to be followed to avoid any identified historic properties;

ix. A description of the progress of the Undertaking and any known or expected changes to the Undertaking;

x. An evaluation of the effectiveness of this PA and whether any amendments or changes are needed based on deficiencies or project modifications; and

xi. An updated list of Signatories, Concurring Parties, and Consulting Parties.

D. Final Construction Phase Report: The USACE shall ensure that a Final Construction Phase Report is completed following the end of construction activities and compliance with the stipulations in this PA related to construction. The Permittee shall submit to USACE a final report summarizing the results of all procedures and mitigation measures implemented in accordance with this PA related to the construction phase of the project. The format and content of this report will be determined via consultation with the Signatories and Consulting Parties. The Permittee will submit a proposal to USACE within six months of the completion of construction. The USACE will distribute the proposal to Signatories, and Signatories will have 30 days to provide comment. The Permittee's draft report will be delivered to the USACE within one year of the closure of the comment period. The USACE will distribute it to Signatories and Consulting Parties, allowing 30 days for review and comment. The USACE may direct the Permittee to make revisions to the report following receipt of comments. The SHPO must concur before the Final Construction Phase Report is finalized. The USACE will distribute the final report to Signatories and Consulting Parties.

E. During operations, maintenance, and reclamation phases, the lead federal agency shall ensure that summary reports are created every ten years. The Permittee shall submit to the lead federal agency a draft summary report of the results of CRM and mitigation efforts completed or ongoing during the 10-year reporting cycle. The format of the summary report will be negotiated by Signatories. The lead federal agency shall distribute the draft report to

Signatories and Consulting parties for a 30-day review. The lead federal agency may direct the Permittee to make revisions to the report following receipt of comments. The SHPO must concur before the Final Construction Phase Report is finalized. The lead federal agency will distribute the final report to Signatories and Consulting Parties.

F. Additional Reporting: Implementation of this PA shall include administrative reporting on progress as well as the preparation of technical reports on resource investigations. The reporting shall use the following procedures unless modifications to this reporting structure are agreed to by the Signatories.

i. Progress reports: Progress reports shall be submitted quarterly by the Permittee to USACE for the duration of the construction following execution of this PA. Progress reports may be in letter format and shall describe fieldwork activities for identifying historic properties as well as relevant construction progress that was initiated, underway, or completed for the most recent performance period, and identify steps to be initiated, continued, or completed in the next quarter. These reports may be combined with other Permittee reporting requirements. Progress reports shall be distributed to Signatories, upon request.

Technical reports: Technical reports describing the results of background research, fieldwork activities, and laboratory analyses shall be prepared according to the standards and permit guidelines appropriate to the resource, including final report standards for archaeological excavation, and submitted to the Signatories for review and comment. The Permittee will submit drafts to the USACE, which will distribute to Signatories for comment. The Signatories will have 30 days to provide their comments to the USACE. The appropriate land managing agencies must concur with all technical reports before they are finalized. The Permittee shall develop reports in consultation with SHPO, and the appropriate land managing agency, and shall issue draft technical reports no later than nine months from the completion of field activities. Final technical reports will be required three months following delivery of draft technical reports and will be delivered to Signatories by USACE.

ii. Consistent with the confidentiality requirements in 36 C.F.R. § 800.11(c) and Section 304 of the NHPA, the USACE shall withhold from public disclosure information about the location, character, or ownership of a historic property when disclosure may cause a significant invasion of privacy, risk harm to the historic property, or impede the use of a traditional religious site by practitioners.

iii. The SHPO will receive all technical reports and will retain location information about all cultural resources and historic properties, including properties of religious and cultural significance to Tribes

identified during the project, in keeping with its mission to identify and maintain inventories of cultural resources and historic properties (Section 101 of NHPA [54 USC § 302301] and Section 41.35.070(a) of the Alaska Historic Preservation Act). Information regarding the location or significance of specific historic properties of tribal cultural or religious significance provided to SHPO in the course of the Project will, upon request by one or more Tribes, be treated as information subject to Section 304 of the NHPA and 36 CFR § 800.11(c), as well as applicable state laws.

XIV. **Curation**

A. Materials collected under this PA are the property of the appropriate state or federal land managing agency, or landowner if collected from privately owned property.

B. Permittee shall incur all standard costs necessary to require that curation of materials collected in conjunction with actions taken under this PA occurs, unless other arrangements have been made, as will be noted in the CRMP. Curation costs may include, but are not limited to, curation fees charged by approved institutions, acquisition of archival materials, shipping, and conservation actions.

C. Permittee, and associated contractors, will safeguard collections from theft and damage by providing adequate interim storage facilities and conservation actions, as necessary and in consultation with approved repository and landowners or land managing agency.

D. All collections will be returned to their owners or deposited in the approved repository six months after approval of the final report or within one year of completion of the fieldwork that generated the collection. All collections will be curation-ready, as determined by the approved repository, unless otherwise stipulated in the CRMP or curation agreement(s).

E. Federal agencies will curate any artifacts, materials, or records resulting from archaeological identification and mitigation conducted on federal lands under their jurisdiction in accordance with 36 C.F.R. Part 79, “Curation of Federally-Owned and Administered Archaeological Collections.” Federal agencies with jurisdiction over the federal lands will consult with Tribes consistent with 36 C.F.R. Part 79.

F. On federally controlled or owned properties, the federal agency will determine the disposition of human burials, human remains, and funerary objects in accordance with applicable federal law, inclusive of NAGPRA.

Artifacts, faunal materials, and/or samples collected on State lands during activities covered by this PA shall be deposited in the University of Alaska

Museum of the North, along with records, field notes, and related materials in accordance with their curation procedures and requirements in force at the time of submission of materials. A provisional curation agreement for collections will be established during the State Cultural Resource Investigation Permitting process and finalized prior to submission of collections to the University of Alaska Museum of the North.

G. Permittee will encourage and assist private landowners in donating any returned artifacts to University of Alaska Museum of the North (Fairbanks) in accordance with an agreement negotiated between landowners and the Museum.

XV. Standards

A. The USACE shall require that all work conducted as a result of this PA will be performed in accordance with the Secretary of the Interior's Standards for Archeology and Historic Preservation (Standards and Guidelines) (48 Fed. Reg. 44716-44742).

B. Permittee, as project proponent, will ensure that persons supervising cultural resources work on their behalf hold any appropriate BLM, USACE, NPS or State permits and/or authorizations as appropriate for cultural resources inventory, monitoring, and other archaeological investigations, and meet the Standards and Guidelines, as well as the Secretary of the Interior's Professional Qualification Standards (36 C.F.R. Part 61) for the applicable discipline. Additional qualifications may be necessary for some situations, such as analysis of human remains, or historic architecture.

XVI. Dispute Resolution

A. Should any of the Signatories or Concurring Parties to this PA object at any time to any actions proposed or the manner in which the terms of this PA are implemented, the USACE will consult with such party to resolve the objection. If the USACE determines that such objection cannot be resolved, the USACE will:

i. Forward all documentation relevant to the dispute, including their proposed resolution, to the ACHP. The ACHP will provide the USACE and the party bringing the objection with its advice on the resolution of the objection within 30 days of receiving adequate documentation. Prior to reaching a final decision on the dispute, USACE will prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, Signatories, and Concurring Parties, and provide them with a copy of this written response. USACE will then proceed according to its final decision.

ii. If the ACHP does not provide its advice regarding the dispute within the 30 calendar-day time period, USACE may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, USACE will prepare a written response that takes into account any timely comments regarding the dispute from the Signatories and Concurring Parties to the PA and provide them and the ACHP with a copy of such written response.

B. The USACE's responsibility is to continue to carry out all other actions subject to the terms of this PA that are not the subject of the dispute.

XVII. **Duration**

A. This PA will expire 30 years from the Effective Date (the date it is filed with the ACHP after being signed by all the Signatories

B. If necessary, the Signatories shall consult prior to the 30-year anniversary from the Effective Date to determine if a new PA should be developed or the PA should be extended.

XVIII. **Amendments**

A. This PA may be amended upon written agreement of the Signatories. Any Signatory to this PA may propose in writing to the other Signatories that it be amended. The Signatories will consult in an effort to reach agreement on an amendment. Any amendment will be effective after being signed by all of the Signatories.

B. All amendments will be tracked in Appendix E (Amendment Log). USACE will update the PA after every amendment and distribute the final PA to Signatories and Consulting Parties via mail and email (where available).

C. In the event that additional federal funding or approvals for the Project are sought, and the Undertaking remains unchanged, such funding or approving agency may comply with Section 106 by agreeing in writing to the terms of this PA and notifying and consulting with SHPO and ACHP. Any necessary modifications will be considered in accordance with the stipulations of this PA.

D. Approved documents created as a result of this PA that require appropriate Signatory concurrence, such as treatment plans resolving adverse effects and monitoring plans are considered to be PA amendments and will become part of the PA to be noted in Appendix E (Amendment Log) and added to Appendix F *Plans*.

E. Alteration to the Appendices shall follow the above stipulation XVIII.A or XVIII.D. as appropriate, unless it is updating Appendix E (Amendment Log), adding an approved document to Appendix F, or updating contact information.

XIX. TERMINATION

A. If any Signatory to this Agreement determines that its terms will not or cannot be carried out, that party shall immediately consult with the other Signatories to attempt to develop an amendment or agreement on other actions that would avoid termination. If within 30 calendar days after the initiation of such consultation (or another time period agreed to by all Signatories) an amendment or agreement on other actions that would avoid termination cannot be reached, any signatory may terminate the Agreement upon written notification to the other Signatories.

B. Once the Agreement is terminated, and prior to continuing work on the Undertaking, the USACE must either (a) execute a MOA pursuant to 36 CFR § 800.6 or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7. USACE shall notify the Signatories as to the course of action it will pursue.

XX. Anti-Deficiency Provision

A. Any obligation of the federal agencies set forth in this PA is subject to and dependent on appropriations by Congress and allocation of sufficient funds for that purpose.

XXI. Scope of the PA

A. This PA is limited in scope to actions related to the proposed construction, operation, maintenance, and reclamation of the ASAP Project and related facilities and the associated consideration of historic properties, consistent with the NHPA, 36 CFR § 800, and other federal laws and regulations and is entered into solely for these purposes.

B. This PA in no way restricts any of the Signatories or Consulting Parties from participating in similar activities with other public or private agencies, organizations, and individuals.

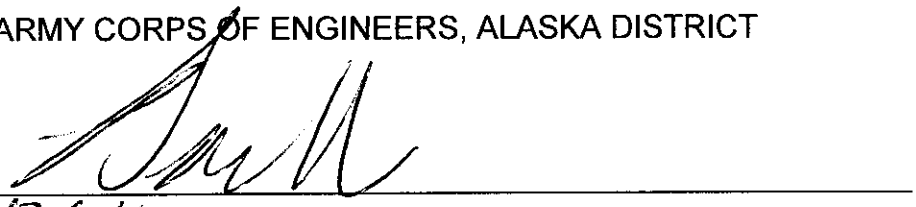
C. This PA is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds between the parties to this instrument will be handled in accordance with applicable laws, regulations, and procedures including those for Federal Government procurement and printing. Such endeavors will be outlined in separate agreements that will be made in writing by representatives of the parties and will be independently authorized by appropriate statutory authority. This instrument does not provide such authority.

EXECUTION of this PA by the Signatories, and implementation of its terms, evidences that the USACE, BLM, and NPS have taken into account the effects of the Undertaking on historic properties and afforded the ACHP an opportunity to comment.

PROGRAMMATIC AGREEMENT
Among the
U.S. Army Corps of Engineers, Alaska District
United States Department of the Interior, Bureau of Land Management
Alaska State Historic Preservation Officer
And
National Park Service, Alaska Regional Office
And
Alaska Gasline Development Corporation
Regarding the
Alaska Stand Alone Pipeline Project

SIGNATORY

U.S. ARMY CORPS OF ENGINEERS, ALASKA DISTRICT

By: 
Date: 12-6-18

PROGRAMMATIC AGREEMENT
Among the
U.S. Army Corps of Engineers, Alaska District
United States Department of the Interior, Bureau of Land Management
Alaska State Historic Preservation Officer
And
National Park Service, Alaska Regional Office
And
Alaska Gasline Development Corporation
Regarding the
Alaska Stand Alone Pipeline Project

SIGNATORY

DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT

By: _____
Date: 12-14-18

PROGRAMMATIC AGREEMENT
Among the
U.S. Army Corps of Engineers, Alaska District
United States Department of the Interior, Bureau of Land Management
Alaska State Historic Preservation Officer
And
National Park Service, Alaska Regional Office
And
Alaska Gasline Development Corporation
Regarding the
Alaska Stand Alone Pipeline Project

SIGNATORY

ALASKA STATE HISTORIC PRESERVATION OFFICER

By: Judith E Bittner
Date: 11/30/2018

PROGRAMMATIC AGREEMENT
Among the
U.S. Army Corps of Engineers, Alaska District
United States Department of the Interior, Bureau of Land Management
Alaska State Historic Preservation Officer
And
National Park Service, Alaska Regional Office
And
Alaska Gasline Development Corporation
Regarding the
Alaska Stand Alone Pipeline Project

The National Park Service is signing as a concurring party with the understanding that in the event that USACE selects the Denali National Park and Preserve route as the LEDPA, this signature then acknowledges NPS' role as an Invited Signatory to the PA,

NATIONAL PARK SERVICE, ALASKA REGIONAL OFFICE

By: _____

Date: 12/18/2018

PROGRAMMATIC AGREEMENT
Among the
U.S. Army Corps of Engineers, Alaska District
United States Department of the Interior, Bureau of Land Management
Alaska State Historic Preservation Officer
And
National Park Service, Alaska Regional Office
And
Alaska Gasline Development Corporation
Regarding the
Alaska Stand Alone Pipeline Project

INVITED SIGNATORIES

ALASKA GASLINE DEVELOPMENT CORPORATION

By:_____
Date: 12/6/18 Frank Richards, Senior V.P.

SUCCESSOR PROPONENT

By:_____
Date:_____

PROGRAMMATIC AGREEMENT
Among the
U.S. Army Corps of Engineers, Alaska District
United States Department of the Interior, Bureau of Land Management
Alaska State Historic Preservation Officer
And
National Park Service, Alaska Regional Office
And
Alaska Gasline Development Corporation
Regarding the
Alaska Stand Alone Pipeline Project

CONCURRING PARTIES

AHTNA, INC.

By:_____
Date:_____

CHICKALOON VILLAGE TRADITIONAL COUNCIL

By:_____
Date:_____

KENAITZE INDIAN TRIBE

By:_____
Date:_____

KNIK TRIBAL COUNCIL

By:_____
Date:_____

Glossary of Terms/Acronyms

Adverse Effect: When an Undertaking may alter, directly or indirectly, the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects may include reasonably foreseeable effects caused by the Undertaking that may occur later in time, be farther removed in distance or be cumulative.

Area of Potential Effect (APE): The geographic area or areas within which an Undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist.

Concurring Parties: A Consulting Party involved with the development of this PA that is invited to concur and sign the executed PA, thus endorsing the agreement. Consistent with 36 CFR § 800.6(c)(3), the refusal of a Concurring Party to sign the PA does not invalidate this PA nor prevent its execution. Concurring Parities may not terminate the PA. Signing this PA as a Concurring Party does not imply endorsement or approval of the Project itself, or limit or restrict in any way the Concurring Party's right to object to, petition against, litigate against or in any other way express or advance critical or negative comments toward, the Project or its proponent.

Consulting Tribes: Tribes (as defined below) that have requested consultative roles in the development of this PA (For a list of Consulting Tribes for this PA, see Appendix B).

Consultation: Consistent with 36 C.F.R. § 800.16 consultation means the process of seeking, discussing, and considering the views of other participants, and, where feasible, seeking agreement with them regarding matters arising in the section 106 process.

Consulting Parties: Signatories, Invited Signatories, Tribes, representatives of local governments, land owners, individuals or organizations with a demonstrated interest in the Undertaking, and the public. These entities have either requested consultative roles in the development of this PA or will be included in consultation outlined in the PA.

Cultural Resource: Any tangible or observable evidence of past human activity, regardless of significance, found in direct association with a geographic location, including tangible properties possessing intangible traditional cultural values.

Cultural Resource Management Plan (CRMP): CRMPs are developed to help meet the requirements under Section 106 of the NHPA. These plans provide detailed procedures and requirements to be implemented to resolve adverse effects to historic properties. CRMPs are often developed in conjunction with agreement documents (i.e. Memorandum of Agreement or PA).

Curation: The disposition of material remains that are excavated or removed during a survey, excavation, or other study of a prehistoric or historic resource, and associated records that are prepared or assembled in connection with the survey, excavation or other

study.

Data Recovery: The gathering of archaeological information from a historic property subject to an adverse effect. The associated procedures generally include, but are not limited to, excavation of subsurface archaeological deposits and documentation in the form of maps, photographs, feature drawings, field notes, and technical reports. The data recovered during these procedures can be utilized for future research.

Days: Days refer to calendar days.

Federal Agency: Any Federal entity with a statutory obligation to fulfill the requirements of Section 106 who has jurisdiction over an Undertaking and takes legal and financial responsibility for Section 106 compliance in accordance with Subpart B 36 CFR 800. The Federal Agency(s) has approval authority for the Undertaking and can commit the Federal agency to take appropriate action for a specific Undertaking as a result of Section 106 compliance.

Finding of Effect: A finding made by a Federal agency in coordination with the SHPO and other Consulting Parties in regards to a Project's effect upon a historic property consistent with 36 CFR. Part 800.

Determination of Eligibility: A determination made by a Federal agency, in coordination with the SHPO and/or designated representatives of Consulting Indian Tribes, as appropriate, respecting a cultural resource's eligibility for inclusion in the NRHP and more fully described in 36 CFR Part 60 and 36 CFR § 800.16(l)(2).

Environmental Impact Statement (EIS): An analysis of a major Federal action's environmental impacts conducted in compliance with NEPA.

Historic Property: Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to Consulting Indian Tribe(s) that meet the National Register criteria (see 36 CFR § 800.16(l)(1)).

Indian Tribe: As presently defined in 36 CFR 800.16(m), an Indian Tribe, band, nation, or other organized group or community, including a Federally-recognized Native Village, Regional Corporation or Village Corporation, as those terms are defined in Section 3 of the ANCSA (43 U.S.C. 1602) which is recognized as eligible for the special programs and serviced provided by the United States to Indians because of their status as Indians.

Invited Signatory: In accordance with 36 CFR 800.6(c)(2), invited signatories, upon signing the PA, are afforded the authority to amend and terminate the PA. As this PA places significant responsibilities on the Permittee, the USACE has invited the Permittee to sign this PA as an invited signatory consistent with 36 CFR § 800.6(c)(2). The refusal of any invited signatory to sign the PA does not invalidate the PA.

Keeper of the National Register: The Keeper is the individual who has been delegated the authority by the National Park Service (NPS) to list properties and determine their eligibility for the National Register. The Keeper may further delegate this authority as he or she deems appropriate.

Native American Graves Protection and Repatriation Act (NAGPRA): (25 U.S.C. 3001 et. seq.). The Act requires federal agencies and institutions that receive federal funding to return Native American cultural items to lineal descendants and culturally affiliated Indian Tribes and Native Hawaiian organizations. Cultural items include human remains, funerary objects, sacred objects, and objects of cultural patrimony. A program of federal grants assists in the repatriation process and the Secretary of the Interior may assess civil penalties on museums that fail to comply. NAGPRA also establishes procedures for the inadvertent discovery or planned excavation of Native American cultural items on federal or tribal lands. While these provisions do not apply to discoveries or excavations on private or state lands, the collection provisions of the Act may apply to Native American cultural items if they come under the control of an institution that receives federal funding.

National Environmental Policy Act (NEPA): NEPA is a federal law that requires federal agencies to disclose to the public the effects that major federal actions would have on environmental quality. These disclosures are reported as environmental assessments or environmental impact statements, and quantify the potential environmental effects of proposed actions.

National Historic Preservation Act (NHPA): The NHPA is legislation intended to preserve historical and archaeological sites in the United States of America. The act created the National Register of Historic Places, the list of National Historic Landmarks, and the State Historic Preservation Offices. Among other things, the act requires federal agencies to evaluate the impact of all federally funded or permitted projects on historic properties (buildings, archaeological sites, etc.) through a process known as Section 106 Review.

National Register of Historic Places (NRHP): The NRHP is the official list of the Nation's historic places worthy of preservation. Authorized by the NHPA and maintained by the National Park Service, it is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources.

National Register Criteria: National Register criteria means the criteria established by the Secretary of the Interior for use in evaluating the eligibility of properties for the National Register (36 CFR 60). The National Register of Historic Places criteria are listed below:

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship and feeling and:

a. that are associated with the events that have made a significant contribution to the broad patterns of our history; or
b. that are associated with the lives of persons significant in our past; or
c. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
d. that yielded, or may be likely to yield, information on prehistory or history.

Criteria considerations: ordinarily cemeteries, birthplaces, or graves of historical figures; properties owned by religious institutions or used for religious purposes; structures that have been moved from their original locations, commemorative in nature; and properties that have achieved their significance within the past 50 years shall not be considered eligible for the National Register of Historic Places (36 CFR 60.4).

Programmatic Agreement (PA): A PA is a document that spells out the terms of a formal, legally binding agreement between state and/or federal agencies. A PA establishes a process for consultation, review, and compliance with one or more federal laws, most often with those federal laws concerning historic preservation.

State Historic Preservation Officer (SHPO): The SHPO is responsible for administering the State Historic Preservation Program which includes providing assistance to Federal and State agencies and local governments in carrying out their historic preservation responsibilities.

Site: Site definition is different for each state but is generally defined by Willey and Phillips (1958:18), as any reasonably definable spatial unit that contains features or is fairly continuously covered with artifacts that are indicative of an occupation 50 years or older. A site may be defined as "a spatial cluster of cultural features, or items, or both" (Binford 1972:46). These definitions apply to both prehistoric and historic sites. Archaeological context may be defined by the inclusion of any of the following: soil staining, associated fire-cracked rock, ceramics, features, or a concentration of materials within a reasonably defined spatial boundary.

Traditional Cultural Property (TCP): A Traditional Cultural Property can be defined generally as an object, site, landscape feature, or other form of feature that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that communities' history, and (b) are important in maintaining the continuing cultural identity of the community. For additional information, reference Parker and King 1995.

Undertaking: An Undertaking is a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; those requiring a Federal permit; license or approval; and those subject to state or local regulation pursuant to a delegation or approval by a Federal agency.

Reference List

Binford, Lewis R. *An Archaeological Perspective*. New York: Seminar Press. 1972
Willey, Gordon R., and Phillip Phillips. 1958. *Method and Theory in American Archaeology*; Chicago: University of Chicago Press
Parker, Patricia L., and Thomas F. King. 1995. *Guidelines for Evaluating and Documenting Traditional Cultural Properties*. National Register Bulletin. Washington, D.C.: National Park Service, http://www.nps.gov/nr/publications/bulletins/nrb38/.

List of Appendices

Appendix A: Draft Cultural Resources Management Plan Dated October 12, 2018

Appendix B: List of Potential Consulting Parties Contacted and Invited to Participate in the Section 106 Process

Appendix C: Inadvertent Discovery of Human Remains

Appendix D: Inadvertent Discovery of Other Cultural Resources

Appendix E: Amendment Log

Appendix F: Plans

APPENDIX A

Draft Cultural Resource Management Plan (October 12, 2018) for the ASAP Project
Final Version to be attached upon completion.

APPENDIX B

LIST OF CONSULTING PARTIES

(* Indicates participating as a Consulting Party during the development of the PA. Appendix B should be used as a starting point for future consultation efforts. Additional parties may be identified throughout the life of the agreement.)

Tribes

Alatna Traditional Council

Allakaket Village

Arctic Village Traditional Council

Cheesh-Na Tribal Council

Chickaloon Native Village

Eklutna Native Village

Evansville Village

Fort Yukon (Gwichyaa Zhee Gwich'in)

Gulkana Village

Kaktovik Village

Kenaitze Indian Tribe (IRA) *

Knik Tribal Council *

Manley Hot Springs Traditional Council

Minto Traditional Council

Native Village of Cantwell

Native Village of Gakona

Native Village of Kluti-Kaah

Native Village of Nuiqsut

Native Village of Tyonek (IRA)

Nenana Native Association

Ninilchik Traditional Council

Rampart Traditional Council

Stevens Village (IRA)

Tanana Tribal Council

Venetie Traditional Council

Village of Anaktuvuk Pass

Village of Salamatof

Tribal Corporations

Alatna Village

Alexander Creek, Inc.

Baan-O-Yeel Kon Corporation

Bean Ridge Corporation

Beaver Traditional Council

Birch Creek Tribal Council

Caswell Native Association

Chickaloon Moose Creek Native Association

Chickaloon Village Traditional Council *

Cook Inlet Tribal Council

DinYee Corporation

Eklutna, Inc

Evansville, Inc.

Gold Creek-Susitna NCI

Kaktovik Inupiat Corporation

Knik Village

Knikahtnu, Inc.

Kuukpik Corporation

Montana Creek Native Association

Naqsragmiut Tribal Council

Nenana Traditional Council

Ninilchik Natives Association, Inc.

Nunamiut Corporation

Seth-De-Ya-Ah Corporation

Tanana Chiefs Conference

Toghotthele Corporation

Tyonek Native Corporation

Village of Venetie

Regional Corporations

Ahtna, Inc. *

Arctic Slope Regional Corporation

Cook Inlet Regional, Inc.

Doyon Limited *

Agencies

Bureau of Indian Affairs

BLM

Environmental Protection Agency

National Park Service

Pipeline and Hazardous Materials Safety Administration

U.S. Fish and Wildlife Service

Alaska DOT&PF

Cities and Boroughs

City of Fairbanks

Denali Borough

Fairbanks North Star Borough

Matanuska Susitna Borough

North Slope Borough

Non-Governmental Organizations (NGOs)

Alaska Historical Society

Alyeska

Cook Inlet Historical Society

Cook Inlet Regional Inc. Foundation

Iditarod Historic Trail Alliance

Inupiat History, Language and Culture Commission

Morris Thompson Cultural & Visitors Center

Simon Paneak Memorial Museum

Talkeenta Historical Society

Tanana-Yukon Historical Society

Wasilla Knik Historical Society

APPENDIX C

INADVERTENT DISCOVERY OF HUMAN REMAINS

The treatment of human remains following inadvertent discovery is governed by state and federal laws, land status, post-mortem interval, and biological/cultural affiliation. Human remains may include intact burials or isolated bones and fragmentary bone pieces.

Several Alaska state laws are applicable to the discovery of human remains. The State Medical Examiner has jurisdiction over all human remains in the state (with rare exceptions, such as military aircraft deaths); regardless of how long the remains have been deposited. Alaska state laws governing discovery of human remains include:

- AS 12.65.5, which requires immediate notification of a peace officer of the state (police, Village Public Safety Officer, or Alaska State Trooper) and the State Medical Examiner when death has "been caused by unknown or criminal means, during the commission of a crime, or by suicide, accident, or poisoning."

- AS 11.46.482(a) (3), which applies to all lands in Alaska, makes the "intentional and unauthorized destruction or removal of any human remains or the intentional disturbance of a grave" a class C felony.

- AS 41.35.200, which applies only to state lands, makes the disturbance of "historic, prehistoric, and archaeological resources" (including graves, per definition) a Class A misdemeanor.

- AS 18.50.250, which applies to all lands in Alaska, requires permits for transport, disinterment/exhumation, and internment of human remains.

On federal lands and federal trust lands, the unauthorized destruction or removal of archaeological human remains (*i.e.*, more than 100 years old) is a violation of 16 U.S.C. 470ee (ARPA). If human remains on federal or federal trust lands are determined to be Native American, their treatment and disposition are also governed by the Native American Graves and Repatriation Act (NAGPRA) of 1990 (P.L. 101-601; 25 U.S.C. 3001-30013; 104 Stat. 3048-3058; 43 CFR 10). NAGPRA also applies to the discovery of certain classes of cultural items, including funerary objects, sacred objects, and objects of cultural patrimony (together, NAGRPA items).

Per 42 CFR 10.2, the definitions of human remains and NAGPRA items are:

> *Human Remains means the physical remains of the body of a person of Native American ancestry. The term does not include remains or portions of remains that may reasonably be determined to have been freely given or naturally shed by the individual from whose body they were obtained, such as hair made into ropes or nets. For the purposes of determining cultural affiliation, human remains incorporated into a funerary object, sacred object, or object of cultural patrimony, as defined below, must be considered as part of that item.*

Funerary Objects means items that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed intentionally at the time of death or later with or near individual human remains. Funerary objects must be identified by a preponderance of the evidence as having been removed from a specific burial site of an individual affiliated with a particular Indian tribe or Native Hawaiian organization or as being related to specific individuals or families or to known human remains. The term burial site means any natural or prepared physical location, whether originally below, on, or above the surface of the earth, into which as part of the death rite or ceremony of a culture, individual human remains were deposited, and includes rock cairns or pyres which do not fall within the ordinary definition of gravesite.

Sacred Objects means items that are specific ceremonial objects needed by traditional Native American religious leaders for the practice of traditional Native American religions by their present-day adherents. While many items, from ancient pottery shards to arrowheads, might be imbued with sacredness in the eyes of an individual, these regulations are specifically limited to objects that were devoted to a traditional Native American religious ceremony or ritual and which have religious significance or function in the continued observance or renewal of such ceremony.

Objects of Cultural Patrimony means items having ongoing historical, traditional, or cultural importance central to the Indian tribe…rather than property owned by an individual tribal or organization member. These objects are of such central importance that they may not be alienated, appropriated, or conveyed by any individual tribal or organization member. Such objects must have been considered inalienable by the culturally affiliated Indian tribe…at the time the object was separated from eh group. Objects of cultural patrimony include items such as Zuni War Gods, the Confederacy Wampum Belts of the Iroquois, and other objects of similar character and significance to the Indian tribe…as a whole.

In the event that human remains or NAGPRA items are inadvertently discovered, the following plan will be implemented, regardless of land ownership.

I. Stop Work

Stop work in the immediate area of the discovery, notify the Project Site Manager, leave the discovery in place, and delineate a 100-foot buffer zone of avoidance. The buffer zone should be flagged with highly visible flagging or staked with brightly colored staking placed no greater than 20 feet apart.

Treat all remains with dignity and respect at all times. Implement protection measures such as covering the remains with a tarp to protect the discovery from the elements and photographs, shoring up cut banks or trench walls so that additional exposure does not occur, and making sure water will not flow through or pool in the immediate area of the discovery. These protection measures and avoidance zone should be maintained until AGDC receives formal notice that construction can resume in the area of the discovery.

II. Notify Officials

Once the remains are secure, the Project Site Manager should immediately notify the following contacts, in the order listed. Contacts should be notified by telephone, and then with written confirmation. Notification must take place within 24 hours of discovery and should include:

- Information regarding the nature and extent of the discovery;
- Photographs of the discovery (note to reviewers: *need consultation and guidance from pa parties, in particular tribes, as to appropriateness/necessity of photographs for the purpose of notification*);
- Narrative description of the precise location of the discovery; and
- GPS coordinates (lat/long) of the location of the discovery.

If a Qualified Archaeologist is on site when the remains are discovered, notification should include a preliminary assessment of whether or not the remains are archaeological in nature.

Notify each office and official identified below:

Alaska State Troopers, Missing Persons Clearinghouse
Phone: 907-269-5038
Fax: 907-337-2059

Lt. Paul Fussey
Phone: 907-269-5682
Email: paul.fussey@alaska.gov

*Malia Miller
Phone: 907-269-5038
Email: malia.miller@alaska.gov

*After contact by phone, send email with relevant information and photos to Lt. Fussey and Malia Miller.

Alaska State Medical Examiner's Office
Reporting Hotline (Death Hotline) to speak with on-duty investigator
Phone: 907-334-2356 or 1-888-332-3273 (Outside Anchorage)

Stephen Hoage Operations Administrator
Phone: 907-334-2202
Fax: 907-334-2216
Email: Stephen.Hoage@alaska.gov

Dr. Gary Zientek, Chief Medical Examiner
Phone: 907-334-2200
Phone: 907-334-2216
Email: gary.zientek@alaska.gov

Local Law Enforcement Contacts

Name	Address	Phone	Email
For Discoveries in the North Slope Borough			
North Slope Borough Police, Central Office	N/A	907-852-0311 ext. 2602	jeff.brown@north-slope.org
For Discoveries Along Dalton Hwy, South of North Slope Borough and Along Parks Hwy (including Fairbanks-North Star Borough and Denali Borough)			
Alaska State Troopers D Detachment Coldfoot Post	N/A	907-678-5211	N/A
Alaska State Troopers D Detachment Fairbanks Post	N/A	907-451-5100	N/A
Alaska State Troopers D Detachment Nenana Post	N/A	907-832-5554	N/A
Alaska State Troopers D Detachment Healy Post	N/A	907-683-2232	N/A
Alaska State Troopers D Detachment Cantwell Post	N/A	907-768-2202	N/A
For Discoveries within City of Fairbanks			
Fairbanks Police Department	N/A	907-459-6800 (Dispatch non-emergency line)	N/A
For Discoveries within Matanuska-Susitna Borough			
Alaska State Troopers B Detachment Mat-Su West Post	N/A	907-373-8300	N/A

Landowner
See **ASAP Landowner Contact Information within Construction Footprint** below for landowner contact information[2]

AGDC
Frank Richards, Sr. Vice President, Program Mgmt
Alaska Gasline Development Corporation
Office Phone: 907-330-6352
Email: frichards@agdc.us

USACE
North Section Chief
U.S. Army Corps of Engineers
Office Phone: (907) 753-2777
Email: Ryan.H.Winn@usace.army.mil

Alaska Office of History and Archaeology (SHPO)
Office Phone: 907-269-8700
Email: oha.permits@alaska.gov

State Archaeologist/Deputy SHPO
Office phone: 907-269-8700
Fax: 907-269-8908
Email: oha.permits@alaska.gov

Local Tribes and Tribes Likely to be Culturally Affiliated with the Discovery

See the CRMP to identify appropriate tribal contacts.

III. Determine Need for Forensic or Criminal Investigation

If the remains appear to be recent (less than 50 years old), the peace officer and Medical Examiner will determine whether or not the remains are of a forensic nature and/or subject to criminal investigation.

If the Medical Examiner determine the remains are historic or archaeological in nature, a qualified professional physical anthropologist with experience in the analysis of human remains will examine them to determine ethnic identity. Analysis techniques will be non-invasive and non-destructive, and throughout analysis, the remains will be treated with respect and dignity. The physical anthropologist shall be afforded no more than 30 days to complete their analysis.

IV. Determine Need for Plan of Action and Consult on Treatment, Custody, and Disposition

[2] In the event that the DNPP Route is selected, AGDC will update Table 9 with NPS landowner contact information.

If the remains or NAGPRA items are determined to be Native American and the discovery is located on federal land[3], the federal land managing agency will consult with known lineal descendants and Tribes likely to be culturally affiliated with the discovery, and determine the need for a Plan of Action for custody, disposition and treatment (including any removal or excavation) of the human remains or NAGPRA items. Consultation will follow regulations laid out in 42 CFR 10.5, and the Plan of Action will be prepared per regulations laid out in 42 CFR 10.4. Construction may resume when a written, binding Plan of Action is executed between the federal land managing agency and the affiliated Tribes and prescribed on-site activities have been completed.

If the remains or NAGPRA items are determined to be Native American and the discovery is located on non-federal land, the landowner with support from AGDC, will consult with the Alaska SHPO, USACE, and local and potentially affiliated Tribes regarding treatment and handling of the discovery. The procedures for treatment and handling of the discovery will be outlined in a binding Memorandum of Agreement (MOA). If the remains are to be removed or moved, the landowner, with support from AGDC will acquire the appropriate permit (disinterment or burial transit) from Health Analytics and Vital Records, prior to any exhumation or transport activity. Construction may resume when the MOA has been executed, and prescribed on-site activities completed.

If the remains are not Native American, and a determination has been made by the peace officer and Medical Examiner that a death investigation is not warranted, the landowner, with support from AGDC, will attempt to identify, locate, and inform descendants of the deceased. If the remains are to be removed or moved, the landowner, with support from AGDC, will acquire the appropriate permit (disinterment or burial transit) from Health Analytics and Vital Records, prior to any exhumation or transport activity. A MOA with descendants or other entities may be necessary. Construction may resume when the remains have been exhumed or otherwise reinterred.

Health Analytics and Vital Records
For questions regarding disinterment/transit/re-interment or burial transit permits, contact the Registration Help Line (Phone: 907-465-5423).

[3] If lands are selected by, but not conveyed to, an Alaska Native Corporation or group, such land is still owned by the federal government and considered "federal land."

APPENDIX D

INADVERTENT DISCOVERY OF OTHER CULTURAL RESOURCES

Cultural resources may be encountered aboveground and belowground during construction of the ASAP Project, and might include historic or prehistoric materials. In the event that previously unknown cultural resources are discovered during project activities, the following plan will be implemented. If the discovery involves human remains or cultural resources considered funerary objects, sacred objects, or objects of cultural patrimony, the Plan for Inadvertent Discovery of Human Remains, as outlined in Appendix C, should be implemented instead.

I. Stop Work

Stop work in the immediate area of the discovery, notify the Project Site Manager, leave the discovery in place, and delineate a 100-foot buffer zone of avoidance. The buffer zone should be flagged with highly visible flagging or staked with brightly colored staking placed no greater than 20 feet apart.

Implement protection measures, such as covering the cultural resource with a tarp, to protect the discovery from the elements, shoring up cut banks or trench walls so that additional exposure does not occur, and ensure water will not flow through or pool in the immediate area of the discovery. These protection measures and avoidance zone will be maintained until AGDC receives formal notice that construction can resume in the area of the discovery.

II. Notify Officials

The Project Site Manager should then immediately notify the persons and entities listed below, or as soon as communication mechanisms are available. Contacts should be notified by telephone, with written confirmation via email, fax or mailed letter. Notification must take place within 24 hours of discovery and should include:

- Information regarding the nature and extent of the cultural resource;
- Photographs of the cultural resource;
- Narrative description of the precise location of the cultural resource; and
- GPS coordinates (lat/long) of the location.

If a Qualified Archaeologist is on site when the resource is discovered, notification should include an assessment of resource's significance and integrity, and whether or not it is potentially NRHP-eligible. The site will be treated as eligible until a full assessment of its eligibility can be completed.

Notify these officials:

USACE
North Section Chief
U.S. Army Corps of Engineers
Office Phone: (907) 753-2777
Email: Ryan.H.Winn@usace.army.mil

AGDC
Frank Richards, Sr. Vice President, Program Mgmt
Alaska Gasline Development Corporation
Office Phone: 907-330-6352
Email: frichards@agdc.us

SHPO
(For SHPO contacts, use this email as primary contact if no phone contact is made)
Office Phone: 907-269-8700
Email: oha.permits@alaska.gov

State Archaeologist/Deputy SHPO
Phone: 907-269-8700
Fax: 907-269-8908
Email: oha.permits@alaska.gov

See **ASAP Landowner Contact Information within Construction Footprint** below for landowner contact information[4]

Local Tribes and Tribes that Have Expressed an Interest in Being Notified
See Table below to identify the appropriate Tribal contact information.

III. Evaluate and Consult on Discovery

Within 72 hours of discovery, USACE, SHPO, AGDC, and the land managing agency or landowner shall consult, by telephone or other means, on the nature of the discovery, its potential significance, and determine if any additional investigation is warranted.

If the USACE determines, in consultation with SHPO, AGDC and the land managing agency or landowner, that the discovery is not significant and SHPO concurs, then verbal authorization to proceed with construction activities may be given by the USACE to AGDC. The USACE should provide AGDC with written confirmation of the authorization to proceed within 48 hours.

If the USACE determines that additional investigation is warranted, the discovery should be investigated by a professional who meets the appropriate qualification standards, and a formal

[4] In the event that the DNPP Route is selected, AGDC will update Table 9 with NPS landowner contact information.

evaluation of the discovery's eligibility for listing in the NRHP should be completed per Stipulation V.B. of the PA. The field investigation and evaluation should be completed within 10 working days of the discovery. The USACE should consult with SHPO and the PA Parties on the eligibility of the discovery within 3 working days of receipt of the evaluation, SHPO and consulting parties should provide a decision to the USACE regarding concurrence with the eligibility within 5 working days. If no response is received within 5 working days, the USACE may assume concurrence with its determination of eligibility.

If the USACE determines the discovery is not eligible, and SHPO concurs, verbal authorization to proceed with construction activities may be given by the USACE to AGDC, and the USACE should provide written confirmation of the authorization to proceed within 48 hours.

If the USACE determines the discovery is eligible and the SHPO concurs, the USACE should consult with the PA parties to determine if effects upon the discovery can be avoided or minimized sufficiently to not adversely affect the historic property or if mitigation is needed. AGDC, under the direction of the USACE, will prepare a determination of treatment (avoidance, minimization, or mitigation) within 5 working days of concurrence with the determination of eligibility and should include a schedule for the resumption of construction work in the area of the discovery.

ASAP Landowner Contact Information within Construction Footprint

Name	Address	Phone	Email
State Lands (Except Alaska Mental Health Trust, University of Alaska, ARRC)			
For All Discoveries, Regardless of State Agency (Except as Noted Above)			
Alaska Office of History and Archaeology	550 W. 7th Ave, Ste. 1310 Anchorage, AK 99501	907-269-8700	oha.permits@alaska.gov
Bureau of Land Management			
For Discoveries between Pipeline MP 0-121			
BLM Arctic Field Office	1150 University Ave Fairbanks, AK 99709	1-800-437-7021	N/A
For Discoveries Between Pipeline MP 121 – 369.5, MP 397.3-420.5, MP 422.7-469.7, MP 471.7-497.7 and MP 520.7-530.8			
BLM Central Yukon Field Office **Attn: Field Manager**	222 University Ave Fairbanks, AK 99709	907-474-2200	N/A
For Discoveries Between Pipeline MP 369.5 to 397.3, MP 420.5 to 422.7, MP 469.7 to 471.7, MP 497.7 to 520.7 and MP 530.8 to 544			

Name	Address	Phone	Email
BLM Eastern Interior Field Office **Attn: Field Manager**	222 University Ave Fairbanks, AK 99709	907-474-2200	N/A
For Discoveries Between Pipeline MP 544 – 705.7			
BLM Glenallen Field Office **Attn: Field Manager**	PO Box 147 Glennallen, AK 99588	907-822-3217	N/A
For Discoveries Between Pipeline MP 705.7 – 733.47			
BLM Anchorage Field Office **Attn: Field Manager**	4700 BLM Rd Anchorage, AK 99507	907-267-1246	N/A
For Discoveries Between Pipeline MP 536.1 - 544.33			
Denali National Park and Preserve **Attn: Phoebe Gilbert**	PO Box 9 Denali Park, AK 99755	907-683-9540 907-683-9581	Phoebe_gilbert@nps.gov
Boroughs and Municipalities			
North Slope Borough			
IHLC Central Office **Kathy Itta-Ahgeak**	PO Box 69 Utqiagvik, AK 99723	907-852-0422 Or 907-852-2611	kathy.ahgeak@north-slope.org
Fairbanks North Star Borough			
Manager, Lands Department **Sandra Mota**	PO Box 71267 Fairbanks, AK 99709	907-459-1241 Or 907-459-1000	land@fnsb.us
Denali Borough			
Planning and Land Use Department **Marsha Lambert**	PO Box 480 Healy, AK 99743	907-683-1330	mlambert@denaliborough.com
Matanuska-Susitna Borough			
Eileen Probasco	350 E. Dahlia Ave.	907-861-8501 Or	eileen.probasco@matsugov.us

Name	Address	Phone	Email
	Palmer, AK 99645	907-861-7801	
Municipality of Nenana			
Municipality Office and City of Nenana Port Authority	Municipality: PO Box 277 Nenana, AK 99760 Port Authority: PO Box 70 Nenana, AK 99730	907-832-5501 (Port Authority Only)	N/A
Alaska Native Regional Corporations			
Ahtna, Incorporated			
Land and Resources Department **Joe Bovee** **Or** **Ahtna, Inc. (General)**	Land and Resources: PO Box 649 Glenallen, AK 99588 Or Ahtna, Inc. (General): 110 W. 38th Ave, Ste. 100 Anchorage, AK 99503	907-822-3476 (Land and Resources) Or 907-868-8250 (Ahtna, Inc. General)	jbovee@ahtna-inc.com
Cook Inlet Region Inc.			
Land and Resources Department	PO Box 93330 Anchorage, AK 99509	907-263-5140 Or 907-263-5191	info@ciri.com
Doyon, Limited			
Lands and Natural Resources	1 Doyon Place, Suite 300 Fairbanks, AK 99701	907-459-2030 Or 907-459-2000	lands@doyon.com
Alaska Native Village Corporations			
Toghotthele Corporation			
Chief Administrative Officer Kelly Ann Burk	PO Box 249	907-832-5832	kellann@togcorp.net

Name	Address	Phone	Email
	Nenana, AK 99760		
Knikatnu, Incorporated			
Knikatnu, Inc.	1075 S. Check St., #211, Wasilla, AK 99654	907-376-1845	N/A
Other			
Alaska Mental Health Trust			
Trust Land Office	2600 Cordova St., Ste. 100 Anchorage, AK 99503	907-269-8658	mhtlo@alaska.gov
University of Alaska			
Facilities and Land Management, Regional Resource Manager Patrick Kelly	1815 Bragaw St., Ste. 101 Anchorage, AK 99508	907-786-7795 Or 907-786-7766	pkelly1@alaska.edu
Alaska Railroad Corporation			
Corporate Planning and Real Estate	327 W. Ship Creek Ave. Anchorage, AK 99501	907-265-2448 Or 907-265-2670	RealEstTech@akrr.com
Native Allotments (2) – Bureau of Indian Affairs			
BIA Alaska Regional Office, Realty Services	3601 C Street, Suite 1100 Anchorage AK 99503	907-271-4085	N/A

Local Tribes and Tribes that have Expressed an Interest in Being Notified

Name	Address	Phone	Email
For Discoveries in the Northern Region (Pipeline MP 0-262)			
Native Village of Nuiqsut	PO Box 169 Nuiqsut, AK 99789	907-480-3010	N/A
Village of Anaktuvuk Pass	PO Box 21065 Anaktuvuk Pass, AK 99721	907-661-2535	N/A
Alatna Village	222 University Ave	907-474-2200	N/A

Name	Address	Phone	Email
	Fairbanks, AK 99709		
Allakaket Village	222 University Ave Fairbanks, AK 99709	907-474-2200	N/A
Evansville Village	PO Box 147 Glennallen, AK 99588	907-822-3217	N/A
Arctic Village Traditional Council	PO Box 22069 Arctic Village, AK 99722	907-587-5523	av_council@hotmail.com
Native Village of Venetie	PO Box 81080 Venetie, AK 99781	907-849-8165	N/A
For Discoveries in the Interior Region (Pipeline MP 263-561)			
Alatna Village	PO Box 70 Alatna, AK 99720	907-968-2261	alatnatribe@yahoo.com
Allakaket Village	PO Box 50 Allakaket, AK 99720	907-968-2237	allakaketepa@yahoo.com
Evansville Village	PO Box 26087 Bettles Field, AK 99726	907-692-5005	evansvillealaska@gmail.com
Arctic Village Traditional Council	PO Box 22069 Arctic Village, AK 99722	907-587-5523	av_council@hotmail.com
Native Village of Venetie	PO Box 81080 Venetie, AK 99781	907-849-8165	N/A
Native Village of Stevens	PO Box 74012 Stevens Village, AK 99774	907-478-7228	N/A
Beaver Village	PO Box 24029 Beaver, AK 99724	907-628-6126	rpitka@beavercouncil.org
Gwichyaa Zhee Gwich'in Tribal Government	PO Box 126 Fort Yukon, AK 99740	907-662-2581	N/A
Birch Creek Tribe	909 Cushman Street, Ste. 207	907-374-9925	birchcreektribe@gmail.com

Name	Address	Phone	Email
	Fairbanks, AK 99701		
Rampart Village	PO Box 29 Rampart, AK 99767	907-358-3312	N/A
Native Village of Tanana	PO Box 130 Tanana, AK 99777	907-366-7160	N/A
Manley Hot Springs Village	PO Box 105 Manley Hot Springs, AK 99756	907-672-3177	N/A
Native Village of Minto	PO Box 58026 Minto, AK 99758	907-798-7112	N/A
Nenana Native Association	PO Box 369 Nenana, AK 99760	907-832-5461	N/A
Native Village of Cantwell	PO Box 94 Cantwell, AK 99729	907-768-2591	N/A
For Discoveries in the Southern Region (Pipeline MP 562-733)			
Native Village of Cantwell	PO Box 94 Cantwell, AK 99729	907-768-2591	N/A
Knik Tribe	1744 N. Prospect Drive Palmer, AK 99645	907-373-7991	N/A
Native Village of Eklutna	26339 Eklutna Village Road Chugiak, AK 99567	907-688-6020	nve@eklutna-nsn.gov
Chickaloon Village Traditional Council	PO Box 1105 Chickaloon, AK 99674	907-745-0737	N/A
Native Village of Tyonek	PO Box 82009 Tyonek, AK 99682	907-583-2111	N/A
Kenaitze Indian Tribe	150 N. Willow Street PO Box 988 Kenai, AK 99611	907-335-7200	N/A

APPENDIX E

Amendment Log

Execution Date	Description
dd/mm/yyyy	*Title of Amendment*

APPENDIX F

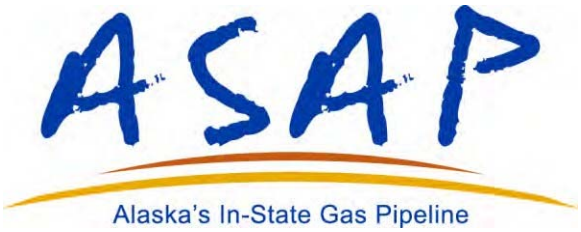
Plans

Placeholder for future incorporation of Avoidance, Minimization and Treatment Plans, site-specific mitigation plans, monitoring plans, and other documents created as a result of this PA.

Appendix E

Draft Cultural Resources Management Plan

- Page Intentionally Left Blank -



ALASKA STAND ALONE PIPELINE / *ASAP* PROJECT

Cultural Resources Management Plan

DRAFT

ASAP-22-PLN-ENV-DOC-00002
October 12, 2018

Alaska Gasline Development Corporation | 3201 C Street, Suite 200 | Anchorage, AK 99503 | P 907.330.6300 | F 907.330.6309 | www.agdc.us

DRAFT

NOTICE

THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

©2018 Alaska Gasline Development Corporation. All rights reserved.

Alaska Gasline Development Corporation
3201 C Street, Suite 200
Anchorage, AK 99503
www.agdc.us
907-330-6300

DRAFT

REVISION HISTORY

Revision	Date	Comme nt	Approval	
			Company Preparing Report	AGDC
	5/4/2017	Corrected counts for APE	TAK, Corvus Culture	
C	1/19/2018	Updated CAMP to reflect APE changes, Agency comments, and Section 106 consultation comments	TAK, Corvus Culture	
D	3/30/2018	Updated CAMP to complete missing sections (Plan for Human Remains, Plan for Inadvertent Discoveries, Assessment of Effect chapter, Monitoring Plan), and address Agency and Section 106 Consulting Party comments	TAK, Corvus Culture	K. Stevenson
E	7/20/2018	Updated CAMP to address comments received from Section 106 Consulting Parties during the May 2018 Section 106 working group meeting, and in review of the March 30 2018 CAMP Draft.	TAK, Corvus Culture	F. Richards
0	7/27/2018	For Use	TAK, Corvus Culture	F. Richards
1	9/7/2018	Updated CAMP to address comments received from SHPO, NPS, CIRI and USACE	TAK, Corvus Culture	F. Richards
2	10/19/2018	Updated to incorporate revisions suggested by NPS on potential DNPP route and by SHPO related to clarifying the 106 process and edits on sections related to identification, evaluation, and treatment of historic properties.	KS, LH, TAK	F. Richards
Approver Signature•				

•This signature approves the most current version of this document.

DRAFT

NOTICE- THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

This page intentionally left blank.

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

ABSTRACT AND MANAGEMENT SUMMARY

Report Title	Cultural Resources Management Plan
Report Date	October 19, 2018
Land Ownership	State of Alaska, Bureau of Land Management, Denali Borough, Denali National Park and Preserve, Fairbanks North Star Borough, City of Nenana, Matanuska-Susitna Borough, North Slope Borough, Alaska Mental Health Trust Authority, University of Alaska, U.S. Army Corps of Engineers, Ahtna, Inc., Cook Inlet Region, Inc. (CIRI), Toghotthele Corporation.
Document No.	ASAP-22-PLN-ENV-DOC-00002
Project Description	The Alaska Gasline Development Corporation (AGDC) has submitted a Joint Application for Permit (404/10) to the U.S. Army Corps of Engineers (USACE) for the Alaska Stand Alone Pipeline (ASAP) Project (Project), to construct a natural gas pipeline system to deliver North Slope natural gas to communities in Alaska. Issuance of the federal permit constitutes an undertaking subject to review under Section 106 of the National Historic Preservation Act. The USACE is executing a Programmatic Agreement (PA) to satisfy its Section 106 consultation responsibilities; this document has been prepared to guide and support the implementation of the PA.
Project Location	The Project location spans the state of Alaska north to south, from Prudhoe Bay, on the North Slope, to the Matanuska-Susitna Borough, near Cook Inlet. The Project area includes un-surveyed portions of the ASAP Alignment and exists within the following USGS map quadrangles: Beechey Point (XBP, A3, B3); Sagavanirktok (SAG, A3, A4, B3, C3, D3); Philip Smith Mountains (PSM, A4, A5, B4, B5, C4, C5, D4); Chandalar (CHN, B6, D5, D6); Wiseman (WIS, A1, B1); Bettles (BET, A1, B1, B2, C2, D1, D2); Tanana (TAN, D1); Livengood (LIV, A3, A4, B3, B4, C4, C5, D5, D6); Fairbanks (FAI, A5, B5, C4, C5, D2, D3, D4); Healy (HEA, A5, A6, B4, B5, C4, D4, D5); Talkeetna Mountains (TLM, D6); Talkeetna (TAL, A1, B1, C1, D1); Tyonek (TYO, B1, C1, D1), Tyonek (TYO, B1, C1, D1); Anchorage (ANC, C8); Seward (SEW, A7).

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Summary

This Plan provides an overview of cultural resources identification, consultation, and National Register of Historic Places (NRHP) eligibility evaluation work completed to date for the Project. The Plan identifies actions that will be completed to satisfy the terms of the PA, including strategies for the avoidance, minimization and mitigation of historic properties that may be adversely affected by the Project. A total of 1,324 cultural resources are present in the Project Area of Potential Effect, and 159 of these resources are considered historic properties (cultural resources determined to be eligible for listing in the NRHP).

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

TABLE OF CONTENTS

1. INTRODUCTION 1
1.1.1 Denali National Park and Preserve Route (Alternative 2) 2
1.2.1 Financial Investment Decision / Authorization for Funding Expenditures 6

2. REGULATORY BACKGROUND 8
54 U.S.C. 306108; Regulations at 36 CFR 800 8
Public Law 96-95 (16 U.S.C. 470aa-470mm); Regulations at 43 CFR 7 9
25 U.S.C. 3001 et seq.; Regulations at 43 CFR 10 9

3. SECTION 106 CONSULTATION 11

4. PREVIOUS CULTURAL RESOURCE INVESTIGATIONS IN THE ASAP PROJECT AREA 16
4.1.1 Alaska LNG Surveys 17
4.1.2 ASAP Surveys 18
4.2.1 Northern Region 20
4.2.2 Interior Region 21
4.2.3 Southcentral Region 21

5. CULTURAL RESOURCES IN THE APE 22
5.1.1 Nuiqsut Cultural Landscape 23
5.1.2 Gallagher Flint Station 24
5.1.3 Galbraith Lake 24
5.1.4 Bonanza Tors 25
5.1.5 Kanuti River 25
5.1.6 Rosebud Knob 25
5.1.7 Montana Creek 25
5.1.8 Fish Creek and Red Shirt Lake 26
5.1.9 Iditarod National Historic Trail 26

6. HISTORIC PROPERTY IDENTIFICATION 28
6.1 SURVEY PROGRESS WITHIN THE APE 28

7. ASSESSMENTS OF EFFECT 39

8. HISTORIC PROPERTIES TREATMENT AND MITIGATION 40

9. ADMINISTRATIVE REPORTING AND SCHEDULE REQUIRED PLANS, ACTIVITIES, AND REPORTS 60

10. PLAN FOR THE INADVERTENT DISCOVERY OF CULTURAL RESOURCES 65

11. INADVERTENT DISCOVERY OF HUMAN REMAINS 72

12. GENERAL MONITORING PROCEDURES 78

13. REFERENCES 80

14. ATTACHMENTS 92

ATTACHMENT A: KNOWN SITES AND ASSOCIATED START OF CONSTRUCTION 94

ATTACHMENT B: AREAS OF POTENTIAL EFFECT AND AREAS SURVEYED MAPBOOK 95

ATTACHMENT C: PREVIOUS SURVEY INVESTIGATIONS IN THE APE 96

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

DRAFT

ATTACHMENT D: AHRS SITES WITHIN THE APE 112
ATTACHMENT E: AHRS SITE LOCATION MAPBOOK 113
ATTACHMENT F: ENVIRONMENTAL AND CULTURAL OVERVIEW 114
ATTACHMENT G: ANNUAL REPORT AND PROGRESS REPORT TEMPLATES..... 129

LIST OF TABLES

Table 1. Signatories, Invited Signatory, and Concurring Parties to the PA 12
Table 2. Number of Cultural Resources in the Direct APE 22
Table 3. Number of Cultural Resources in the Indirect APE 22
Table 4. Percentage of Survey by Region of the ASAP Mainline Alignment ROW 27
Table 5. Cultural Resources Survey Completed at Project Components in Direct APE 29
Table 6. Cultural Resources Survey Completed at Project Components, Indirect APE.....32
Table 7. Mitigation Recommendations for Historic Properties in the Direct APE.....44
Table 8. Summary and Schedule of CRMP Required Plans, Activities, and Reports 62
Table 9. ASAP Landowner Contact Information within Construction Footprint.....67
Table 10. Local Tribes and Tribes that have Expressed an Interest in Being Notified.....69
Table 11. Local Law Enforcement Contacts 74

LIST OF FIGURES

Figure 1. Alaska Stand Alone Pipeline.....3
Figure 2. Fairbanks Lateral Route 4

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

This page intentionally left blank

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

ACRONYMS AND ABBREVIATIONS

%	percent
ACC	Alaska Commercial Company
ADNR	Alaska Department of Natural Resources
AFE	Authorization for Expenditures
AGDC	Alaska Gasline Development Corporation
AGPPT	Alaska Gas Producer's Pipeline Team
AHPA	Alaska Historic Preservation Act
AHRS	Alaska Heritage Resources Survey
ANCSA	Alaska Native Claims Settlement Act
APE	Area of Potential Effect
APP	Alaska Pipeline Project
ARPA	Archaeological Resources Protection Act
ARRC	Alaska Railroad Corporation
AS	Alaska Statute
ASAP	Alaska Stand Alone Pipeline
ASRC	Arctic Slope Regional Corporation
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
B.P.	Before Present
CFR	Code of Federal Regulations
CIRI	Cook Inlet Regional Incorporated
CRMP	Cultural Resources Management Plan
Denali Project	Denali – the Alaska Gas Pipeline LLC
DNPP	Denali National Park and Preserve

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

DOT&PF	Department of Transportation and Public Facilities
ENSTAR	ENSTAR Natural Gas Company
EO	Executive Order
FEIS	Final Environmental Impact Statement
FERC	Federal Energy Regulatory Commission
FID	Final Investment Decision
GCF	Gas Conditioning Facility
GPS	Global Positioning Systems
IHLC	Iñupiat History, Language and Culture
INHT	Iditarod National Historic Trail
LMR	Land Management Regulations
m	meter
MOA	Memorandum of Agreement
MP	pipeline milepost
MSB	Matanuska-Susitna Borough
NAGPRA	Native American Graves Protection and Repatriation Act
NHPA	National Historic Preservation Act
NLUR/NHG	Northern Land Use Research
NPS	National Park Service
NRHP	National Register of Historic Places
NSB	North Slope Borough
OHA	Office of History and Archaeology
PA	Programmatic Agreement
Plan	Cultural Resources Management Plan
PMRE	Port MacKenzie Rail Extension
Project	Alaska Stand Alone Pipeline Project

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

ROW	right-of-way
SEIS	Supplemental Environmental Impact Statement
SHPO	State Historic Preservation Officer
SRB&A	Stephen R. Braund and Associates
TAPS	Trans-Alaska Pipeline System
TLUI	Traditional Land Use Inventory
U.S.	United States
U.S.C.	United States Code
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

This page intentionally left blank

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

1. INTRODUCTION

The Alaska Gasline Development Corporation (AGDC) has submitted a Joint Application for Permit (404/10) (Permit) to the United States (U.S.) Army Corps of Engineers (USACE) for the Alaska Stand Alone Pipeline (ASAP) Project (Project), to construct a natural gas pipeline system to deliver North Slope natural gas to communities in Alaska. Issuance of the federal permit constitutes an undertaking subject to review under Section 106 of the National Historic Preservation Act (NHPA). The purpose of this Cultural Resources Management Plan (CRMP or Plan) is to support and guide the implementation of the *Programmatic Agreement (PA) among the U.S. Army Corps of Engineers, Alaska District, United States Department of the Interior, Bureau of Land Management, National Park Service, Alaska State Historic Preservation Officer and Alaska Gasline Development Corporation Regarding the Alaska Stand Alone Pipeline Project* (PA).

This Plan details the procedures that will be followed to complete the processes for historic property identification, assessments of effect, and historic property treatment. This includes strategies for the avoidance, minimization, and mitigation of adverse effects to cultural resources eligible for the National Register of Historic Places (NRHP) (*i.e.*, historic properties).

1.1 PROJECT DESCRIPTION AND PLANNING BACKGROUND

The purpose of the ASAP Project, which is identified as Alternative 1: Alaska Stand Alone Pipeline Project (Proposed Action) in the Final Supplemental Environmental Impact Statement (Final SEIS), is to deliver North Slope natural gas to Fairbanks, the Southcentral region, and other communities in Alaska. The ASAP Project comprises a Gas Conditioning Facility (GCF) near Prudhoe Bay capable of producing an annual average of 500 million standard cubic feet of gas per day of natural gas; a buried, 36-inch, 733-mile-long, 1,480-pound per square inch gauge (psig) buried natural gas pipeline connecting the GCF to the existing ENSTAR Natural Gas Company (ENSTAR) pipeline system in the Matanuska-Susitna Borough (MSB); a buried, 12-inch, 30-mile long, 1,480 psig, lateral line connecting the Mainline to Fairbanks; and associated facilities. The pipeline system is designed to transport natural gas that will be accessible to and useable by communities, government entities, and natural resource development projects.

The proposed pipeline will typically be buried with a minimum cover of 30 inches and a bottom-of-ditch depth of 6 to 8 feet, except at fault crossings, elevated bridge stream crossings, pigging facilities, and block valve locations. The ASAP route will generally parallel the Trans-Alaska Pipeline System (TAPS) and Dalton Highway corridor to near Livengood, northwest of Fairbanks. At Livengood, the route will continue south, to the west of Fairbanks and Nenana. In its forthcoming Record of Decision, USACE will determine whether the pipeline will bypass Denali National Park and Preserve (DNPP) to the east or pass through approximately seven miles of DNPP non-wilderness designated lands. The pipeline route will then generally parallel the Parks Highway corridor to Willow, continuing south to an interconnection point with ENSTAR's distribution system at Milepost (MP) 39 of the Beluga Pipeline southwest of Big Lake (Figure 1). The Fairbanks Lateral tie-in will be located approximately 2.5 miles south of the Mainline Chatanika River crossing at MP 440 of the Mainline. From the tie-in, the Fairbanks Lateral pipeline will traverse east, following the Murphy Dome, Old Murphy Dome Roads, and then extending southeast into Fairbanks (Figure 2).

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

In addition to the Mainline and Fairbanks Lateral pipelines, off right-of-way (ROW) components will be constructed to support both construction of the Project, and the long-term maintenance and operation of the Project. These include:

- GCF at Prudhoe Bay
- West Dock Sea Lift and Staging Pad
- Metering Stations at the end of the Fairbanks Lateral and Mainline Terminus
- Eight Pig Launching or Receiver Facilities
- Forty Mainline Block Valve Locations
- Maintenance Response Bases at the GCF, Fairbanks Lateral, and Mainline Terminus (Big Lake)
- Corporate Headquarters in Anchorage
- 298 New Access Roads Totaling 174.4 Miles
- 89 Material Borrow Sites
- Material Waste Sites
- Pipe Storage and Laydown Yards
- Temporary Workspaces
- 13 Stationary Worker Camps
- Two Temporary Logistics Support Sites (Seward and Fairbanks)

A complete description of the Project is available in the USACE Joint Application for Permit and the Final SEIS for the Alaska Stand Alone Pipeline, both of which can be accessed online at http://www.asapeis.com/.

The ASAP Project would phase required cultural resource evaluations along a timeline that completes additional survey or evaluation prior to construction activities. A complete list of known sites and approximate associated starting dates for construction is provided in Attachment A.

1.1.1 Denali National Park and Preserve Route (Alternative 2)

The USACE may opt to select a route alternative through DNPP (Alternative 2, Final SEIS) that has been proposed for the ASAP Project. The Denali NPP Route Variation would begin at ASAP MP 535.8 and would enter the Denali NPP boundary approximately 0.2 miles after crossing the Nenana River on the pedestrian bridge to the west of the Parks Highway (also contained within Denali NPP). Just south of the pedestrian bridge, the Denali NPP Route Variation would cross the Parks Highway again (from west to

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

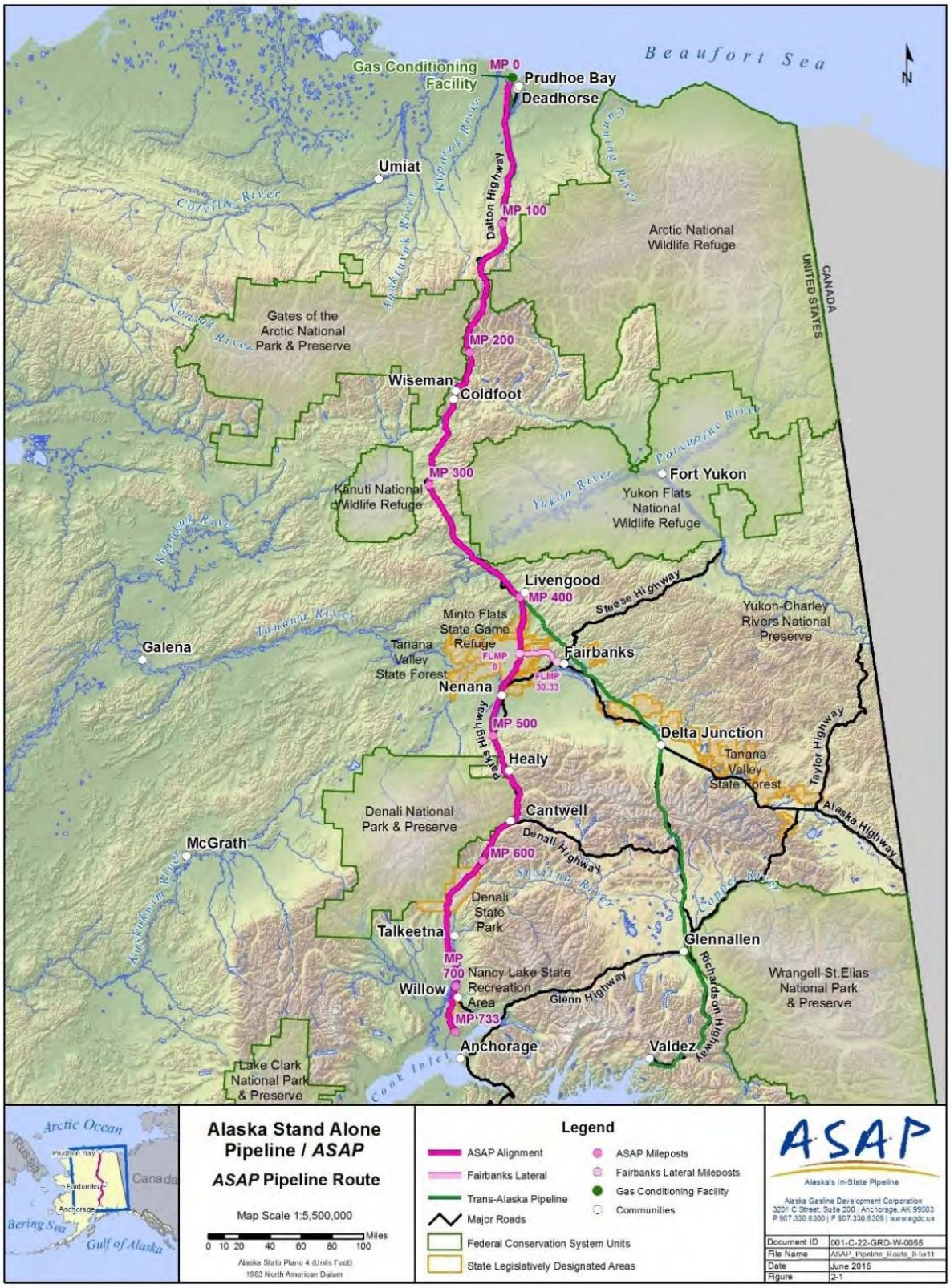
east) and remain on the east side of the road. The route would parallel the highway until the second at-grade railroad crossing south of the Denali NPP entrance, at which point the route would diverge from it. At this point, the route would shift to the southeast, away from the Parks Highway, crossing the Nenana River downstream (east) of McKinley Village. The Denali NPP Route Variation would rejoin the proposed route at ASAP MP 543. Should the USACE select the DNPP Route in its Record of Decision, plans, reports, and activities identified within this Plan will fully incorporate consideration of the DNPP route and the inclusion of the National Park Service (NPS) as a Signatory to the PA.

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

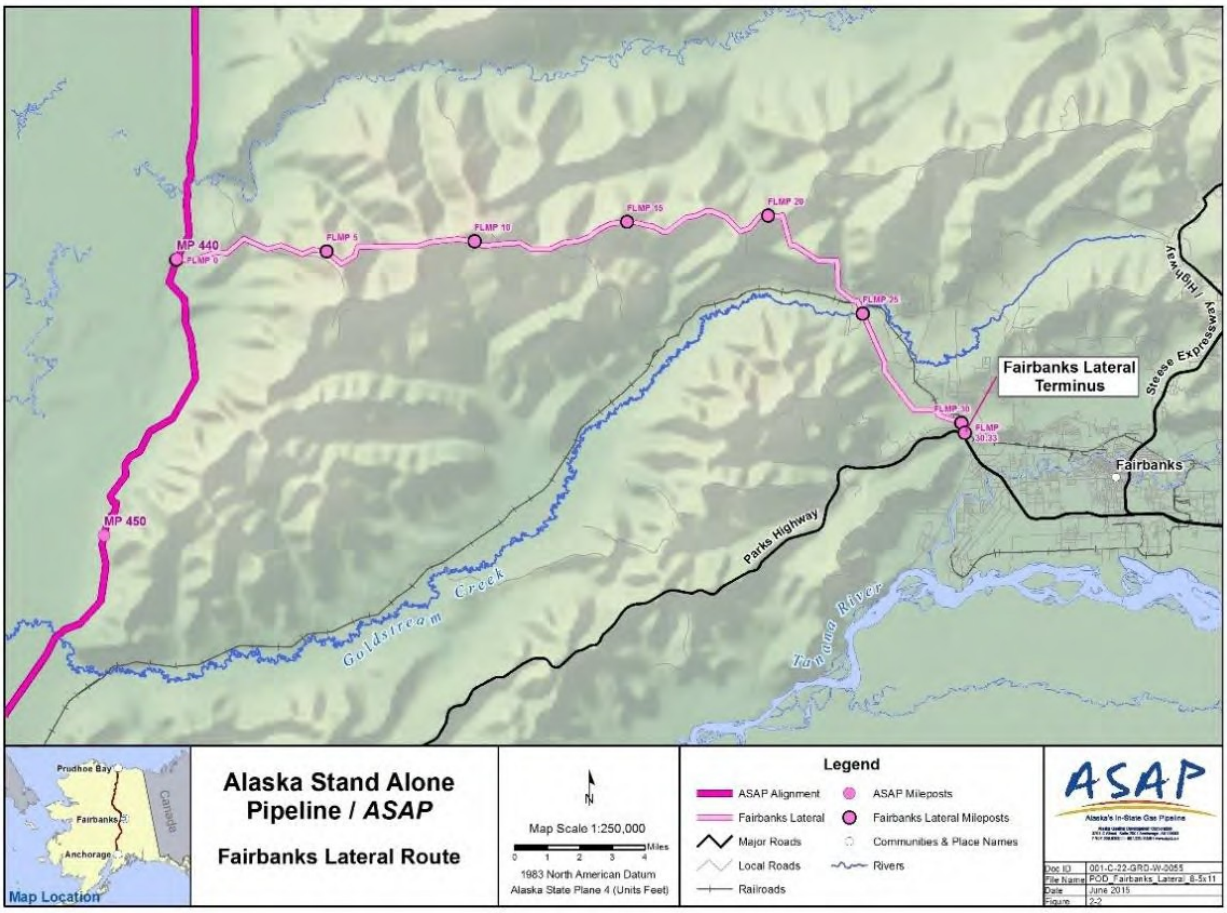
Figure 1. Alaska Stand Alone Pipeline



NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Figure 2. Fairbanks Lateral Route



1.2 PURPOSE OF THE PLAN

As noted in the Introduction, the purpose of this Plan is to support the implementation of the PA. The USACE is the lead federal agency for the purposes of compliance with Section 106 of the NHPA. As mandated by federal law for the Section 106 process, federal agencies work with Consulting Parties to identify historic properties within their project's Area of Potential Effect (APE); determine if the project will have an adverse effect; and then resolve the adverse effect through avoidance, minimization, or mitigation prior to project permitting.

Because of the scale of the ASAP Project, as well as the phased nature of design, engineering and construction, the USACE has prepared a PA concurrent with the development of the Final SEIS, to identify a phased path for compliance with Section 106. The PA identifies the parties participating in the Section 106 consultation process (see Section 3.1) and the stipulations regarding continued consultation, historic property identification, assessment, and resolution of effect, to demonstrate compliance with Section 106 and its implementing regulations at 36 Code of Federal Regulation (CFR) 800.

This Plan summarizes the cultural resources identification and Section 106 consultation efforts completed to date for the Project and outlines the work that will be completed following execution of the PA, including

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

avoidance, minimization and mitigation measures for the treatment of historic properties that will be adversely affected by the Project.

1.2.1 Financial Investment Decision / Authorization for Funding Expenditures

It should be noted that the trigger for implementation of the consultation, historic property identification, assessment, and effect resolution activities identified in this CRMP is the issuance of a Financial Investment Decision (FID) or AGDC Board of Directors-approved Authorization for Expenditures (AFE). There will likely be approximately 6 months from the time a financial decision is made (FID/AFE) to the start of the first year of phased construction (Attachment A). Additional time will be afforded for survey and evaluation of cultural resources leading up to the 2nd, 3rd, and 4th year of construction (Appendix A). This provides ample time for scheduled evaluations phased along with construction activities to occur. AGDC will notify PA Parties when the FID/AFE are signed, and will pursue completion of the plans, reports, and activities detailed throughout this CRMP in accordance with the expected construction schedules.

1.3 ORGANIZATION OF THE PLAN

Section 1 of this Plan presents an introduction to the Project and the purpose of the Plan, as well as a brief Project description. Section 2 presents the regulatory context for cultural resources, including descriptions of applicable federal, state, and local cultural resource laws, regulations, policies, and permit requirements. Section 3 discusses the status of Section 106 consultation for the Project and the PA, and then concludes with a description of the APE.

Section 4 presents an overview of the cultural resources work completed to date, including summaries of previous Project-related surveys as well as other field and literature review investigations that have taken place in the APE. Section 5 identifies the cultural resources documented within the APE, and their eligibility for listing in the NRHP. Section 6 presents a brief discussion of the status of survey within the APE and the procedures for identification of historic properties following execution of the PA, including field survey and site evaluations. Section 7 presents procedures for assessing Project effects to historic properties within the APE. Section 8 identifies strategies that AGDC will implement to avoid, minimize, and mitigate effects to historic properties within the APE. This includes a table listing all historic properties within the direct APE and the proposed mitigation or minimization measures to be implemented at each site.

Section 9 presents a table summarizing the actions, reports, and plans AGDC will complete to satisfy its responsibilities in the PA. Sections 10 and 11 present the Plans for Inadvertent Discovery of Cultural Resources and the Plan of Action for the Inadvertent Discovery of Human Remains, respectively. Lastly, Section 12 discusses general monitoring procedures that will be implemented during construction.

The appendices included with this Plan contain tables and mapbooks with more detailed information on the location of cultural resource investigations within the APE, and the location of all documented cultural resource sites within the APE. Additionally, an environmental and cultural overview of the Project area is included.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

This page intentionally left blank.

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

2. REGULATORY BACKGROUND

The Project will require a Section 404 permit from the USACE, triggering compliance with and consultation under Section 106 of the NHPA. Additionally, sizeable portions of the Project will be constructed on federal land managed by the U.S. Bureau of Land Management (BLM) and will require the issuance of a ROW, which is also subject to the Section 106 process. Partnership with the State of Alaska triggers Project compliance with Alaska Statute (AS) 41.35.070 under the Alaska Historic Preservation Act (AHPA). Also, portions of the Project are located within the North Slope Borough (NSB), which maintains a permitting process to ensure that cultural resources are taken into account for projects within its boundaries.

Other federal laws and regulations govern the management of cultural resources and human remains located on federal land. These laws include the Archaeological Resources Protection Act (ARPA) and the Native American Graves Protection and Repatriation Act (NAGPRA).

2.1 SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT (NHPA)

54 U.S.C. 306108; Regulations at 36 CFR 800

Section 106 of the NHPA of 1966, as amended, and implementing regulations at 36 CFR 800, mandate that federal agencies must take into account the effects their undertakings may have on historic properties. The NHPA defines an undertaking as, "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including...those requiring a Federal permit, license, or approval" (36 CFR 500.16(y)). Per 36 CFR 800.16 (l)(1) as amended, an "historic property" is described as:

> *any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.*

Section 106 lays out a process which seeks to balance historic preservation concerns with the requirements of the undertaking through consultation among the responsible lead federal agency (in this case, USACE) and other parties, including the State Historic Preservation Officer (SHPO), other federal land-managing agencies, federally recognized Tribes, and other Alaska Native groups, representatives of local government, and other interested parties. The goal of consultation is to identify historic properties potentially affected by the undertaking, assess the effects of the undertaking, and seek measures to avoid, minimize, or mitigate (resolve) adverse effects to historic properties.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

2.2 ARCHAEOLOGICAL RESOURCES PROTECTION ACT OF 1979

Public Law 96-95 (16 U.S.C. 470aa-470mm); Regulations at 43 CFR 7

ARPA provides for the protection of archaeological resources on federal and Indian lands and requires federal land managers to issue permits for the excavation or removal of archaeological resources from lands under their jurisdiction. ARPA stipulates that appropriate Tribes be notified prior to permit issuance to determine if significant religious or cultural sites may be affected. ARPA prohibits the sale or trafficking of artifacts removed from federal lands across interstate or international boundaries; and levies both civil and criminal penalties for the illegal excavation damage or defacement of archaeological sites and for the sale or trafficking of cultural materials illegally removed from federal lands.

Archaeological resources, as defined by ARPA, consist of any material remains of past human life or activities which are of archaeological interest and are at least 100 years in age and the physical site, location, or context in which they are found. A resource is of archaeological interest if, through its scientific study and analysis, information or knowledge can be obtained concerning human life or activities. Paleontological specimens, deposits, and remains are not considered archaeological resources under ARPA unless they are located in an archaeological context.

ARPA stipulates information concerning the nature and location of any archaeological resource on federal or Indian lands may not be made available to the public unless it is determined that such disclosure would further the purposes of the Act and not create a risk of harm to the resources or to the site where such resources are located.

2.3 NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT

25 U.S.C. 3001 et seq.; Regulations at 43 CFR 10

NAGPRA, which was passed in 1990, requires federal agencies and museums receiving federal funds to inventory collections of human remains and associated funerary objects as well as consult with Indian tribes and Native Hawaiian organizations on the repatriation or disposition of these remains and objects. Of relevance to the ASAP Project, NAGPRA requires that Indian tribes or Native Hawaiian organizations be consulted whenever archaeological investigations encounter, or are expected to encounter, Native American cultural items or when such items are unexpectedly discovered on federal or tribal lands.

NAGPRA contains provisions for both the intentional and inadvertent discovery of Native American cultural items on federal and tribal lands. Section 4 of NAGPRA establishes that illegal trafficking in human remains and cultural items may result in criminal penalties.

2.4 THE ALASKA HISTORIC PRESERVATION ACT

AHPA (AS 41.35) was implemented in 1971 and regulates the treatment of historic, prehistoric, and archaeological resources on State of Alaska land or lands threatened by public (state) construction. The statute establishes that it is state policy to, “preserve and protect the historic, prehistoric, and archeological resources of Alaska from loss, desecration, and destruction so that the scientific, historic, and cultural heritage embodied in these resources may pass undiminished to future generations” (AS 41.35.010) and

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

establishes state title to all historic, prehistoric, and archaeological resources located on state-owned or state-controlled land. By definition this includes, "deposits, structures, ruins, sites, buildings, graves, artifacts, fossils, or other subjects of antiquity which provide information pertaining to the historical or prehistorical culture of people in the state as well as to the natural history of the state" (AS 41.35.230).

The statute compels the Alaska Department of Natural Resources (ADNR) to identify historic, prehistoric, and archaeological resources (AS 41.35.070(a)) and to determine if public construction projects will have any adverse impacts on these resources in advance of an undertaking (AS 41.35.070(b-c)).

The statute prohibits removal or destruction of the historic and archaeological resources located on state-owned or state-controlled lands, including tidelands and submerged lands, without a state permit. Additionally, the statute prohibits the possession, selling, buying, or transport of these resources without a state permit.

2.5 NORTH SLOPE BOROUGH REGULATIONS

The Land Management Regulation (LMR) Division of the NSB reviews land use permits and monitors compliance with applicable regulations. The NSB's Iñupiat History, Language and Culture (IHLC) Division has oversight of the historic, archaeological, and cultural sites within the boundaries of the NSB, which are recorded in the Traditional Land Use Inventory (TLUI) database. The IHLC is tasked with ensuring that development activities do not impact cultural sites, activities, or social/cultural practices and values. To that end, all land use permits processed by LMR require the completion of a Certificate of IHLC/TLUI Clearance Application (Form 500). The TLUI clearance process also requires that cultural resource studies be conducted in project areas, and that consultation with affected village tribal presidents and city mayors occur before permits are granted.

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

This page intentionally left blank.

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

3. SECTION 106 CONSULTATION

Per 36 CFR 800.2, entities that should be invited to consult on the Project include: the SHPO; Tribes that may attach religious and cultural significance to the cultural resources affected by the Project; local governments with jurisdictions over areas in which the effects of the Project may occur; the Project applicant (AGDC); and individuals and organizations with a demonstrated interest in the Project (for example, those with a legal or economic relation to the Project or affected cultural resources, or concern with the Project's effects on historic properties).

Since 2010, the USACE has conducted consultation with various federal, state, and local land-managing agencies as well as Alaska Native Claims Settlement Act (ANCSA) corporations that own lands within the Project area. Additionally, USACE consulted with Tribes, Tribal entities, and other organizations or individuals with a demonstrated interest in the Project. Consultation for the Project initially occurred between 2010 and 2012, during preparation of the Final Environmental Impact Statement (FEIS). Consultation was put on hold between 2012 and 2016, as AGDC revised the Project description and 404 permit application, though informal consultation continued throughout 2013 to 2016.

In 2017, the USACE reached out to federal, state, local agencies, local government, federally recognized Tribes, ANCSA corporations, and other individuals and organizations with a demonstrated interest in the Project to participate in consultation and the development of the PA. Appendix B of the PA lists the entities invited to consult in 2017. In addition to the USACE and the Project's Permittee (AGDC), the entities that indicated interest in participating in the consultation included the Alaska SHPO, the BLM, the NPS, Chickaloon Village Traditional Council, the Knik Tribe, the Kenaitze Indian Tribe, and Ahtna, Inc. These entities, collectively, are the Consulting Parties for the PA.

3.1 PROGRAMMATIC AGREEMENT

The USACE is the lead federal agency for the purposes of compliance with Section 106 of the NHPA. During the Section 106 process, federal agencies work with Consulting Parties to identify historic properties within their project's APE. They determine if the project will have an adverse effect to those properties and then resolve the adverse effect through avoidance, minimization, or mitigation prior to project permitting.

Because of the scale of the ASAP Project, as well as the phased nature of design, engineering, and construction, the USACE has prepared a PA concurrent with the development of the Final SEIS, to identify a phased path for compliance with Section 106. The PA identifies all parties participating in the Section 106 consultation process and their roles, along with the stipulations regarding continued consultation, historic property identification, determination of effect, and resolution of effect. Although the USACE has delegated much of the historic property identification and preliminary effect recommendations and effects resolution activities to AGDC (the permittee), as the lead federal agency, the USACE bears decision making responsibility for determinations and findings regarding historic properties completed as a part of the PA. This includes NRHP eligibility determinations and findings of effect.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Because of the responsibilities they have for permitting some or all of the Project, the USACE, BLM, NPS, and SHPO[1] are Signatories to the PA. Because of the responsibilities AGDC (the Permittee/Applicant) has for implementing many of the terms of the PA, they are an Invited Signatory to the PA. The remaining entities participating in consultation and the development of the PA are Concurring Parties. As noted previously, should the DNPP Route (Alternative 2) be selected, the NPS will sign on as a Signatory to the PA.

3.2 FUTURE CONSULTATION

A primary component of successful implementation of the PA will be continued consultation and coordination among the PA Signatories, Invited Signatory, and Concurring Parties (together considered the PA Parties) and other parties as appropriate. Table 1 identifies these entities and their point of contact. AGDC will update this table annually as part of the Annual Report (see Section 9.3). Throughout the duration of the PA, AGDC will support the USACE's continued consultation per the stipulations of the PA and this CRMP. In addition to consultation with the PA Parties, it is understood that continued consultation will strive to reach out to and incorporate input from the other Section 106 consulting parties, interested Tribes and Alaska Native organizations, and the public. This will be achieved via public project informational meetings and project website, informal and formal discussions with Tribes, historical groups and others during survey planning and execution, and public dissemination of the Annual Report (see Section 9.1).

Table 1. Signatories, Invited Signatory, and Concurring Parties to the PA

Name	Address	Phone/Fax	Email
Signatories			
U.S. Army Corps of Engineers **Role: Federal Lead Agency Reviewing Application for the Undertaking**			
Shannon Morgan, Chief, North Branch Regional Regulatory Division, USACE, Alaska District	U.S. Army Corps of Engineers PO Box 6898, 2204 3rd St.	907-753-5552 (ph) 907-753-5567 (f)	Shannon.R.Morgan@usace.army.mil
Dept. of the Interior – Bureau of Land Management **Role: Federal Land Manager with Authority to Issue a Linear ROW for the Proposed Undertaking; Administrator for the Iditarod National Historic Trail**			
Ted Murphy, Acting State Director,BLM Alaska	Bureau of Land Management Alaska State Office 222 West Seventh Avenue, #13 Anchorage AK 99513-7504	907-271-5080 (ph) 907-271-4596 (f)	t75murph@blm.gov
Dept. of the Interior -National Park Service **Role: Federal Land Manager with Authority to Issue a special use permit for a pipeline ROW for the Proposed Undertaking; consulting party for the Gallagher Flint Station NHL**			
Herbert C. Frost, Ph.D Regional Director, NPS Alaska Region	National Park Service 240 W. 5th Avenue Anchorage, AK 99501	907-644-3510 (ph) No fax	907-644-3510 (ph) No fax

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Alaska State Historic Preservation Officer Role: Consulting Party Pursuant to Section 106 of the NHPA			
Judith Bittner, SHPO	Alaska Dept. of Natural Resources Office of History and Archaeology 550 West 7th Ave, Suite 1310 Anchorage, AK 99501	907-269-8721 (ph) 907-269-8908 (f)	judy.bittner@alaska.gov
Invited Signatory			
Alaska Gasline Development Corporation Role: Applicant to Construct the Alaska Stand Alone Pipeline (Undertaking)			
Frank Richards, Sr. Vice President, Program Management	Alaska Gasline Development Corporation 3201 C Street, Suite 200 Anchorage, AK 99503	907-330-6352 (ph)	frichards@agdc.us
Concurring Parties			
Federally Recognized Tribes Role: Consulting Parties Pursuant to Section 106 of the NHPA and Executive Order (EO) 13175			
Chickaloon Village Traditional Council	Chickaloon Village Traditional Council	(Insert contact phone and fax)	(insert contact email)
Name	Address	Phone/Fax	Email
Signatories			
U.S. Army Corps of Engineers Role: Federal Lead Agency Reviewing Application for the Undertaking			
Shannon Morgan, Chief, North Branch Regional Regulatory Division, USACE, Alaska District	U.S. Army Corps of Engineers PO Box 6898, 2204 3rd St.	907-753-5552 (ph) 907-753-5567 (f)	Shannon.R.Morgan@usace.army.mil
Dept. of the Interior – Bureau of Land Management Role: Federal Land Manager with Authority to Issue a Linear ROW for the Proposed Undertaking; Administrator for the Iditarod National Historic Trail			
Ted Murphy, Acting State Director, BLM Alaska	Bureau of Land Management Alaska State Office 222 West Seventh Avenue, #13 Anchorage AK 99513-7504	907-271-5080 (ph) 907-271-4596 (f)	t75murph@blm.gov
Dept. of the Interior -National Park Service Role: Federal Land Manager with Authority to Issue a special use permit for a pipeline ROW for the Proposed Undertaking; Consulting Party for the Gallagher Flint Station NHL			
Herbert C. Frost, Ph.D, Regional Director, NPS Alaska Region	National Park Service 240 W. 5th Avenue Anchorage, AK 99501	907-644-3510 (ph) No fax	bert_frost@nps.gov
Alaska State Historic Preservation Officer Role: Consulting Party Pursuant to Section 106 of the NHPA			
Judith Bittner, SHPO	Alaska Dept. of Natural Resources Office of History and Archaeology 550 West 7th Ave, Suite 1310 Anchorage, AK 99501	907-269-8721 (ph) 907-269-8908 (f)	judy.bittner@alaska.gov
Invited Signatory			
Alaska Gasline Development Corporation Role: Applicant to Construct the Alaska Stand Alone Pipeline (Undertaking)			

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Frank Richards, Sr. Vice President, Program Management	Alaska Gasline Development Corporation 3201 C Street, Suite 200 Anchorage, AK 99503	907-330-6352 (ph)	frichards@agdc.us
Concurring Parties			
Federally Recognized Tribes **Role: Consulting Parties Pursuant to Section 106 of the NHPA and Executive Order (EO) 13175**			
Angie Wade or Jessica Winnestaffer, Chickaloon Village Traditional Council	Chickaloon Village Traditional Council, PO Box 1105 Chickaloon, AK	(907-761-3914 907-761-3911) (ph) No fax	angiew@chickaloon.org Jessica@chickaloon.org
Kenaitze Indian Tribe Wayne Wilson Tribal Council Chairperson	Kenaitze Indian Tribe PO Box 988 Kenai, AK 99611	907-335-7200 (ph) No fax	Btrefon@kenaitze.org
Knik Tribe Mike Tucker President	Knik Tribe PO Box 1565 Wasilla, AK 99687	907-373-3153 (ph) 907-373-2161 (f)	bcharles@kniktribe.org
ANCSA Regional Corporations **Role: Consulting Parties Pursuant to Section 106 of the NHPA and EO 13175**			
Ahtna, Inc., Michelle Anderson President	Ahtna, Inc. PO Box 649 Glennallen, AK 99588	907-822-3476 (ph) 907-822-3495 (f)	jbovee@ahtna-inc.com

[1] The SHPO is considered a Signatory per 36 CFR 800.14(b)3 and 36 CFR 800.6(c)1.

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

3.3 AREA OF POTENTIAL EFFECT (APE)

Under 36 CFR 800.16(d), the APE is defined as, "the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historical properties, if any such properties exist."

The USACE, as the lead federal agency and in consultation with the Signatories, has established the undertaking's APE, as defined in 36 CFR 800.16(d), which encompasses direct and indirect effects on historic properties for agency-permitted alternatives.

The APE considered for direct effects includes the 350-foot-wide ROW corridor for pipeline construction and the proposed footprint for all other project components (*e.g.*, work camps, storage areas, gravel, material sources, and the GCF), plus a 90-foot buffer area. The area considered for indirect effects, including visual impacts, is contained within a 1-mile perimeter that surrounds the direct APE. The dimensions of the APE are to remain consistent for the entire route, including any areas traversed within DNPP, if applicable. This document provides summary information for sites in both the proposed route and the DNPP alternative route.

The 350-foot-wide corridor has been determined by applying a 175-foot-wide buffer to all sides of the centerline of the nominally 150-foot-wide Mainline and Fairbanks Lateral Alignment ROW. The 90-foot buffer area has been determined by applying a 90-foot-wide buffer to all sides of the construction footprint for all other Project components (off-ROW components). These components consist of new and improved access roads, construction camps, dredge disposal areas, facility pads (including the GCF), ice roads, material sources, pipe storage yards, sea ice pads, sea ice roads, temporary workspaces vertical support members, the West Dock dredge area, West Dock existing bridge, fill and road, West Dock mooring dolphins, West Dock new fill areas, West Dock temporary barge bridge and barge bridge rake, HDD entry and exit pads, HDD false ROW, and railroad sidings.

A map of the entire APE for the ASAP Project is provided in Attachment B. To aid in the review and discussion of the APE, it is divided into three regions:

1. The Northern region includes the northernmost portion of the APE at West Dock through pipeline MP 262;

2. The Interior region includes the APE for project components located between pipeline MP 263 and MP 561; and

3. The Southern region includes the APE for Project components located between pipeline MP 562 and the southernmost portion of the APE.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

4. PREVIOUS CULTURAL RESOURCE INVESTIGATIONS IN THE ASAP PROJECT AREA

Several cultural resource investigations have been conducted in the APE. Much of the Mainline alignment north of Livengood was surveyed in the 1970s by archaeologists working on the TAPS. Other cultural resource investigations completed within the vicinity of the APE include surveys of sections of the Parks Highway (DePew and Pendleton 2013; Thompson 2011), surveys conducted for the Alaska Railroad Corporation (ARRC), and the Point MacKenzie Rail Extension (Pipkin 2006; Stephen R. Braund and Associates [SRB&A] 2009, 2010), and surveys conducted in the greater Fairbanks area for various municipal and borough projects (Matheson and Haldeman 1981; Dixon 1993). Robust surveys for proprietary oil and gas pipeline projects, including the Alaska LNG Project and the Alaska Pipeline Project (APP) have been completed within or in the vicinity of the Mainline alignment as well as some off-ROW component areas (Alaska LNG 2016; Northern Land Use Research [NLUR/NHG] n.d.). A table of previous survey investigations conducted up through June 2018[1] in the APE is provided in Attachment C.

4.1 OIL AND GAS RELATED CULTURAL RESOURCE SURVEYS

Multiple linear surveys have taken place within the vicinity of the ASAP study area. The TAPS was one of the first projects to complete systematic cultural resource surveys before its construction in the 1970s. More than 370 archaeological sites were documented during the TAPS surveys between 1969 and 1975 (Cook 1977). These field studies, which coincide in part with the APE, were conducted by personnel from the University of Alaska Fairbanks and what is now Alaska Pacific University. Another project that undertook cultural resource field investigations in the 1970s was the Northwest Alaska Pipeline Project. This project, which sought to construct a pipeline from Prudhoe Bay to the United States–Canada border, coincided in part with the APE between Prudhoe Bay and Livengood, before turning east toward the border (Aigner and Gannon 1981).

In 2001, investigations for the Alaska Gas Producer's Pipeline Team (AGPPT) pipeline were conducted along a corridor from Prudhoe Bay and the United States-Canada border at Port Alcan (Potter *et al.* 2001). The northern portion of the AGPPT route is similar to the northern portion of the APE. A proprietary predictive model, which used geomorphic variables to identify portions of the proposed route as either low potential for containing cultural resources, moderate potential for containing cultural resources, or two separate types of high potential for containing cultural resources, was used to structure the field investigations. Low potential areas generally received spot checks by helicopter survey. Moderate and high potential areas generally received pedestrian surveys and some level of shovel testing. Approximately 624 linear miles of the AGPPT route were surveyed and 122 cultural resource sites were identified and recorded during the surveys.

In 2008, Denali – the Alaska Gas Pipeline LLC (Denali Project) proposed to construct a gas pipeline from Prudhoe Bay to Alberta, Canada. The northern portion of the Denali Project route followed the northern

[1] Surveys of DNPP were carried out in late summer 2018 for the Alaska LNG Project. The initial data (AGDC 2018) were provided to the Federal Energy Regulatory Commission (FERC); however, the data and information have not yet been reviewed and/or vetted by SHPO, and are therefore not included in this revision of the CRMP. The data and information will be reviewed and considered by state and federal agencies following issuance of the document.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

portion of the AGPPT route, and coincides with much of the northern portion of the APE. Cultural resource field investigations completed for the Denali Project focused primarily on the portions of the route between Delta Junction and the Canadian border and thus do not overlap the APE. However, a pedestrian survey with discretionary subsurface shovel testing was conducted at the Denali Project's proposed Gas Treatment Plant at Prudhoe Bay in 2009 (NLUR/NHG n.d.) in the vicinity of the APE.

Between 2010 and 2012, the APP applied a refined version of the proprietary predictive model developed for the AGPPT project to identify areas of cultural resources sensitivity for pedestrian survey and shovel testing. This project had two proposed corridors: one which ran from Prudhoe Bay to Valdez, the other which ran from Prudhoe Bay to Alberta. Similar to TAPS, AGPPT, and the Denali Project, portions of the APP project corridor coincided with the APE. These overlapping areas are identified in Attachment B.

Most recently and most germane to the ASAP Project, however, is the Alaska LNG Project, which completed substantial cultural resource investigations between 2013 and 2016, as discussed below.

4.1.1 Alaska LNG Surveys

Cultural resource field investigations for the Alaska LNG Project were designed based on mapped sensitivity or the archaeological potential of areas along the Alaska LNG Project corridor. Pre-survey helicopter overflights were conducted to demarcate generally high or low potential survey segments and note any visible historic buildings or structures. A desktop review of the corridor, which applied a proprietary predictive model, identified areas with very low to no potential for cultural resources and those areas were eliminated from field surveys. The remaining areas were segregated into low potential (Type A) and high potential (Type B) areas. For Type A areas, helicopter or vehicular surveys of segments not previously surveyed were used to identify isolated higher-potential areas for targeted field survey. For Type B areas, field investigations were implemented, including pedestrian transect surveys with systematic shovel testing of previously un-surveyed areas, as well as targeted surveys where the previous surveys (*e.g.*, Denali Project, AGPPT, APP, or ASAP) were considered inadequate.

The field investigations included a combination of walkover, surface inspection, and shovel testing. Of these techniques, walkover transects or vehicular/aerial surveys were used most frequently in Type A survey areas. Surveys included visual inspection of areas where previous surveys were conducted or where topography and vegetation cover suggested a lower potential for cultural resources. These areas comprised wetlands or inundated areas, previously disturbed locations, and areas where the slope exceeded 15 percent (%). Shovel testing was employed along with these methods for Type B areas. Shovel tests were placed at a maximum interval of 15 meters (m) and assigned a unique identification number. Location data were collected using handheld Global Positioning Systems (GPS) units; both location data and survey results were recorded on survey forms. The shovel tests were excavated to a depth below which cultural materials might be found, as little as 10 centimeters below surface in some areas, and more than 100 centimeters below surface in others such as alluvial and colluvial settings. To investigate strata below the base of standard shovel tests, 1-inch-diameter cores were used.

Select prehistoric and historic period artifacts were collected from the surface and in shovel tests. Non-diagnostic prehistoric artifacts were recorded in the field using GPS, documented in field notes, and photographed. Diagnostic items and tools were collected for further analysis. Unique diagnostic historic artifacts were retained for analysis; however, non-diagnostic or mass-produced items were recorded and left at the site. A provisional artifact curation agreement was obtained with the University of Alaska, Museum of the North in Fairbanks for the eventual disposition of the collected artifacts.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Investigations to determine the potential for deeply buried cultural deposits within the APE for the Alaska LNG Project footprint were initiated during the 2015 field season (Proue *et al.* 2016); excluding the Denali Route. Recent studies documented stratified Late Pleistocene and Holocene sites in dune fields of the Tanana Valley. Project representatives sought to investigate eolian landforms similar to these where deeply stratified cultural materials were recorded. Dune deposits in the lower Nenana River and the loess deposit mantling the lower foothills bordering the east side of the Tolovana River were selected for deep testing (Proue *et al.* 2016). Field investigations included excavation of 1-m x 1-m test units to a depth of at least 1.2 m into dune and loess deposits to search for cultural materials and to collect charcoal and sediment samples. Sediments were excavated with shovels and trowels, and then passed through 1/8-inch mesh screens. Deposits below 1.2 m were examined using a 1-inch soil probe with extensions to permit sampling to 5 m below ground surface (Proue *et al.* 2016).

In 2013, investigations sought to identify cultural resources located within a 300- to 600-foot-wide study corridor around the pipeline centerline. In subsequent years, the study area was narrowed to a 300-foot-wide corridor. Surveys completed in 2014 examined select survey target areas along the pipeline corridor south of Livengood, while in 2015 cultural resource surveys focused not only on the pipeline corridor, but also off-ROW facilities and previously documented cultural resources sites. In 2016, surveying focused primarily on the pipeline centerline of the Point Thomson Transmission Line, access routes, and off-ROW facilities. By the close of the 2016 field season, approximately 33,828 acres (comprising just over 50% of the Alaska LNG Project area) had been surveyed. Intensive Phase II surveys were completed for the project between 2015 and 2016, which resulted in the NRHP eligibility evaluation of more than 150 cultural resources (Alaska LNG 2016).

4.1.2 ASAP Surveys

AGDC (through cultural resource contractors) conducted aerial and pedestrian archaeological surveys in the APE between 2009 and 2014. It is important to note that the location and design of the ASAP Project components has been modified over the years, to accommodate geotechnical information, land, and resource concerns (including cultural resource concerns). Consequently, not all sites or surveys investigated during any given year have remained within the APE. To aid in understanding the status of surveys completion within the current APE, and the specific method completed, this Plan includes a mapbook displaying all surveys that have occurred within the ASAP Project footprint, as defined in the Section 404 permit application (see Attachment B). This mapbook also displays surveys completed for the APP and Alaska LNG projects, which were discussed previously in this chapter.

Results of the ASAP survey efforts are reported in the following AGDC reports, all of which have been submitted previously to the Alaska Office of History and Archaeology (OHA):

- *Alaska Stand Alone Gas Pipeline Project/ASAP Cultural Resource Report for the 2010 and 2011 Field Seasons* (AGDC 2012);
- *Alaska Stand Alone Gas Pipeline Project/ASAP Cultural Resource Report for the 2013 Field Season* (AGDC 2014a);
- *Alaska Stand Alone Gas Pipeline Project/ASAP Cultural Resource Report for the 2013 Field Season North of Livengood* (AGDC 2014b);
- *Alaska Stand Alone Gas Pipeline Project/ASAP Cultural Resource Report for the 2014 Field Season* (AGDC 2015b); and

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

- Letter Report from Marko Radonich to Earle Williams (BLM 2012).

In 2009, AGDC conducted aerial and vehicular (windshield) reconnaissance surveys for the entire then-Mainline alignment, at the time referred to as the ASAP ENSTAR Bullet Line; however, no pedestrian survey was conducted at that time. The goal of the 2009 surveys was to identify pedestrian survey target areas for future years, and understand the general topography of the Project as a whole (AGDC 2012).

In 2010, AGDC instituted pedestrian survey methods and completed a pedestrian reconnaissance survey within a 300-foot corridor along 75 miles of the then-Mainline alignment. The 2010 survey occurred at 10 locations between the North Slope, Happy Valley, and the Trapper Creek area. The survey was conducted in parallel transects, spaced 50 feet apart; systematic shovel testing occurred at 1,000-foot intervals in areas considered to have high potential for cultural resources. The 2010 pedestrian reconnaissance survey resulted in the identification of 10 new cultural resource sites. No NRHP evaluations were completed for the sites identified in 2010 (AGDC 2013).

Pedestrian surveys continued in 2011, when AGDC conducted pedestrian reconnaissance survey with discretionary subsurface (shovel) testing within a 200-foot corridor along approximately 243 miles of the then-Mainline alignment and Fairbanks Lateral alignment. Mainline alignment survey was focused on the portion of the Mainline south of Fairbanks. AGDC also completed 50 miles of aerial reconnaissance and limited pedestrian survey in the Minto Flats area (AGDC 2013). In addition to the alignment survey, AGDC conducted archaeological testing at proposed borehole locations between Healy and Willow. The tested boreholes were located both within and outside of the 2011 alignment survey targets.

In 2012, AGDC filed the FEIS for the ASAP Project. Consequently, very limited cultural resource investigation occurred in 2012. However, pedestrian survey and shovel testing at three proposed borehole locations at the Mainline alignment's crossing at the Yukon River were completed. No cultural resources were identified as a result of this testing (BLM 2012).

A more robust survey program resumed in 2013, and AGDC conducted pedestrian reconnaissance survey with discretionary subsurface (shovel) testing along a 200-foot-wide corridor centered along 88 miles of the then-Mainline alignment. A survey was completed at various places from Livengood south, and in a 5-mile section north of Livengood, near Grayling Lake. No new cultural resources were identified at Grayling Lake; however, 13 new cultural resources were documented south of Livengood, and 12 previously recorded Alaska Heritage Resources Survey (AHRS) sites were revisited (AGDC 2014a). No NRHP evaluations were completed for the sites identified in 2013.

In 2014, SHPO and federal land managing agencies expressed concern regarding the number of intensive surveys occurring for oil and gas projects, and the potential impacts these surveys were having on cultural resources. Consequently, AGDC refined survey methods to create as little an impact as possible, collecting enough information about the location and nature of cultural resources along the Mainline alignment, but not causing further damage to such resources in the process. These methods, including Levels II and III survey methods, were employed for surveys conducted in 2014.

The overall intent of the 2014 field surveys was to identify the location, nature, and extent of cultural resources along the Mainline alignment for the purpose of better project consultation and planning. Because the survey area spanned a large part of the state and crossed many diverse natural settings, the methods and strategies of cultural resources surveys varied from place to place. Areas were judged as having high,

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

medium, or low probability for cultural resources based on several factors, including landform, proximity to other known cultural resources, and proximity to natural resources such as waterbodies, or concentrations of subsistence fish, plants, and wildlife species.

Intensive survey and subsurface testing was not conducted in areas with high concentrations of previously documented sites (*e.g.*, Galbraith Lake, Gallagher Flint Station, etc.), as numerous sites have already been identified at these locations and additional intensive survey methods presented the potential to adversely affect these sites.

Survey methods included a variety of Level II reconnaissance, and Level III pedestrian intensive survey strategies. Pedestrian survey was conducted by crews of three to five people. Aerial survey was conducted with a crew of three archaeologists. Windshield survey was conducted by a group of four archaeologists riding together in a car.

Level II reconnaissance survey involved a general visual inspection of an area by means of helicopter, automobile (windshield), and non-systematic pedestrian access. Reconnaissance-level surveys involved gathering general information about an area of low to moderately low potential, or in areas of moderate potential that were not readily accessible by foot. When done by air, surveyors flew in a helicopter traveling low and slow enough to visually inspect the survey area terrain for indications of cultural resources. Windshield reconnaissance was also done slowly in low potential areas where the survey area was visible from the roadside. Windshield and aerial reconnaissance survey provided a basis for identification of higher potential areas for pedestrian survey.

Level III pedestrian-intensive survey involved a more careful, systematic mode of visual inspection where, whenever possible, the crew walked 15-m parallel transects. Where parallel transects were not possible, adapted survey strategies were used to take advantage of exposed ground, areas with good ground visibility and access. Pedestrian survey methods were used for areas of medium to high potential that could be accessed on foot. Pedestrian-intensive survey involved the discretionary, non-systematic excavation of subsurface shovel tests in areas of high potential or to define the boundaries of a site.

During both reconnaissance and pedestrian intensive surveys, if potential for finding cultural resources appeared to increase, methods for investigation and testing were intensified at the discretion of the field crew chief. Subsurface testing also occurred at the discretion of the crew chief, primarily as a means to intensively investigate areas of high potential or define the boundaries of a site.

Survey areas and efforts were documented with digital photographs, Garmin GPS, GPS-enabled tablets, hand-drawn maps using compass and measuring tape, and in the notes handwritten daily by each field crew member. All cultural resources and subsurface tests were described in field notes, photographed, and geo-located using GPS.

A total of 404.5 miles of the ASAP Mainline alignment were surveyed in 2014, including 252 miles of Level II aerial reconnaissance, 77.5 miles of Level II windshield reconnaissance, and 76 miles of Level III pedestrian intensive. A total of 24 new cultural resource sites were documented.

4.2 OTHER NOTABLE SURVEYS

4.2.1 Northern Region

In addition to the aforementioned oil and gas-related surveys, a number of cultural resource investigations

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

have been conducted along the Dalton Highway in association with highway maintenance and improvements, including proposed material sources (DePew 2001; DePew and Pendleton 2003; Gerlach *et al.* 2001; Thompson 2002, 2013a, 2013b). Many of these surveys covered portions of off-ROW ASAP Project components located adjacent to the Dalton Highway, and employed similar survey methods as those used during the ASAP Project cultural resources surveys. BLM has conducted numerous discrete surveys in the APE in association with mining permits and other assessments (Adkins 2000a-g; Mills 2003; Smith 2004).

4.2.2 Interior Region

Notable cultural resource investigations that have occurred within the APE in the Interior Region, and which have employed methods similar to the ASAP and Alaska LNG projects, include the Tower Hill Mines surveys near Livengood (Proue *et al.* 2014, 2013), surveys associated with maintenance and operation of the ARRC (Cultural Resource Consultants, LLC 2005; Kriz 2004; Reuther *et al.* 2003; Potter *et al.* 2004; Williams and Ream 2005; Yarborough 2005), and surveys associated with electric distribution lines (Potter and Bowers 2004).

4.2.3 Southcentral Region

The Southcentral Region has been the focus of a number of surveys associated with Parks Highway improvement projects (Thompson 2011) as well as MSB-sponsored cultural resource investigations. Surveys associated with the Port MacKenzie Rail Extension (PMRE) project, however, are one of the largest and most noteworthy investigations overlapping the APE. Surveys for PMRE were conducted primarily in 2008 (SRB&A 2010) and resulted in the identification of 42 cultural resources.

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

5. CULTURAL RESOURCES IN THE APE

This section identifies and describes the cultural resources that are in the ASAP Project APE. Tables identifying each cultural resource, the APE in which the site is located (direct or indirect), the site's NRHP eligibility status, and preliminary description information are included in Attachment D. Due to the number of sites within the APE, tables are broken into regions (*i.e.,* Northern, Interior, and Southcentral). The Northern region runs from Mainline alignment pipeline MP 0 to MP 262, just south of Coldfoot. The Interior region runs from MP 263 to MP 561, just north of Cantwell, and includes the Fairbanks Lateral alignment. The Southcentral region begins at pipeline MP 562 and continues to the pipeline's terminus at MP 733. These regions correspond to the regional divisions used in the environmental and cultural context overview (Attachment F) and to regional divisions identified in cultural resources survey reports prepared previously. In addition, a mapbook displaying the location of each cultural resource in relation to the APE is attached in Attachment E. Cultural resources are defined in the Glossary of Terms/Acronyms section contained in the PA.

The Alaska OHA maintains a central data repository of cultural resources that have been documented within the state. The inventory, known as the AHRS, includes more than 45,000 reported resources, including archaeological sites, buildings, structures, objects, and districts (OHA 2018). While much of the ASAP APE has received some level of previous cultural resource survey, only a portion of Alaska in general has been surveyed for cultural resources. Consequently, when reviewing the AHRS inventory, a lack of reported sites in any given area in the state may not indicate the area is devoid of cultural resources, rather it has more likely never been surveyed. Furthermore, as technology for cultural resource surveys and mapping has changed, precision of site location mapping has improved. Resources documented prior to the advent of GPS may not be mapped in the AHRS in their actual locations, and resources documented as discrete points in the AHRS may in fact cover large areas of land.

Paleontological resources are considered natural resources and are not subject to Section 106 consideration. However, the State of Alaska includes fossils and resources important to the natural history of the state in its definition of "historic, prehistoric, and archaeological resources" (AS 41.35.230), thus they are included in the AHRS inventory and in the cultural resources identified for this project.

Examination of AHRS records revealed that a total of 1,324 documented AHRS sites are located within the APE for the ASAP Project (includes proposed and alternative DNPP route). Of the 1,324 AHRS sites, 207 are within the direct APE, and the remaining 1,117 are within the indirect APE. Of the 207 sites in the direct APE, 71 (34%) have been determined to be eligible for listing in the NRHP, have been listed in the NRHP, or are to be treated as eligible and are, therefore, considered historic properties; 79 (38%) have been determined not eligible for listing in the NRHP; 30 (14%) have eligibility determinations pending with the SHPO; one (<1%) is a paleontological site, and the remaining 26 (13%) were determined to have insufficient data at this time and will be evaluated as defined under the terms of the PA and CRMP resources have not yet been evaluated (Table 2, also see Attachment D).

Of the 1,117 sites in indirect APE, 88 (8%) have been determined to be eligible for listing in the NRHP, have been listed in the NRHP, or are to be treated as eligible and are therefore considered historic properties. 147 (13%) have been determined not eligible for listing in the NRHP, 20 (2%) are paleontological sites, 7

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

(<1%) have eligibility determinations pending with the SHPO, and the remaining 855 (77%) have not yet been evaluated (Table 3, also see Attachment D).

Table 2. Number of Cultural Resources in the Direct APE

NRHP Status	Total Number of Sites in Direct APE	Percentage of Total
Determined Eligible and/or Listed	64	31
Treated as Eligible	6	3
National Historic Landmark	1	< 1
Eligibility Pending with SHPO	30	14
Not Eligible	79	38
Unevaluated (Paleontological)	1	< 1
Insufficient Data for Evaluation	26	13

Table 3. Number of Cultural Resources in the Indirect APE

NRHP Status	Total Number of Sites in Indirect APE	Percentage of Total
Determined Eligible and/or Listed	86	8
Treated as Eligible	0	0
National Historic Landmark	2	< 1
Eligibility Pending with SHPO	7	<1
Not Eligible	147	13
Unevaluated (Paleontological)	20	2
Unevaluated	855	77

Documented linear cultural resources, such as trails and roads, are designated with a different AHRS number for each map quadrangle through which they cross. Some of these linear resources cross the direct APE multiple times, and have multiple AHRS designations, but represent a single resource. Similarly, some AHRS sites and districts are large polygons that may be present in both the direct and indirect APE.

5.1 NOTABLE SITE CONCENTRATIONS IN THE APE

A number of notable site concentrations are located along the Mainline alignment, Fairbanks Lateral, and off-ROW project components, which are included below.

5.1.1 Nuiqsut Cultural Landscape

(MP 1-112, pages 1-14 in Attachment E)

A large portion of the North Slope area has been documented as the Nuiqsut Cultural Landscape (Brown 1979, 2001; SRBA 2013). The NPS defines cultural landscapes as "a geographic area, including both cultural and natural resources and wildlife or domestic animals therein, associated with a historic event, activity, or person, or that exhibit other cultural or aesthetic values" (Page *et al.* 1998:12). The Nuiqsut

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Cultural Landscape is centered largely on the area west of the APE for the Project, but its eastern boundary does include the direct and indirect APE, from the proposed West Dock area down along the Mainline Alignment for approximately 112 miles. Though not documented in AHRS, the Nuiqsut Cultural Landscape represents cultural site locations, cultural traditions, and land use and circulation patterns. Cultural patterns and traditions are reflected in the cultural and natural features of the landscape. Natural features, such as rivers, bluffs, pingos and wildlife, provide the setting in which cultural activities take place and heavily influence the characteristics of the cultural landscape, while cultural sites consist of locations defined by archaeological, ancestral, historic, traditional, sacred, camp, cabin, birthplace, harvest, and subsistence uses (USACE 2018).

The cultural resource locations that comprise the Nuiqsut Cultural Landscape are primarily located west of the APE; however, a primary characteristic of the cultural landscape within the Project's APE is the Sagavanirktok River Valley. The valley is one of the major circulation features of the cultural landscape, and has been a year-round travel route and ancestral hunting and trapping area for multiple generations. The Iñupiat and their ancestors have used the Sagavanirktok River since time immemorial, and continuity of this customary use and the practices associated with it help maintain the Iñupiaq cultural identify and ties to the cultural landscape (USACE 2018).

5.1.2 Gallagher Flint Station

(MP 114-122, page 15 in Attachment E)

Near the Gallagher Flint Station is a concentration of approximately 75 densely clustered prehistoric sites, many of which are located within the direct or indirect APE for the Project. Prehistoric features in the area are recorded in AHRS as individual points with a single locus, or as individual points with multiple loci. The concentration of sites, including Gallagher Flint Station NHL, suggests the area should be designated by the State of Alaska as an archaeological district; however, no formal district boundary demarcation is documented in the AHRS database.

The Gallagher Flint Station itself (PSM-00050) is a National Historic Landmark, determined nationally significant for its age (one of the oldest sites reported north of the Brooks Range, dates to 10,500 Before Present [B.P.]) and for its evidence of repeated use over time by different cultural groups. Gallagher Flint Station was first documented during cultural resource surveys for the TAPS project. Materials recovered at the site included lithics, wood, bone, pottery, and charcoal, and are associated with American Paleoarctic, Northern Archaic, and Arctic Small Tool traditions (OHA 2017; Morton 1985). Many of the sites in the vicinity of Gallagher Flint Station contain both surface and sub-surface components, and have been damaged over the years from archaeological testing and excavation, along with TAPS and Dalton Highway construction and maintenance.

5.1.3 Galbraith Lake

(MP 141-151, pages 18-19 in Attachment E)

The area around Galbraith Lake is rich in prehistory, with more than 150 concentrated prehistoric sites, again, many of which are within the APE. Similar to the Gallagher Flint Station Concentration, sites at

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Galbraith Lake were first documented during surveys for the TAPS project and are recorded both as individual sites, and as single sites with multiple loci. Also similar to Gallagher Flint Station, no formal district boundary demarcation is documented in AHRS. Notable sites within the Galbraith Lake Concentration include Mosquito Lake (PSM-00049), which is associated with the Denbigh Complex, and Atigun III (PSM-00075), which is associated with late prehistoric Kavik phase. Atigun III is noted as being part of the Atigun Archaeological District (PSM-00204); however, the boundaries of this district are not clearly demarcated in AHRS. As with Gallagher Flint Station, many of the sites within the Galbraith Lake concentration area express both surface and subsurface components, and sites in proximity to TAPS and the Dalton Highway have been damaged over the years from archaeological testing and excavation, as well as pipeline and highway construction and maintenance activities.

5.1.4 Bonanza Tors

(MP 286-290, page 34 in Attachment E)

A small cluster of prehistoric archaeological sites is located near Bonanza Creek. Field investigations for the Alaska LNG Project have evaluated a number of these sites, which consist primarily of isolated or small concentrations of surface and/or subsurface lithic artifacts. Three of these sites are located within the direct APE and have been determined eligible for listing in the NRHP.

5.1.5 Kanuti River

(MP 305-308, page 36 in Attachment E)

As at Bonanza Creek, a small concentration of prehistoric archaeological sites are located near the Mainline alignment's intersection with the Kanuti River. The sites appear to be primarily surface lithic scatters representing reduction sequences, and with the exception of NRHP-eligible BET-00250, are largely outside the direct APE.

5.1.6 Rosebud Knob

(MP 398-400, page 46 in Attachment E)

The Mainline alignment bisects the Rosebud Knob Archaeological District (LIV-00284) near the community of Livengood. The district was recently determined to be NRHP-eligible, for its ability to contribute to an understanding of land and resource use. It includes a concentration of 17 documented prehistoric sites ranging from lookouts and flaking stations to complex, multi-component camps. Naturally-occurring outcrops of chert, a material commonly used in the manufacture of lithic tools, are located throughout the Rosebud Knob area. There are four NRHP-eligible sites associated with the District within the direct APE.

5.1.7 Montana Creek

(MP 680-683, page 82 in Attachment E)

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

The area near the Mainline alignment's intersection with Montana Creek is the location of a number of sites associated with a traditional Dena'ina village, including the historic Montana Creek Cemetery, where Chief Wasilla Stepan, his wife and their five daughters are reportedly buried (OHA 2017). AGDC has rerouted the Mainline alignment east of this area, to avoid and minimize effects to cultural resources associated with Chief Wasilla and the Montana Creek Village site; however, these sites still remain in the indirect APE.

5.1.8 Fish Creek and Red Shirt Lake

(MP 715-722, page 86 in Attachment E)

A sparse cluster of prehistoric and traditional use sites are documented in AHRS in the area of Fish Creek and Red Shirt Lake within the Project APE. These sites consist of Dena'ina-related depressions, cache pits, and housepits (OHA 2017). However, in both informal discussions and formal consultation, the Knik Tribe has noted the high potential for extensive, undocumented Dena'ina sites in the area, particularly near stream crossings south of Talkeetna. In an analysis of LiDAR datasets available for the MSB, the Knik Tribe identified hundreds of potential cultural features such as house and cache pits near Fish Creek, Cow Lake, and Red Shirt Lake (Porter 2017). This analysis, in combination with oral history provided by Shem Pete and recorded by James Kari, suggests the area contains many more cultural resources than those documented in AHRS.

5.1.9 Iditarod National Historic Trail

(MP 728-729, page 88 in Attachment E)

The Mainline alignment crosses the Knik-Rainy Pass Trail (TYO-00084) near MP 729. The Knik-Rainy Pass Trail is a primary segment of the Iditarod National Historic Trail (INHT), a Congressionally-designated historic trail and the only National Historic Trail in Alaska. The INHT was designated in 1978 for its rich diversity of climate, terrain, scenery, wildlife, recreation, and resources in a largely unchanged environment (BLM 2018).

Also in this location, the Mainline alignment crosses TYO-00228, the U.S. Geological Survey (USGS) Base Map Winter Trail 1, and parallels TYO-00224, the Iditarod Sled Dog Race Trail. Both trails are associated with the INHT and both are contributing resources to the Iditarod Dog Sledding Historic District.

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

This page intentionally left blank.

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

6. HISTORIC PROPERTY IDENTIFICATION

6.1 SURVEY PROGRESS WITHIN THE APE

To date, survey efforts for the Project have focused largely on the Mainline and Fairbanks Lateral alignments. Table 4 delineates the amount and type of survey that has occurred along the Mainline alignment nominally 150-foot-wide ROW footprint. With robust data delineating cultural resource survey completed by APP, Alaska LNG, and ASAP projects, it can be determined that 80% of the project footprint of the Mainline alignment has been surveyed for cultural resources at the pedestrian level (Table 4). The interior region portion of the alignment has received the greatest amount of pedestrian level survey, while the southcentral region portion of the alignment has received the lowest.

It is important to note that analysis of the broader direct APE indicates 64% of the 350-foot-wide Mainline alignment direct APE corridor has been surveyed at the pedestrian level (Table 5). The amount and type of survey that has occurred within the direct APE for each type of project component, including off-ROW components, is delineated in Table 5. The Table is organized by region. While off-ROW components have not been the focus of previous survey efforts, in general approximately 50%of the direct APE for temporary workspaces, camps, and HDD entry and exit pads has been surveyed at the pedestrian level. Similarly, Table 6 delineates survey that has occurred within the indirect APE.

Table 4. Percentage of Survey by Region of the ASAP Mainline Alignment ROW through June 30, 2018.

Region	Total Miles	Pedestrian Survey		Windshield Survey		Aerial Survey		No Field Survey	
		Miles	Percentage	Miles	Percentage	Miles	Percentage	Miles	Percentage
Northern	262	188.8	72.10%	4.7	1.80%	66.4	25.30%	2.2	0.80%
Interior	301	284.9	94.60%	0.9	0.30%	7.1	2.40%	8.1	2.70%
Southcentral	170.5	114.6	67.20%	0.3	0.20%	30.4	17.90%	25.1	14.70%
Grand Total	733.5	588.2	80.20%	5.9	0.80%	103.9	14.20%	35.4	4.80%

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

This page intentionally left blank.

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Table 5. Cultural Resources Survey Completed at Project Components in Direct APE

Region	Total Acres	Pedestrian Survey		Windshield Survey		Aerial Survey		No Field Survey	
		Acres	Percentage	Acres	Percentage	Acres	Percentage	Acres	Percentage
Northern Region									
Access Road	1,138.8	309.5	27.2	24.6	2.2	197.4	17.3	607.3	53.3
ASAP Alignment ROW	11,809.4	7,243.2	61.3	308.2	2.6	3,208.6	27.2	1,049.4	8.9
Camp	208.4	106.6	51.2	0.0	0.0	14.3	6.8	87.5	42.0
Dredge Disposal	122.7	0.0	0.0	0.0	0.0	0.0	0.0	122.7	100.0
Facility Pad	124.8	5.8	4.7	0.0	0.0	116.0	92.9	3.0	2.4
Ice Access Road	205.2	5.3	2.6	0.2	0.1	46.4	22.6	153.2	74.7
Material Source	3,108.3	672.1	21.6	20.5	0.7	382.6	12.3	2,033.1	65.4
Pipe Storage Yard	150.9	27.4	18.2	0.0	0.0	20.2	13.4	103.2	68.4
Sea Ice Pad	245.8	0.0	0.0	0.0	0.0	2.0	0.8	243.8	99.2
Sea Ice Road	292.6	0.0	0.0	0.0	0.0	6.2	2.1	286.5	97.9
Temporary Workspace	51.9	30.5	58.7	1.5	2.9	4.3	8.3	15.6	30.1
Vertical Support Member	17.8	0.0	0.0	0.0	0.0	8.0	45.1	9.8	54.9
West Dock Dredge Area	84.0	0.0	0.0	0.0	0.0	0.5	0.6	83.5	99.4
West Dock Existing Bridge	4.9	0.0	0.0	0.0	0.0	1.2	24.9	3.7	75.1
West Dock Existing Fill	99.1	0.0	0.0	0.0	0.0	25.1	25.3	74.0	74.7
West Dock Existing Road	39.8	0.0	0.0	0.0	0.0	21.1	53.0	18.7	47.0
West Dock Mooring Dolphin	2.8	0.0	0.0	0.0	0.0	1.2	43.7	1.6	56.3

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Region	Total Acres	Pedestrian Survey		Windshield Survey		Aerial Survey		No Field Survey	
		Acres	Percentage	Acres	Percentage	Acres	Percentage	Acres	Percentage
West Dock New Fill	50.7	0.0	0.0	0.0	0.0	30.2	59.5	20.5	40.5
West Dock Temporary Barge Bridge	5.2	0.0	0.0	0.0	0.0	3.6	68.9	1.6	31.1
West Dock Temporary Barge Bridge Rake	1.3	0.0	0.0	0.0	0.0	0.9	70.4	0.4	29.6
Northern Region Total	17,764.4	8,400.5	47.3	355.0	2.0	4,089.9	23.0	4,919.1	27.7
Interior Region									
Access Road	4,117.2	915.2	22.2	112.2	2.7	86.2	2.1	3,003.6	73.0
ASAP Alignment ROW	14,027.5	10,749.6	76.6	449.3	3.2	1,244.5	8.9	1,584.1	11.3
Camp	199.5	47.4	23.8	61.5	30.8	0.0	0.0	90.6	45.4
Facility Pad	66.2	7.4	11.1	0.0	0.0	0.0	0.0	58.8	88.9
Fairbanks Lateral Alignment ROW	1,290.6	219.0	17.0	35.8	2.8	254.4	19.7	781.4	60.5
HDD Entry Pad	15.1	8.3	54.6	0.0	0.0	4.4	29.3	2.4	16.1
HDD Exit Pad	16.5	9.6	57.9	0.0	0.0	5.2	31.5	1.7	10.6
HDD False ROW	172.6	62.0	35.9	0.0	0.0	16.5	9.6	94.1	54.5
Ice Access Road	258.5	3.2	1.2	0.0	0.0	2.0	0.8	253.3	98.0
Material Source	2,591.7	1,021.6	39.4	30.2	1.2	2.3	0.1	1,537.6	59.3
Pipe Storage Yard	170.8	28.4	16.6	0.0	0.0	0.0	0.0	142.4	83.4
Railroad Siding	66.1	6.2	9.4	0.0	0.0	2.5	3.7	57.4	86.8
Temporary Workspace	38.0	16.9	44.4	0.0	0.0	6.4	16.9	14.7	38.7

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Region	Total Acres	Pedestrian Survey		Windshield Survey		Aerial Survey		No Field Survey	
		Acres	Percentage	Acres	Percentage	Acres	Percentage	Acres	Percentage
Interior Region Total	23,030.2	13,094.6	56.9	689.1	3.0	1,624.4	7.1	7,622.2	33.1
Southern Region									
Access Road	1,550.0	330.0	21.3	11.1	0.7	36.1	2.3	1,172.9	75.7
ASAP Alignment ROW	8,050.2	4,293.7	53.3	522.1	6.5	993.0	12.3	2,241.4	27.8
Camp	121.1	24.9	20.6	0.0	0.0	7.3	6.0	88.9	73.4
Facility Pad	37.1	0.0	0.1	0.0	0.0	2.1	5.7	35.0	94.3
HDD Entry Pad	20.1	9.4	46.6	0.0	0.0	2.2	10.9	8.6	42.5
HDD Exit Pad	20.2	10.2	50.6	0.0	0.0	2.5	12.4	7.5	37.0
HDD False ROW	256.9	66.0	25.7	0.0	0.0	18.5	7.2	172.4	67.1
Ice Access Road	210.7	15.6	7.4	0.0	0.0	24.6	11.7	170.6	80.9
Material Source	947.6	100.9	10.6	2.5	0.3	15.4	1.6	828.8	87.5
Pipe Storage Yard	114.3	26.7	23.3	0.0	0.0	0.2	0.2	87.4	76.5
Railroad Siding	85.8	0.5	0.6	0.0	0.0	0.0	0.0	85.3	99.4
Temporary Workspace	28.4	12.9	45.4	5.0	17.6	0.7	2.5	9.8	34.5
Southern Region Total	11,442.6	4,890.8	42.7	540.6	4.7	1,102.6	9.6	4,908.6	42.9
GRAND TOTAL	52,237.2	26,385.8	50.5	1,584.6	3.0	6,816.9	13.0	17,449.9	33.4

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Table 6. Cultural Resources Survey Completed at Project Components, Indirect APE

Region	Total Acres	Pedestrian Survey		Windshield Survey		Aerial Survey		No Field Survey	
		Acres	Percentage	Acres	Percentage	Acres	Percentage	Acres	Percentage
Northern Region									
Access Road	175,815.9	11,876.4	6.8	712.3	0.4	4,469.5	2.5	158,757.7	90.3
ASAP Alignment ROW	334,234.4	17,675.3	5.3	1,031.7	0.3	10,198.2	3.1	305,329.1	91.4
Camp	13,316.9	811.3	6.1	0.0	0.0	1,112.8	8.4	11,392.8	85.6
Dredge Disposal	3,408.5	0.0	0.0	0.0	0.0	0.0	0.0	3,408.5	100.0
Facility Pad	5,490.3	176.2	3.2	0.4	0.0	920.0	16.8	4,393.7	80.0
Ice Access Road	35,844.2	289.5	0.8	71.3	0.2	3,823.9	10.7	31,659.5	88.3
Material Source	95,354.7	6,156.1	6.5	259.1	0.3	2,852.9	3.0	86,086.7	90.3
Pipe Storage Yard	24,186.6	2,535.9	10.5	18.6	0.1	1,161.9	4.8	20,470.2	84.6
Sea Ice Pad	7,419.4	0.0	0.0	0.0	0.0	510.6	6.9	6,908.8	93.1
Sea Ice Road	12,949.8	0.0	0.0	0.0	0.0	496.2	3.8	12,453.5	96.2
Temporary Workspace	37,329.1	3,465.1	9.3	221.8	0.6	368.8	1.0	33,273.4	89.1
Vertical Support Member	2,962.9	0.0	0.0	0.0	0.0	851.1	28.7	2,111.8	71.3
West Dock Dredge Area	3,462.4	0.0	0.0	0.0	0.0	470.7	13.6	2,991.7	86.4
West Dock Existing Bridge	2,224.3	0.0	0.0	0.0	0.0	121.8	5.5	2,102.5	94.5
West Dock Existing Fill	4,717.8	0.0	0.0	0.0	0.0	403.2	8.5	4,314.5	91.5
West Dock Existing Road	3,910.3	0.0	0.0	0.0	0.0	267.4	6.8	3,642.8	93.2
West Dock Mooring Dolphin	2,139.5	0.0	0.0	0.0	0.0	120.5	5.6	2,018.9	94.4
West Dock New Fill	4,097.8	0.0	0.0	0.0	0.0	298.6	7.3	3,799.2	92.7

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Region	Total Acres	Pedestrian Survey		Windshield Survey		Aerial Survey		No Field Survey	
		Acres	Percentage	Acres	Percentage	Acres	Percentage	Acres	Percentage
West Dock Temporary Barge Bridge	2,194.1	0.0	0.0	0.0	0.0	122.0	5.6	2,072.0	94.4
West Dock Temporary Barge Bridge Rake	2,047.1	0.0	0.0	0.0	0.0	119.2	5.8	1,927.8	94.2
Northern Region Total	773,105.8	42,985.8	5.6	2,315.1	0.3	28,689.5	3.7	699,115.4	90.4
Interior Region									
Access Road	299,574.1	15,603.6	5.2	802.6	0.3	2,196.8	0.7	280,971.1	93.8
ASAP Alignment ROW	381,793.0	25,162.8	6.6	1,226.2	0.3	3,834.3	1.0	351,569.7	92.1
Camp	13,137.2	1,164.9	8.9	118.7	0.9	172.8	1.3	11,680.7	88.9
Facility Pad	8,791.9	237.0	2.7	0.0	0.0	72.0	0.8	8,482.9	96.5
Fairbanks Lateral Alignment ROW	39,914.9	906.4	2.3	48.5	0.1	490.2	1.2	38,469.8	96.4
HDD Entry Pad	6,433.0	480.3	7.5	26.1	0.4	148.9	2.3	5,777.7	89.8
HDD Exit Pad	6,458.9	486.6	7.5	23.5	0.4	123.8	1.9	5,825.0	90.2
HDD False ROW	9,368.0	607.4	6.5	24.8	0.3	133.4	1.4	8,602.5	91.8
Ice Access Road	15,796.8	249.5	1.6	0.0	0.0	102.7	0.7	15,444.6	97.8
Material Source	117,425.0	8,250.3	7.0	524.7	0.4	842.6	0.7	107,807.5	91.8
Pipe Storage Yard	22,858.2	1,843.3	8.1	134.9	0.6	239.9	1.0	20,640.2	90.3
Railroad Siding	10,760.3	341.9	3.2	0.0	0.0	49.9	0.5	10,368.4	96.4
Temporary Workspace	17,646.2	1,286.2	7.3	106.2	0.6	317.8	1.8	15,936.0	90.3
Interior Region Total	949,957.5	56,620.3	6.0	3,036.1	0.3	8,725.1	0.9	881,576.0	92.8

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Region	Total Acres	Pedestrian Survey		Windshield Survey		Aerial Survey		No Field Survey	
		Acres	Percentage	Acres	Percentage	Acres	Percentage	Acres	Percentage
Southern Region									
Access Road	144,083.4	7,641.5	5.3	558.5	0.4	963.2	0.7	134,920.2	93.6
ASAP Alignment ROW	220,032.9	11,587.7	5.3	821.5	0.4	1,938.0	0.9	205,685.8	93.5
Camp	7,839.8	422.3	5.4	35.9	0.5	98.0	1.3	7,283.6	92.9
Facility Pad	4,703.7	40.2	0.9	0.0	0.0	30.2	0.6	4,633.4	98.5
HDD Entry Pad	9,144.6	464.4	5.1	0.0	0.0	180.6	2.0	8,499.6	92.9
HDD Exit Pad	10,033.2	521.5	5.2	0.0	0.0	194.7	1.9	9,317.0	92.9
HDD False ROW	13,954.6	603.8	4.3	0.0	0.0	238.5	1.7	13,112.3	94.0
Ice Access Road	19,289.0	836.2	4.3	0.0	0.0	318.0	1.6	18,134.8	94.0
Material Source	45,124.8	2,564.1	5.7	167.1	0.4	295.9	0.7	42,097.6	93.3
Pipe Storage Yard	17,206.4	721.0	4.2	37.5	0.2	180.1	1.0	16,267.7	94.5
Railroad Siding	13,614.6	291.3	2.1	37.0	0.3	58.3	0.4	13,228.0	97.2
Temporary Workspace	21,073.9	1,399.1	6.6	241.7	1.1	130.7	0.6	19,302.3	91.6
Southern Region Total	526,100.8	27,093.1	5.1	1,899.1	0.4	4,626.2	0.9	492,482.3	93.6
GRAND TOTAL	2,249,164.1	126,699.2	5.6	7,250.3	0.3	42,040.8	1.9	2,073,173.8	92.2

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

6.2 DATA GAP ANALYSIS

Based on preliminary analysis of survey data and consultation discussions with the Knik Tribe, SHPO, BLM, NPS, and other Consulting Parties, additional cultural resource survey, research, and NRHP evaluation is needed prior to construction in some areas, including the DNPP route. In general, survey of off-ROW components in regions of the APE is necessary. Specifically, as noted by the Knik Tribe during consultation meetings, additional surveying is needed along the southern region of the APE, both for the alignment, and at off-ROW components. Archival research and consideration of ethnographic data for the purposes of identification of Traditional Cultural Properties and Landscape and District-scale properties throughout the APE is also needed. Lastly, if the DNPP alternative is selected, additional cultural resource survey or data evaluation for that alternative may be needed within the 350' Direct APE.

AGDC previously completed a cultural resources data gap analysis for the Project's off-ROW components (AGDC 2015b). The Data Gap Analysis determined 7,070 acres of the footprint of off-ROW project components have not been subject to previous cultural resource survey, were surveyed more than 15 years ago, or were subjected to survey that did not meet data validity or adequacy standards for the analysis. However, the Data Gap Analysis was prepared prior to the acquisition of Alaska LNG survey data and prior to determination of the APE for the Project.

To determine locations and priorities for additional survey and testing, AGDC will update the Data Gap Analysis and identify survey targets for un-surveyed portions of the APE and unevaluated cultural resources within the APE. The Data Gap Analysis will include:

1. A general discussion and review of existing cultural resources data relevant to the project;
2. A general discussion of outstanding or unavailable data recommended for compliance;
3. Methods for determining and identifying data gaps;
4. Discussion of key cultural resource data sources and assessment of their reliability, suitability, adequacy, applicability and completeness with respect to the ASAP project;
5. Discussion of the nature, magnitude, and location of areas where data gaps exist and priorities for data acquisition in these areas;
6. Recommendations for outstanding field, archival and ethnographic data acquisition and analysis;
7. Robust methodology for outstanding field, archival and ethnographic data acquisition and analysis; and
8. Maps identifying the spatial extent of data gaps and locations where field investigation is planned.

In the event the DNPP alternative is selected, the Data Gap Analysis will include full consideration of the DNPP route.

AGDC will complete the Data Gap Analysis within 6 months of the Final Investment Decision (FID) or

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

AGDC Board-approved AFE and submit it to the USACE for distribution to the PA Parties, for review and comment. PA Parties will have 60 working days to review and provide comment. AGDC will address comments and revise the plan within 30 working days of the closure of the comment period, or as negotiated. If no comments are received within the 60 working day review period, the Data Gap Analysis will be considered complete.

6.3 ANNUAL SURVEY AND EVALUATION PLANS

Following completion of the Data Gap Analysis, and prior to March 1 of each year that the PA is in effect and surveys and evaluations are needed, AGDC will complete an Annual Survey and Evaluation Plan. This plan will detail the proposed cultural resource survey and evaluation targets for the upcoming year, the methods to be used, the schedule for completion, and field plan details for completing the survey and NRHP evaluations. The Annual Survey and Evaluation Plan will also include details and copies of the curation agreement(s) and full description of curation methods for artifacts that may be collected during survey or treatment activities over the course of the Project. Per the PA, artifacts and records resulting from survey and treatment of historic properties will be curated in accordance with 36 CFR Part 79, except as determined through consultation with Tribes, carried out in accordance with federal and state laws pertaining to the ownership of artifacts and treatment and disposition of Alaska Native human remains and funerary objects. The designated curatorial facility for federal and state land managing agencies is the University of Alaska Museum of the North; however, the NPS curates artifacts retrieved from NPS lands in Alaska at its own facility. The Kenaitze Tribe has requested to have artifacts and any burial remains associated with the Kenaitze Dena'ina people returned to the Tribe. Final disposition of artifacts will be determined by the land owner or manager.

AGDC will develop the Annual Survey and Evaluation Plan in cooperation with the PA Parties and seek to include agency and Tribal participation in the plan development. Specifically, AGDC will seek to include tribal participation in field survey efforts. AGDC will submit a copy of the Annual Survey and Evaluation Plan to the USACE for distribution to the PA Parties, for review and comment. PA Parties will have 30 working days to review and provide comment. AGDC will address comments and revise the plan within 30 working days of the closure of the comment period, or as negotiated. If no comments are received within the 30 working day review period, the Annual Survey and Evaluation Plan will be considered complete.

6.4 ANNUAL SURVEY AND EVALUATION REPORTS

AGDC will summarize the results of field investigations and NRHP eligibility evaluations in an Annual Survey and Evaluation Report, to be completed within 6 months of the completion of fieldwork. Annual Survey and Evaluation Reports will be prepared to state and federal standards and guidelines, including OHA Historic Preservation Series No. 11, 48 FR 44716, and National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation. Reports will contain a description and map of the fieldwork completed, thorough documentation and completed AHRS cards for cultural resources identified as a result of the survey, NRHP evaluations for cultural resources identified as a result of the survey, identification of Consulting Tribes that may attach religious and cultural significance to cultural resources evaluated within the report, previously documented resources revisited for the purposes of completing an NRHP evaluation, and recommendations for the USACE regarding assessments of effect and avoidance, minimization and mitigation measures to be applied for treatment of eligible resources.

AGDC will submit a draft of the Annual Survey and Evaluation Report to the USACE to distribute to PA

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Parties for their review and comment. PA Parties will have 60 working days to review and provide comment. AGDC will address comments and revise the report within 30 working days of the closure of the comment period, or as negotiated. If no comments are received within the 60 working day review period, the Annual Survey and Evaluation Report will be considered complete.

6.5 NRHP EVALUATIONS

NRHP evaluations of previously documented and newly identified cultural resources will be completed per the Annual Survey and Evaluation Plan (6.3) and included as part of the Annual Survey and Evaluation Report (6.4).

As part of the Annual Survey and Evaluation Report, AGDC will provide initial NRHP eligibility recommendations for consideration. The USACE will review the NRHP recommendations, make a determination and submit the finalized Report to the SHPO for concurrence on the determinations of eligibility. The USACE will also submit the finalized report to any Consulting Tribes that may attach religious and cultural significance to cultural resources evaluated within the report and will request their concurrence with the determinations of eligibility. The SHPO and any Consulting Tribes will have 30 working days to review the determinations of eligibility within the finalized Survey and Evaluation Report and provide concurrence. If no comments are received within the 30 working day review period, then concurrence will be assumed. If agreement cannot be reached among the USACE, SHPO, or Consulting Tribes, then the USACE will carry out the stipulations contained in Section V.B.iv-v. of the PA.

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

This page intentionally left blank.

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

7. ASSESSMENTS OF EFFECT

To allow for the phased historic property identification and construction of the Project, findings of effect for cultural resources that were unevaluated at the time of PA signature or that were identified following PA signature will be completed by project component type for each region (as defined previously in the document, see Section 3.2). For example, prior to the initiation of ground disturbing activities associated with the construction of access roads in the northern region of the Project, the USACE will make a finding of effect for all project activities related to the construction of access roads in the northern region and seek concurrence from SHPO on that finding. Ground disturbing construction activities on any given project component may not commence until the USACE has completed the finding of effect for that set of components, for that region, and SHPO and the Signatories have concurred. If the project component/region includes a location that requires avoidance, minimization, mitigation or treatment measures, ground disturbing activities at the specific project component location in question, as determined through consultation, may not commence until said measures have been implemented (in the case of avoidance or minimization measures) or completed (in the case of treatment or mitigation measures), and the Signatories have concurred in writing that the said measure has been adequately implemented or completed.

In the event that AGDC wishes to pursue construction on a specific project element outside of the regional project component type grouping, the USACE will make a finding of effect for the specific project element and seek concurrence from SHPO and the PA Signatories on that finding. However, to the extent possible, USACE will group findings of effect by region and project component type, as discussed above.

To aid the USACE in preparing the finding of effect, AGDC will prepare Regional Project Component Assessments (RPCAs). These RPCAs may be included in the Annual Report and will meet the documentation standards specified in 36 CFR 800.11 and contain a summary of the cultural resource identification activities that occurred to identify historic properties within the APE for that project component and region, the historic properties located within the APE for that component and region, recommendations for the specific steps that will be taken to avoid, minimize, or mitigate effects to these properties, including monitoring plans for specific areas that will be monitored during construction, and the site treatment plans for properties that will be mitigated.

AGDC will provide RPCAs to the USACE 120 working days or more prior to the desired start of construction activities that would impact cultural resources for the component and region. To facilitate efficient review, AGDC will group RPCAs into as few submittals as possible. The USACE will notify AGDC if any additional information is needed within 30 working days of receipt of the RPCA. If no additional information is needed, the USACE will seek concurrence from SHPO and the PA Signatories on a finding of effect within 45 working days of receipt of the RPCA, and alert AGDC of a decision to allow construction to proceed within 15 working days of receipt of concurrence. If any PA Signatory does not respond within 30 working days of the USACE's finding of effect and request for concurrence, then concurrence will be assumed. If agreement cannot be reached among the USACE, SHPO, and the PA Signatories, then the USACE will carry out the stipulations contained in Section X (Dispute Resolution) of the PA.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

8. HISTORIC PROPERTIES TREATMENT AND MITIGATION

Cultural resources within the direct APE will be affected primarily by ground disturbing activities associated with Project construction and long-term operation and maintenance, while those resources in the indirect APE could be affected by long-term visual, audible, and atmospheric changes introduced by the construction of aboveground permanent facilities, changes to vegetation from buried project components, or increased access to areas previously not easily accessed.

To the extent practicable, AGDC will implement measures to avoid and minimize adverse effects to historic properties. AGDC has sought to avoid impacts to cultural resources throughout project planning, and in some cases has rerouted the alignments, abandoned proposed material sites, and moved the location of project facilities to do so. Examples include modification of the Mainline alignment to avoid culturally sensitive areas in the vicinity of Montana Creek, and the deletion of Access Road AR-BV-N-718.7, to avoid culturally sensitive areas near Redshirt and Cow Lakes.

In general, avoidance will be the preferred treatment. Historic properties within the direct APE that can be avoided will be given a minimum 500-foot-diameter buffer and flagged for avoidance prior to construction. Additionally, professionals meeting the appropriate qualification standards (see PA Stipulation IX) will be tasked with monitoring the avoided properties during construction, through a series of drop-in site visits, to ensure flagged areas are being avoided. Minimization measures may include construction in winter time when the ground is frozen and covered with a layer of snow sufficient to protect underlying resources, and/or reconfiguration of workspaces, and flagging and necking down of construction areas to avoid nearby sites.

8.1 AVOIDANCE, MINIMIZATION, AND TREATMENT PLAN

Within 1 year of the FID/AFE, AGDC will prepare an Avoidance, Minimization, and Treatment Plan identifying the site-specific avoidance and minimization measures to be implemented for historic properties in each of the three regions of the project, as well as a listing of historic properties proposed for avoidance.

The plan will also delineate a program for site visitation over the life of the PA (long-term monitoring program) to monitor historic properties for signs of adverse effect from nearby construction, operation and maintenance activities, such as site vandalism from increased visitation, or site degradation from atmospheric effects (see Section 8.6.1). Discussion of the long-term monitoring program will include a list and schedule of historic properties proposed for visitation.

Lastly, the plan will include robust Standard Site Treatment Plans for site types such as surface lithic scatters, deeply buried sites, or historic cabins. The Standard Site Treatment Plans will include research questions and design, methods for field investigation and lab analysis (including remote sensing techniques and advanced dating or analytical techniques as appropriate), copies of curation agreements (see Section 6.3) and artifact collection and cataloging procedures, and reporting timelines.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

AGDC will complete the initial Avoidance, Minimization, and Treatment Plan within 1 year of the FID/AFE and submit it to the USACE for distribution to the PA Parties, for review and comment. PA Parties will have 60 working days to review and provide comment. AGDC will address comments and revise the plan within 30 working days of the closure of the comment period, or as negotiated. If no comments are received within the 60 working day review period, the plan will be considered complete.

AGDC will update the Avoidance, Minimization and Treatment Plan annually as part of the PA Annual Report (see Section 9.1), to incorporate proposed avoidance, minimization, and treatment for historic properties that may have been identified during the previous year of cultural resource survey. The updated plan will be included in the Annual Report (see Section 9.1) and provided to PA Parties per the process outlined for the Annual Report.

Results of avoidance, minimization, and long-term monitoring program activities identified in the plan will be summarized in the Annual Report and provided to PA Parties per the process outline for the Annual Report. Results of Standard Site Treatment activities will be reported on per the processes outlined in the Standard Site Treatment Plans.

8.2 CONTRACTOR CULTURAL RESOURCE AWARENESS TRAINING PROGRAM

AGDC will develop cultural resource awareness training materials. The training program will teach contractors and their employees how to recognize cultural resources they may come into contact with, why it is important to protect cultural resources, what to expect when working in the area of cultural resources (both those that are flagged off and those that might be being monitored during construction), and how to implement the Inadvertent Discovery procedures. In particular, training will cover how to recognize and sensitively treat burials and cremated remains.

The training curriculum will be developed in consultation with the PA Parties, and AGDC will seek Tribal participation in development of the curriculum. AGDC will then develop the cultural resource awareness training, provide train-the-trainer sessions, and make the training materials available to relevant AGDC and construction personnel working on the Project. Training instruction may be in person, electronic, or a combination of methods and will seek Tribal participation.

Contractors will be required to ensure field and other relevant personnel receive the training, and AGDC will have an assurance process in place to periodically check contractor training records.

At least 60 working days prior to construction initiation, AGDC will provide the USACE and SHPO a copy of the training curriculum and schedule for instruction, for review. The USACE and SHPO will have 15 working days to review and provide comment. AGDC will address comments and revise the plan within 15 working days of the closure of the comment period, or as negotiated. The USACE will distribute a copy of the training curriculum and schedule for instruction to the PA Parties for informational purposes only.

8.3 CONSTRUCTION MONITORING

AGDC will conduct archaeological monitoring of ground-disturbing construction activities in accordance with the General Monitoring Procedures presented in Section 12 of this document. Monitoring and / or

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

mitigation will be conducted when ground-disturbing construction activities are located within 500 feet of historic properties that may be adversely affected by ground-disturbing activities, and in areas identified in the RPCAs as highly probable to contain NRHP-eligible archaeological resources. Construction Monitoring Plans will be included in the RPCAs and monitoring results for each RPCA will be documented in a report to the PA Parties, to be completed within 6 months of the completion of monitoring activities.

AGDC will submit the RPCA monitoring report to the USACE for distribution to PA Parties. PA Parties will have 30 working days to review and provide comment. AGDC will address comments and revise the report within 30 working days of the closure of the comment period, or as negotiated. If no comments are received within the 30 working day review period, the RPCA monitoring report will be considered complete.

8.4 STRATEGIES FOR AVOIDANCE, MINIMIZATION, AND MITIGATION OF HISTORIC PROPERTIES IN THE DIRECT APE

As discussed previously, sites that can be avoided will be avoided, through the establishment of a 500-foot-diameter buffer and drop-in monitoring program. AGDC will determine the feasibility of site avoidance in consultation with pipeline engineers within 1 year of the FID/AFE and include a listing of historic properties proposed for avoidance in the Avoidance, Minimization, and Treatment Plan (see Section 8.1).

Until the specific properties that can be avoided are identified, AGDC will plan to implement minimization and mitigation as identified in the following Table 7. It is important to note that recommendations for mitigation depend largely on the historic property type (*e.g.*, prehistoric surface lithic scatter) and the nature of project effects to the property. Consequently, a discussion of some of these property types and the details on mitigation strategies and necessary actions for each is presented following Table 7, in Section 8.5.

8.4.1 Site Treatment Plans

As noted previously, the Avoidance, Minimization, and Treatment Plan will contain robust plans for standard site treatment at certain site types. In addition, the Annual Survey and Evaluation Plan will contain curation agreements and curation methods. For each historic property to be mitigated, AGDC, will either recommend one of the Standard Site Treatment Plans to implement, or prepare an Individual Site Treatment Plan detailing proposed mitigation methods, research questions, and design (if applicable), schedule for completion, and deliverables (reports, publications, etc.). As part of the RPCA (see Section 7), AGDC will submit Standard Site Treatment Plan selection and any detailed Individual Site Treatment Plans to the USACE for inclusion in the Finding of Effect. Upon concurrence with the RPCA, AGDC will implement site treatment activities.

As discussed in Section 7, construction will not be initiated for a given activity in a particular region until the PA Parties have concurred with the USACE regional project component finding of effect. If the regional project component includes specific locations requiring avoidance, minimization, mitigation, or treatment, ground- disturbing activities may not commence at that specific location (as defined in the RPCA) until the Signatories have concurred in writing that the said measure has been adequately implemented or completed, or that stipulated conditions of the concurrence for that location have been met.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

For historic properties where data recovery is recommended, AGDC, at the direction of the Corps, will consider the feasibility of community archaeology, field schools, and other public archaeology opportunities that allow for greater involvement by Alaskans in the investigation and stewardship of archaeological resources.

Table 7. Mitigation Recommendations for Historic Properties in the Direct APE

Region	AHRS No. and Site Name	Nature of Resource	Attachment E Mapbook Page	NRHP Status	Proposed Mitigation
Northern Region	SAG-00097 DALTON HWY (MP 1 TO 414)	Historic road	Multiple	Treated as Eligible	Additional consultation needed with Department of Transportation and Public Facilities (DOT&PF) and SHPO to determine effect and appropriate minimization or mitigation measures
Northern Region	SAG-00109	Prehistoric subsurface features and artifacts, limited previous excavation and/or testing	12	Eligible	Data recovery
Northern Region	PSM-00197	Prehistoric subsurface and surface features and artifacts, previously excavated and/or extensively tested	15	Eligible	See Gallagher Flint Station Mitigation Discussion (8.5.4)
Northern Region	PSM-00601	Prehistoric subsurface and surface features and artifacts, previously excavated and/or extensively tested	15	Eligible	See Gallagher Flint Station Mitigation Discussion (8.5.4)
Northern Region	PSM-00050 GALLAGHER FLINT STATION ARCHEOLOGICAL SITE	National Historic Landmark Multi-loci, Stratified prehistoric subsurface features and artifacts, extensive previous excavation	15	National Historic Landmark	See Gallagher Flint Station Mitigation Discussion (8.5.4)

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Region	AHRS No. and Site Name	Nature of Resource	Attachment E Mapbook Page	NRHP Status	Proposed Mitigation
Northern Region	PSM-00596	Prehistoric subsurface lithic artifacts, previously excavated and/or extensively tested	15	Eligible	See Gallagher Flint Station Mitigation Discussion (8.5.4)
Northern Region	PSM-00572	Prehistoric surface and subsurface lithic artifacts, previously excavated and/or extensively tested	15	Eligible	See Gallagher Flint Station Mitigation Discussion (8.5.4)
Northern Region	PSM-00573	Prehistoric surface and subsurface lithic artifacts, previously excavated and/or extensively tested	15	Eligible	See Gallagher Flint Station Mitigation Discussion (8.5.4)
Northern Region	PSM-00605	Prehistoric surface and subsurface lithic artifacts, previously excavated and/or extensively tested	15	Eligible	See Gallagher Flint Station Mitigation Discussion (8.5.4)
Northern Region	PSM-00604	Prehistoric surface and subsurface lithic artifacts, limited previous excavation and/or testing	15	Eligible	Data recovery
Northern Region	PSM-00570 DALTON HWY (MP 1 TO 414)	Historic road	Multiple	Treated as Eligible	Additional consultation needed with DOT&PF and SHPO to determine effect and appropriate minimization or mitigation measures
Northern Region	PSM-00607	Prehistoric surface and subsurface lithic artifacts, limited previous excavation and/or testing	18	Eligible	Data recovery
Northern Region	PSM-00076 ATIGUN II	Prehistoric surface artifacts, previously excavated and/or extensively tested	18	Eligible	See Galbraith Lake Area Discussion (8.5.5)
Northern Region	PSM-00075 ATIGUN III (BRIDGE SITE)	Prehistoric surface artifacts, previously excavated and/or extensively tested	18	Eligible	See Galbraith Lake Area Discussion (8.5.5)

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Region	AHRS No. and Site Name	Nature of Resource	Attachment E Mapbook Page	NRHP Status	Proposed Mitigation
Northern Region	PSM-00049 MOSQUITO LAKE ARCHAEOLOGICAL SITE	Multi-loci, Prehistoric surface and subsurface features and artifacts, previously excavated and/or tested	18	Eligible	See Galbraith Lake Area Discussion (8.5.5)
Northern Region	PSM-00192	Multi-loci, Prehistoric surface and subsurface features and artifacts, previously excavated and/or tested	18	Eligible	See Galbraith Lake Area Discussion (8.5.5)
Northern Region	PSM-00501	Prehistoric subsurface lithic artifact, previously excavated and/or tested	19	Eligible	See Galbraith Lake Area Discussion (8.5.5)
Northern Region	PSM-00498	Prehistoric surface and subsurface lithic artifacts, previously excavated and/or extensively tested	19	Eligible	See Galbraith Lake Area Discussion (8.5.5)
Northern Region	PSM-00578	Prehistoric subsurface lithic artifacts, previously excavated and/or extensively tested	19	Eligible	See Galbraith Lake Area Discussion (8.5.5)
Northern Region	PSM-00588	Prehistoric subsurface lithic artifacts, previously excavated and/or extensively tested	20	Eligible	Data recovery - spatial analysis and analysis of collected material
Northern Region	CHN-00077	Prehistoric surface and subsurface lithic artifacts, previously excavated and/or extensively tested	25	Eligible	Data recovery- spatial analysis and analysis of collected material
Northern Region	CHN-00124	Prehistoric subsurface lithic artifacts, limited previous excavation and/or testing	25	Eligible	Data recovery

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Region	AHRS No. and Site Name	Nature of Resource	Attachment E Mapbook Page	NRHP Status	Proposed Mitigation
Northern Region	CHN-00070 DALTON HWY (MP 1 TO 414)	Historic road	Multiple	Eligible	Additional consultation needed with DOT&PF and SHPO to determine effect and appropriate minimization or mitigation measures
Northern Region	CHN-00025	Historic surface can scatter, well-documented	26	Eligible as Contributing	Data recovery
Northern Region	CHN-00018	Historic camp and can scatter, well-documented	26	Eligible	Data recovery
Northern Region	CHN-00125	Historic surface and partially buried artifact and feature scatter, well-documented	26	Eligible	Data recovery
Northern Region	WIS-00437	Prehistoric subsurface lithic artifacts, limited previous excavation and/or testing	28	Eligible	Data recovery
Northern Region	WIS-00048 DALTON HWY (MP 1 TO 414)	Historic road	Multiple	Treated as Eligible	Additional consultation needed with DOT&PF and SHPO to determine effect and appropriate minimization or mitigation measures
Northern Region	WIS-00288	Prehistoric subsurface features and artifacts, previously excavated and/or extensively tested	30	Eligible	Data recovery - spatial analysis and analysis of collected material
Northern Region	WIS-00413	Prehistoric subsurface lithic artifact, previously excavated and/or tested	30	Eligible	Data recovery
Northern Region	WIS-00436	Prehistoric subsurface features and artifacts, limited previous excavation and/or testing	30	Eligible	Data recovery

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Region	AHRS No. and Site Name	Nature of Resource	Attachment E Mapbook Page	NRHP Status	Proposed Mitigation
Interior Region	BET-00055	Prehistoric surface and subsurface features and artifacts, limited previous excavation and/or testing	32	Eligible	Data recovery
Interior Region	BET-00202	Prehistoric surface and subsurface lithic artifacts, some previous excavation and/or testing but boundaries of site are unclear	33	Eligible	Data recovery
Interior Region	BET-00213	Prehistoric subsurface lithic artifacts, previously excavated and/or extensively tested	34	Eligible	See Section 8.5.6; AGDC will work with Allakaket, Evansville, an Alatna on documentation of a Koyukon cultural landscape
Interior Region	BET-00081	Prehistoric surface and subsurface lithic artifacts, previously excavated and/or extensively tested	34	Eligible	See Section 8.5.6; AGDC will work with Allakaket, Evansville, an Alatna on documentation of a Koyukon cultural landscape
Interior Region	BET-00206	Prehistoric surface and subsurface lithic artifacts, previously excavated and/or extensively tested	34	Eligible	See Section 8.5.6; AGDC will work with Allakaket, Evansville, an Alatna on documentation of a Koyukon cultural landscape
Interior Region	BET-00074 VICK ROCK-SHELTER	Prehistoric rock shelter	35	Eligible	Additional consultation with PA Parties needed. This is a unique site that has been extensively excavated and disturbed by looting.

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Region	AHRS No. and Site Name	Nature of Resource	Attachment E Mapbook Page	NRHP Status	Proposed Mitigation
Interior Region	BET-00250	Prehistoric surface lithic artifacts	36	Eligible	See Section 8.5.6; AGDC will work with Allakaket, Evansville, an Alatna on documentation of a Koyukon cultural landscape
Interior Region	BET-00200 DALTON HWY (MP 1 TO 414)	Historic road	Multiple	Treated as Eligible	Additional consultation needed with DOT&PF and SHPO to determine effect and appropriate minimization or mitigation measures
Interior Region	TAN-00118 DALTON HWY (MP 1 TO 414)	Historic road	Multiple	Treated as Eligible	Additional consultation needed with DOT&PF to determine effect and appropriate minimization or mitigation measures
Interior Region	LIV-00501 DALTON HWY (MP 1 TO 414)	Historic road	Multiple	Treated as Eligible	Additional consultation needed with DOT&PF to determine effect and appropriate minimization or mitigation measures
Interior Region	LIV-00726	Prehistoric subsurface features and artifacts, previously excavated and/or extensively tested	43 and 44	Eligible	Data recovery - spatial analysis and analysis of collected material
Interior Region	LIV-00055 JUSWON	Prehistoric surface and subsurface lithic artifacts, previously excavated and/or extensively tested	45	Eligible	AGDC will conduct field visit to determine data recovery method (excavation of undisturbed portion of site and/or analysis of previously collected materials)
Interior Region	LIV-00553	Prehistoric surface and subsurface lithic artifacts, previously excavated and/or extensively tested	46	Eligible	Data recovery - spatial analysis and analysis of collected material

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Region	AHRS No. and Site Name	Nature of Resource	Attachment E Mapbook Page	NRHP Status	Proposed Mitigation
Interior Region	LIV-00104	Prehistoric surface and subsurface features and artifacts, some previous excavation and/or testing	46	Eligible	AGDC will conduct field visit to determine data recovery method (excavation of undisturbed portion of site and/or analysis of previously collected materials)
Interior Region	LIV-00047 TOLOVANA 10	Prehistoric surface and subsurface lithic artifacts, previously excavated and/or extensively tested	46	Eligible	AGDC will conduct field visit to determine data recovery method (excavation of undisturbed portion of site and/or analysis of previously collected materials)
Interior Region	LIV-00106	Prehistoric surface and subsurface lithic artifacts, some previous excavation and/or testing but boundaries of site are unclear	46	Eligible as Contributing	Data recovery
Interior Region	LIV-00284 ROSEBUD KNOB ARCHAEOLOGICAL DISTRICT	Prehistoric Archaeological District	46	Eligible	Data recovery - spatial analysis of sites within District and analysis of collected material from sites within District
Interior Region	LIV-00402	Prehistoric surface lithic artifacts, previous excavation and/or extensive testing	46	Eligible	Data recovery - spatial analysis of sites within District and analysis of collected material from sites within District
Interior Region	LIV-00749	Prehistoric subsurface lithic artifacts, previous excavation and/or extensive testing	47	Eligible	Data recovery - spatial analysis and analysis of collected material
Interior Region	LIV-00778	Prehistoric subsurface lithic artifacts, previous excavation and/or extensive testing	47	Eligible	This site can likely be avoided

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Region	AHRS No. and Site Name	Nature of Resource	Attachment E Mapbook Page	NRHP Status	Proposed Mitigation
Interior Region	LIV-00748	Prehistoric subsurface lithic artifacts, previous excavation and/or extensive testing	49	Eligible	Data recovery - spatial analysis and analysis of collected material
Interior Region	LIV-00556 DUNBAR-BROOKS TERMINAL TRAIL (SEE ALSO FAI-02102)	Historic trail	Multiple	Eligible	Minimize effects through vegetation and existing trail condition maintenance, schedule of construction activities during period of low use
Interior Region	LIV-00776	Prehistoric subsurface lithic artifacts, limited previous excavation and/or testing	50	Eligible	Data recovery
Interior Region	FAI-02177 DUNBAR-MINTO-TOLOVANA TRAIL	Historic trail	Multiple	Eligible	Minimize effects through vegetation and existing trail condition maintenance, schedule of construction activities during period of low use
Interior Region	FAI-02102 DUNBAR-BROOKS TERMINAL TRAIL (SEE ALSO LIV-00556)	Historic trail	54	Eligible	Minimize effects through vegetation and existing trail condition maintenance, schedule of construction activities during period of low use
Interior Region	FAI-02390	Historic Lower Tanana Athabascan dwelling, tested and well-documented	58	Eligible	Archival research and development of historic context for Lower Tanana settlement during this period
Interior Region	FAI-2366 NENANA KANTISHNA TRAIL SEGMENT RS2477 346 (NENANA-KNIGHTS ROADHOUSE TRAIL, ARC ROUTE 46C)	Historic trail	Multiple	Eligible	Minimize effects through vegetation and existing trail condition maintenance, schedule of construction activities during period of low use

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Region	AHRS No. and Site Name	Nature of Resource	Attachment E Mapbook Page	NRHP Status	Proposed Mitigation
Interior Region	FAI-02386	Historic surface features and artifacts	61	Eligible	Data recovery
Interior Region	HEA-00595	Prehistoric subsurface artifacts, some excavation and/or testing	64	Eligible	Data recovery including testing for deeply buried deposits, consideration of field school or community archaeology project
Interior Region	HEA-00062 Nenana River Gorge Site	Multicomponent site with prehistoric artifacts and features and historic railroad related artifacts, potentially destroyed by erosion and construction	65	Eligible	AGDC will conduct field visit to determine data recovery method (excavation of undisturbed portion of site and/or analysis of previously collected materials)
Interior Region	HEA-00662	Prehistoric subsurface lithic artifacts	65	Eligible	Data recovery
Interior Region	HEA-00658	Prehistoric subsurface lithic and faunal artifacts, previous excavation and/or extensive testing	66	Eligible	Data recovery - spatial analysis and analysis of collected material
Southcentral Region	HEA-00450 DENALI HWY (MP 1 TO 134.5)	Historic road	68	Treated as Eligible	Additional consultation needed with DOT&PF and SHPO to determine effect and appropriate minimization or mitigation measures
Southcentral Region	HEA-00066 BROAD PASS	Historic railroad camp, site has potential for extensive historic archaeological deposits yet no subsurface testing appears to have occurred	71	Eligible	Data recovery

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Region	AHRS No. and Site Name	Nature of Resource	Attachment E Mapbook Page	NRHP Status	Proposed Mitigation
Southcentral Region	TLM-00327	Prehistoric subsurface lithic artifacts, limited previous excavation and/or testing	75	Eligible	Data recovery
Southcentral Region	TAL-00180	Historic surface features and artifacts, site has potential for buried historic artifacts yet appears to have not been tested for subsurface artifacts/deposits	77	Eligible	Data recovery
Southcentral Region	TAL-00181 SAWMILL CREEK CABIN	Historic log cabin	80	Eligible	Historic American Building Survey level documentation of the cabin, testing and data recovery of surface and subsurface historic features
Southcentral Region	TYO-00228 USGS BASE MAP WINTER TRAIL 1	Historic trail	88	Eligible	See Section 8.5.9.1; AGDC will consider NRHP evaluations for other sections of the INHT within the indirect APE as mitigation, as well as other measures that contribute towards the care and well-being of the INHT. These measures may include financial or mechanical support of INHT programs, such as assistance with Trail maintenance, Trail brushing, or assistance with INHT- associated cabin maintenance

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Region	AHRS No. and Site Name	Nature of Resource	Attachment E Mapbook Page	NRHP Status	Proposed Mitigation
Southcentral Region	TYO-00084 KNIK-RAINY PASS TRAIL (IDITAROD NATIONAL HISTORIC TRIAL - PRIMARY TRAIL)	Historic trail	88	Eligible	See Section 8.5.9.1; AGDC will consider NRHP evaluations for other sections of the INHT within the indirect APE as mitigation, as well as other measures that contribute towards the care and well-being of the INHT. These measures may include financial or mechanical support of INHT programs, such as assistance with Trail maintenance, Trail brushing, or assistance with INHT- associated cabin maintenance
Southcentral Region	TYO-00224 IDITAROD SLED DOG RACE TRAIL	Historic trail	92	Eligible	See Section 8.5.9.1; AGDC will consider NRHP evaluations for other sections of the INHT within the indirect APE as mitigation, as well as other measures that contribute towards the care and well-being of the INHT. These measures may include financial or mechanical support of INHT programs, such as assistance with Trail maintenance, Trail brushing, or assistance with INHT- associated cabin maintenance

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

8.5 SPECIAL CONSIDERATION FOR MITIGATION OF CERTAIN SITE TYPES IN THE DIRECT APE

8.5.1 Prehistoric Surface Lithic Scatters

A number of historic properties are prehistoric surface lithic scatters where lithic materials were observed on and, in many cases collected from, the site's surface or root mat. Subsurface testing at these sites generally revealed few buried artifacts or materials.

The significance of these sites is in their potential to provide information important to prehistory (NRHP Criterion D); thus, data recovery is the recommended mitigation. Because of the surficial nature of these sites and the previous collection that may have occurred, data recovery potential at the site itself may be limited. Data recovery for these sites should focus on the collection of any remaining surface material, and spatial analysis of the location of these lithic scatters in combination with laboratory analysis of the previously and newly collected materials.

Alternatively, AGDC may recommend the development of multiple property documentation and registration criteria for prehistoric surface lithic scatters based on regional, chronological, or other linking characteristics.

8.5.2 Prehistoric Surface and Subsurface Lithic Deposits

Historic properties comprised of surface and subsurface lithic deposits are also significant in their potential to provide information important to prehistory (NRHP Criterion D) and data recovery is the recommended mitigation. Because of the surficial and buried nature of these sites and the previous collection that has occurred, data recovery potential at these sites is varied. Data recovery for these sites should consider the amount of previous disturbance, and identify an appropriate balance of new surface survey/excavation, spatial analysis, and/or laboratory analysis of previously and newly collected materials.

Much of the collected material from excavations and testing of sites located within the APE is housed at the University of Alaska Museum of the North. AGDC recommends that site treatment plans for data recovery involving laboratory analysis of collected materials consider the hiring and training of high school and/or undergraduate-level interns to assist analysis, to provide exposure to and training in cultural resources lab techniques.

Alternatively, AGDC may recommend the development of multiple property documentation and registration criteria for prehistoric surface and subsurface lithic scatters based on regional, chronological, or other linking characteristics.

8.5.3 Previously Excavated or Extensively Tested Prehistoric Surface and Subsurface Sites

A number of sites in the direct APE were excavated in the 1970s and 1980s in association with archaeological investigations that occurred for the construction of TAPS. Additionally, many of the other

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

prehistoric sites in the Northern and Interior regions were extensively tested during archaeological survey for the Alaska LNG Project.

At these types of sites, the data recovery potential may be limited, due to disturbance and destruction associated with previous excavation, testing, and collection. Therefore, data recovery in the form of spatial analysis and/or laboratory analysis of previously collected materials is recommended, or alternative mitigation is recommended, as discussed in the following sections.

As noted in Section 8.5.2 above, much of the collected material from excavations and testing of sites located within the APE is housed at the University of Alaska Museum of the North. AGDC recommends that site treatment plans for data recovery involving analysis of previously collected materials consider the hiring and training of high school and/or undergraduate-level interns to assist analysis, to provide exposure to and training in cultural resources lab techniques.

8.5.4 Gallagher Flint Station and Nearby Sites

As noted previously, the Gallagher Flint Station (PSM-00050) is a National Historic Landmark and multi-loci, multi-component site that has yielded cultural material dating back as far as 10,500 B.P.; it is situated within a cluster of more than 75 documented prehistoric archaeological sites. AHRS records indicate Gallagher Flint Station was excavated in the 1970s; however, estimates by the BLM (Bowers 1983) suggest only 30 to 40% of the site has been excavated. The previous excavation was concentrated on the south side of the site, and to a lesser extent, the east side of the site. A 1997 assessment (Ferguson 1997), as well as photos taken by NPS in 2014, suggest the portion of the site through which the proposed pipeline route passes (north and west sides of the NHL) are in good condition and relatively undisturbed by testing or excavation.

A number of other documented multi-loci surface lithic scatters and multi-component sites are located within the direct APE, in vicinity of Gallagher Flint Station. These are PSM-00197, PSM-00601, , PSM-00596, PSM-00572, PSM-00573, PSM-00605, and PSM-00604. Most of these sites received intensive field testing consisting of excavation of 10 to 50-cm-square shovel test pits, per site, during survey for the Alaska LNG Project. These previous excavations and intensive testing have reduced the data recovery potential for these sites.

Within 1 year of the FID/AFE, or as negotiated, AGDC will conduct a field investigation, in cooperation with the BLM and NPS-Alaska Regional Office, to determine if the portion of the Gallagher Flint Station that will be disturbed by project construction has been previously excavated or is undisturbed. If undisturbed, within 6 months of the field visit, AGDC will consult with the PA Parties and NPS regarding the suitability of conducting excavations at the Gallagher Flint Station and/or further testing a selection of the afore-mentioned nearby sites within the direct APE, and conducting detailed magnetic surveys (magnetometry) for the detection of hearth features in and around Gallagher Flint Station. Mitigation consultation involving Gallagher Flint Station will also consider the production of a publication for public distribution discussing the archaeology of the NHL.

If disturbed, within 6 months of the field visit, the USACE will consult with the PA Parties regarding the suitability of: 1) conducting detailed magnetic surveys of existing documented sites in the vicinity of the

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Gallagher Flint Station; and 2) preparing a professionally designed and printed publication suitable for public distribution summarizing the archaeology of the Gallagher Flint Station and surrounding area. The publication would be similar in quality to publications produced by the NPS and Bureau of Indian Affairs (BIA), such as *The Penguq Site in Alaska Peninsula Prehistory* (Saltonstall *et al.* 2012).

8.5.5 Galbraith Lake Area Sites

As noted previously, Galbraith Lake hosts a concentration of more than 150 prehistoric archaeological sites, ranging from ephemeral Northern Archaic hunting camps to long-term protohistoric Nunamiut village sites (Comment made by Glassburn in May 2018 Section 106 Consultation Meeting). Nine of these sites are historic properties located within the direct APE. These sites include PSM-00607, PSM-00076, PSM-00075, PSM-00049, PSM-00192, PSM-00501, PSM-00498, and PSM-00578. AHRS records indicate these sites were identified as a result of TAPS, APP, and Alaska LNG surveys.

The most extensively tested and excavated site in the area is Mosquito Lake (PSM-00049), though both BLM and Alaska LNG surveys at Mosquito Lake observed cultural materials on the surface of the site, suggesting undisturbed areas of the site may still remain. At the other afore-mentioned sites within the direct APE near Galbraith Lake, intensive field testing consisting of the excavation of 20 to 60 shovel test pits, and in some cases, 1-m x 1-m-square units, has occurred, again reducing the data recovery potential for these sites.

Due to the rarity of stratified sites in the region, mitigation at PSM-00075 and PSM-00076 will consist of data recovery and analysis of both previous collections and newly excavated materials. For the other seven sites, which primarily consist of thinly stratified lithic scatters, mitigation will consist of developing a publication highlighting the regional history of the Galbraith Lake/Atigun River area, which synthesizes known archaeological and ethnographic information. The publication would be similar in quality to publications produced by the NPS and BIA, such as *The Penguq Site in Alaska Peninsula Prehistory* (Saltonstall *et al.* 2012).

8.5.6 Bonanza Tors and Kanuti River

As noted previously, small, surface and subsurface prehistoric site concentrations are located in the vicinity of Bonanza Tors and the Kanuti River. At Bonanza Tors, three of these sites (BET-00213, BET-00206, and BET-00081) are in the direct APE and have been determined to be eligible for the NRHP, while at the Kanuti River, one site (BET-00250) is located within the APE and has been determined to be eligible. Each of these sites received intensive shovel testing during survey for Alaska LNG, which has reduced their data recovery potential.

The Bonanza Tors and Kanuti River are traditional and historical use areas for the Koyukon; however, documentation of the complex cultural use and continuity of movement on the landscape by the Koyukon in this area is not well documented. In lieu of additional data recovery, the BLM has proposed mitigating these sites through the investigation and documentation of a Koyukon cultural landscape. AGDC will work with the communities of Alatna, Allakaket, and Evansville, as well as the BLM, to document cultural sites, cultural traditions, and the circulation and land use patterns that form the Koyukon cultural landscape.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

8.5.7 Dena'ina Related Sites

There are currently no NRHP-eligible sites associated with the Dena'ina within the direct APE; however, unevaluated Dena'ina related sites are within the direct APE and based on discussions with the Knik Tribe there are likely undocumented, significant sites within the direct APE in the area of Redshirt and Cow lakes, and Fish Creek.

In consultation for development of the PA, the Knik Tribe has proposed mitigation for Dena'ina related sites involving the documentation and transcription of existing Shem Pete recordings collected by James Kari, and the comprehensive ethnographic review and analysis of existing published materials, data, and reports from other projects and programmatic agreements in southcentral Alaska. The council and other Consulting Parties have also recommended documentation and completion of an NRHP nomination for an Upper Cook Inlet Dena'ina Cultural Landscape be completed as part of the mitigation of adverse effects to Dena'ina-related historic properties.

As NRHP-eligible Dena'ina related sites are identified in future project survey efforts, USACE will work closely with the Knik Tribe and PA Parties to identify specific mitigation measures for adverse effects.

8.5.8 Historic Roads

Under the *Programmatic Agreement Regarding Alaska's Highway System Roads Affected by the Federal-Aid Highway Program* (Alaska Road PA), certain roads within Alaska were to be considered historic properties for the purposes of Section 106. These roads have been identified as Treated-as-Eligible. While the Alaska Road PA pertains to Federal Highway Administration and DOT&PF federal aid projects only, it does provide general guidance on how to evaluate historic roads for significance, and what mitigation measures might be appropriate.

There are two historic roads considered Treated-as-Eligible in the direct APE, the Dalton Highway and the Denali Highway. Both highways were evaluated for historic significance in 2014; however, the significance evaluations did not address or apply NRHP integrity considerations, consequently the NRHP eligibility status for both highways remains undetermined. A framework for assessing the NRHP eligibility of Treated-as-Eligible roads has been developed, but has not yet been accepted by DOT&PF for use in the evaluation of Treated-as-Eligible roads.

Additional consultation with DOT&PF is needed to determine the nature of the effects of the Project on both the Dalton and Denali highways, and what, if any, mitigation is appropriate.

Prior to the initiation of ground-disturbing activities in the vicinity of the Dalton and Denali highways, the USACE will consult with DOT&PF, AGDC, and the PA Parties to determine if the ASAP Project will adversely affect the Dalton and Denali highways, and what avoidance, minimization, and mitigation measures will be employed to address the effects.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

8.5.9 Historic Trails

The direct APE for the Mainline alignments and Fairbanks Lateral crosses a number of historic trails, including the INHT (see Section 8.5.9.1). The significance of these trails is in their association with important historic events or patterns of events (Criterion A); specifically, the sport of dog mushing and access to historic mining camps. In most cases, these trails are used contemporarily by all-terrain vehicles and dog mushing teams and their integrity is related to maintaining access and connectivity to destinations and other trails, and maintaining general trail conditions including width, area vegetation, and existing route and configuration.

Adverse effects to historic trails are most likely to come from temporary access restrictions due to construction and altering the setting of the trail through the removal and maintenance of vegetation along the buried pipeline where it intersects the trails or is otherwise visible from the trails.

AGDC will avoid and minimize impacts to trail access by consulting with trail users prior to construction and scheduling, to the extent possible, construction activities during times of low use. Upon completion of construction activities, AGDC will return the trail crossing to its original condition, to the extent practicable. AGDC will also minimize impacts to trail conditions by maintaining vegetation consistent with existing trail characteristics during project construction, with the exception of access roads and the area directly above the pipeline. For reasons related to pipeline integrity and safety, rooted trees will not be allowed to grow within close proximity to the pipeline in the operational right-of-way.

8.5.9.1 Iditarod National Historic Trail and Iditarod Dog Sledding District

The Mainline alignment crosses the Knik-Rainy Pass Trail (TYO-00084) near MP 729. The Knik-Rainy Pass Trail is a primary segment of the INHT. The INHT is of national significance and the experience of passing through the Iditarod landscape is one of the character-defining features of the trail. Because changes to the landscape resulting from the ASAP Project will be long lasting, and because the experience of the landscape can never be recreated, creative mitigation should be considered. In addition to minimization measures discussed above, USACE will consider NRHP evaluations for other segments of the INHT within the indirect APE as mitigation, as well as other measures that contribute to the care and well-being of the INHT. These measures may include financial or mechanical support of INHT programs, such as assistance with trail maintenance, trail brushing, or assistance with INHT-associated cabin maintenance.

8.6 STRATEGIES FOR AVOIDANCE, MINIMIZATION, AND MITIGATION OF HISTORIC PROPERTIES IN THE INDIRECT APE

As noted previously, historic properties within the indirect APE are most likely to be affected by long-term visual, audible, and atmospheric changes introduced by the construction of aboveground permanent facilities, changes to vegetation from buried project components, and increased access to areas previously not easily accessed. Consequently, strategies for avoidance, minimization, and mitigation for historic properties within the indirect APE are organized by type of effect.

8.6.1 Historic Properties Sensitive to Increased Visitation

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Visitation due to increased or newly available access is most likely to occur at historic properties within ¼ mile of the direct APE. While all historic properties within this range may be adversely affected, prehistoric and historic resources with surface artifacts in particular are likely to be adversely affected. AGDC will minimize effects to historic properties within the indirect APE through a long-term site monitoring program (see Section 8.1), to monitor the effects of nearby construction, operation and maintenance activities to these sites. Monitoring will involve at a minimum, a schedule of annual field visits to a sample of NRHP-eligible archaeological sites within the indirect APE to check for obvious signs of disturbance, including vandalism and looting. Actions taken upon discovery of disturbance during monitoring will be described in the Long-term Monitoring Program, which will be incorporated into the Avoidance, Minimization, and Treatment Plan (Section 8.1).

8.6.2 Visually, Audibly and Atmospherically Sensitive Historic Properties

The introduction of a pipeline corridor, access roads, and other project components may result in indirect effects to historic properties; specifically, visual effects, such as noticeable breaks in vegetation, audible effects, such as construction noise or road traffic in a previously undeveloped area, and atmospheric effects, such as dust from construction traffic on newly constructed gravel access roads.

AGDC will minimize these effects through a combination of vegetation screening, timing of construction activities, and dust control measures. Minimization efforts to address visual, audible, and atmospheric effects to historic properties in the indirect APE will be identified in the Avoidance, Minimization, and Treatment Plan and summarized for each regional project component in the RPCA. Additionally, AGDC will incorporate monitoring of a subset of these properties as part of the site monitoring program discussed in Sections 8.1, to review the minimization measures and assess their efficacy in minimizing effects. Results of the monitoring will be included in the Annual Report (see Section 9.1).

8.6.3 Denali Park Road Historic District

Although outside the APE, the Denali Park Road Historic District may be indirectly affected by the ASAP Project through the introduction of a visible break in vegetation along the Mainline alignment. USACE will work with AGDC and DNPP to identify appropriate visual screening measures to reduce impacts to the Denali Park Road Historic District viewshed or to identify other mitigation.

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

9. ADMINISTRATIVE REPORTING AND SCHEDULE REQUIRED PLANS, ACTIVITIES, AND REPORTS

This CRMP has identified a number of technical plans, activities, and reports to be completed to comply with the terms of the PA and complete the Section 106 process. In addition to these technical plans, activities, and reports, the PA stipulates annual and progress reporting and annual meetings.

9.1 ANNUAL REPORTS AND ANNUAL MEETING

Per PA Stipulation VI, AGDC will complete annual and progress reports and the USACE will conduct an annual meeting for each year the PA is in effect. The PA dictates that the Annual Report be distributed to all PA Parties at least 45 days prior to the annual meeting. To allow for this, the USACE will notify AGDC at least 90 days in advance of the proposed meeting date. To simplify this timeline, and to coincide with delivery of Annual Survey and Evaluation Plans, AGDC recommends that each year the USACE conduct the annual meeting around April 15th, and AGDC submit the Annual Report to the PA Parties by March 1st. A copy of the report with any sensitive information redacted will be posted to the project website for public consumption.

The content for Annual Reports will include those topics identified in Stipulation VI.C. of the PA, as well as:

1. The documentation, review, and results of historic property identification, avoidance, minimization and treatment activities for the preceding year;

2. The anticipated historic property identification, avoidance, minimization, and treatment activities for the coming year; and

3. The updated Avoidance, Minimization, and Treatment Plan, incorporating historic properties that may have been identified during the previous year of cultural resource survey.

To aid in Annual Report production, the template for Annual Reports is provided in Attachment G.

9.2 PROGRESS REPORTS

Per PA Stipulation VI.E.i, AGDC will also complete progress reports quarterly for the duration of the Undertaking. AGDC will submit progress reports to the USACE within 30 working days of the end of each quarter. The progress reports will describe fieldwork and monitoring activities for identifying historic properties as well as relevant construction progress that was initiated, underway, or completed for the most recent performance period, and identify steps to be initiated continued or completed in the next quarter. The template to be used for quarterly progress reports is provided in Attachment G.

Table 8 provides a summarized schedule of the preparation, implementation, and delivery of the technical plans, activities, and reports, and PA-stipulated Annual Reports, annual meetings, and progress reporting.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

9.3 FINAL REPORT

Per PA Stipulation VI.D., AGDC will complete a final report upon completion of compliance with the stipulations of the PA and CRMP. The final report is intended to summarize the results of procedures and mitigation measures implemented in accordance with the PA for public distribution and benefit. Consequently, AGDC will consider alternative formats for the report such as the development of a GIS–based story map. At least 1 year before the anticipated completion of compliance activities, AGDC will propose a format and content outline for the final report and submit it to the USACE for distribution to the PA Parties for review. PA Parties will have 30 working days to review and provide comment. USACE will review comments in consultation with the PA Signatories to determine the final report format and content. AGDC will complete a draft report within 1 year of the closure of the comment period, or as negotiated. The draft report will be afforded a 30-day review and comment period, and 30 additional days will be allowed for revision and issuance of the final report.

Table 8. Summary and Schedule of CRMP Required Plans, Activities, and Reports

Plan or Report Title	Schedule for Completion (Working Days)	Responsible Party	Reviewers/ Participants	Length of Comment Period (Working Days)	Length of Revision Period (Working Days)	CRMP Reference
FID/AFE Issuance	Parties are notified of issuance and work begins	AGDC	PA Parties	N/A	N/A	Section 1.2.1
Data Gap Analysis	Within 6 months of the FID/AFE	AGDC	PA Parties	60 Days	30 Days	Section 6.2
Avoidance, Minimization and Treatment Plan	Within 1 year of the FID/AFE, update annually and include in the Annual Report	AGDC	PA Parties	60 Days	30 Days	Section 8.1
Annual Survey and Evaluation Plan	Prior to March 1 of each year, the PA is in effect following FID/AFE	AGDC	PA Parties	30 Days	30 Days	Section 6.3
Annual Survey and Evaluation Report	Within 6 months of the completion of fieldwork	AGDC	PA Parties	60 Days	30 Days	Section 6.4
Regional Project Component Assessments	At least 120 days prior to desired construction commencement	AGDC	USACE	30 Days	N/A	Section 7
Regional Project Component Finding of Effect	Within 30 days of receipt of the RPCA	USACE	PA Signatories	45 Days	N/A	Section 7

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Cultural Resource Awareness Training Curriculum	At least 60 days prior to construction initiation	AGDC	USACE and SHPO review, PA Parties for informational purposes	15 Days	15 Days	Section 8.2

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Plan or Report Title	Schedule for Completion (Working Days)	Responsible Party	Reviewers/ Participants	Length of Comment Period (Working Days)	Length of Revision Period (Working Days)	CRMP Reference
Site Treatment Plans	Standard Site Treatment Plans will be included in the Avoidance, Minimization and Treatment Plan, Individual Site Treatment Plans will be included in RPCA and RPCA Finding of Effect	AGDC	See Avoidance, Minimization & Treatment Plan, RPCA, and RPCA Finding of Effect	See Avoidance, Minimization & Treatment Plan, RPCA, and RPCA Finding of Effect	See Avoidance, Minimization & Treatment Plan, RPCA, and RPCA Finding of Effect	Section 8.1, Section 7, Section 8.4.1
Site Treatment Results Reports	Site Treatment Results Reports will be completed per the schedules identified in the Site Treatment Plans	AGDC	Per Site Treatment Plans	Per Site Treatment Plans	Per Site Treatment Plans	Section 8.1, Section 8.4.1
Construction Monitoring Plans	Prior to desired construction commencement, as part of RPCA and RPCA Finding of Effect	AGDC	See RPCA and RPCA Finding of Effect	See RPCA and RPCA Finding of Effect	See RPCA and RPCA Finding of Effect	Section 8.3, Section 12
Construction Monitoring Results Reports	6 months following completion of construction monitoring activities	AGDC	PA Parties	30 Days	30 Days	Section 8.3, Section 12
Gallagher Flint Station Field Visit	Within 1 year of the FID/AFE	AGDC	PA Parties	N/A	N/A	Section 8.5.4
PA Annual Meeting	On or around April 15th annually	USACE	PA Parties	N/A	N/A	Section 9.1
PA Annual Report	By March 1st annually	AGDC	PA Parties	N/A	N/A	Section 9.1
PA Progress Report	Within 30 working days of the end of each quarter	AGDC	USACE	N/A	N/A	Section 9.2
PA Final Report	At least 1 year prior to the completion of project construction	AGDC	PA Parties	30 Days	1 Year	Section 9.3

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

This page intentionally left blank.

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

10. PLAN FOR THE INADVERTENT DISCOVERY OF CULTURAL RESOURCES

Cultural resources may be encountered aboveground and belowground during construction of the ASAP Project, and might include historic or prehistoric materials. In the event that previously unknown cultural resources are discovered during project activities, the following plan will be implemented. If the discovery involves human remains or cultural resources considered funerary objects, sacred objects, or objects of cultural patrimony, the Plan for Inadvertent Discovery of Human Remains (see Section 11) should be implemented instead.

I. Stop Work

Stop work in the immediate area of the discovery, notify the Project Site Manager, leave the discovery in place, and delineate a 100-foot buffer zone of avoidance. The buffer zone should be flagged with highly visible flagging or staked with brightly colored staking placed no greater than 20 feet apart.

Implement protection measures, such as covering the cultural resource with a tarp, to protect the discovery from the elements, shoring up cut banks or trench walls so that additional exposure does not occur, and ensure water will not flow through or pool in the immediate area of the discovery. These protection measures and avoidance zone will be maintained until AGDC receives formal notice that construction can resume in the area of the discovery.

II. Notify Officials

The Project Site Manager should then immediately notify the persons and entities listed below and identified in Table 9, or as soon as communication mechanisms are available. Contacts should be notified by telephone, with written confirmation via email, fax or mailed letter. Notification must take place within 24 hours of discovery and should include:

- Information regarding the nature and extent of the cultural resource;
- Photographs of the cultural resource;
- Narrative description of the precise location of the cultural resource; and
- GPS coordinates (lat/long) of the location.

If a Qualified Archaeologist is on site when the resource is discovered, notification should include an assessment of resource's significance and integrity, and whether or not it is potentially NRHP-eligible. The site will be treated as eligible until a full assessment of its eligibility can be completed.

Notify these officials:

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

USACE
(insert name/contact of appropriate USACE rep here)

AGDC
Frank Richards, Sr. Vice President, Program Mgmt
Alaska Gasline Development Corporation
Office Phone: 907-330-6352
Email: frichards@agdc.us

SHPO
(For SHPO contacts, use this email as primary contact if no phone contact is made)
Office Phone: 907-269-8700
Email: oha.permits@alaska.gov

State Archaeologist/Deputy SHPO
Phone: 907-269-8700
Fax: 907-269-8908
Email: oha.permits@alaska.gov

Landowner
See Table 9 to identify appropriate landowner contact information.[3]

Local Tribes and Tribes that Have Expressed an Interest in Being Notified
See Table 10 to identify the appropriate Tribal contact information.

III. Evaluate and Consult on Discovery

Within 72 hours of discovery, USACE, SHPO, AGDC, and the land managing agency or landowner shall consult, by telephone or other means, on the nature of the discovery, its potential significance, and determine if any additional investigation is warranted.

If the USACE determines, in consultation with SHPO, AGDC and the land managing agency or landowner, that the discovery is not significant and SHPO concurs, then verbal authorization to proceed with construction activities may be given by the USACE to AGDC. The USACE should provide AGDC with written confirmation of the authorization to proceed within 48 hours.

If the USACE determines that additional investigation is warranted, the discovery should be investigated by a professional who meets the appropriate qualification standards, and a formal evaluation of the discovery's eligibility for listing in the NRHP should be completed per Stipulation V.B.. of the PA. The field investigation and evaluation should be completed within 10 working days of the discovery. The USACE should consult with SHPO and the PA Parties on the eligibility of the discovery within 3 working days of receipt of the evaluation, SHPO and Consulting Parties should provide a decision to the USACE

[3] In the event that the DNPP Route is selected, AGDC will update Table 9 with NPS landowner contact information.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

regarding concurrence with the eligibility within 5 working days. If no response is received within 5 working days, the USACE may assume concurrence with its determination of eligibility.

If the USACE determines the discovery is not eligible, and SHPO concurs, verbal authorization to proceed with construction activities may be given by the USACE to AGDC, and the USACE should provide written confirmation of the authorization to proceed within 48 hours.

If the USACE determines the discovery is eligible and the SHPO concurs, the USACE should consult with the PA Parties to determine if effects upon the discovery can be avoided or minimized sufficiently to not adversely affect the historic property or if mitigation is needed. AGDC, under the direction of the USACE, will prepare a determination of treatment (avoidance, minimization, or mitigation) within 5 working days of concurrence with the determination of eligibility and should include a schedule for the resumption of construction work in the area of the discovery.

Table 9. ASAP Landowner Contact Information within Construction Footprint

Name	Address	Phone	Email
State Lands (Except Alaska Mental Health Trust, University of Alaska, ARRC)			
For All Discoveries, Regardless of State Agency (Except as Noted Above)			
Alaska Office of History and Archaeology	550 W. 7th Ave, Ste. 1310 Anchorage, AK 99501	907-269-8700	oha.permits@alaska.gov
Bureau of Land Management			
For Discoveries between Pipeline MP 0-121			
BLM Arctic Field Office	1150 University Ave Fairbanks, AK 99709	1-800-437-7021	N/A
For Discoveries Between Pipeline MP 121 – 369.5, MP 397.3-420.5, MP 422.7-469.7, MP 471.7-497.7 and MP 520.7-530.8			
BLM Central Yukon Field Office Attn: Field Manager	222 University Ave Fairbanks, AK 99709	907-474-2200	N/A
For Discoveries Between Pipeline MP 369.5 to 397.3, MP 420.5 to 422.7, MP 469.7 to 471.7, MP 497.7 to 520.7 and MP 530.8 to 544			
BLM Eastern Interior Field Office Attn: Field Manager	222 University Ave Fairbanks, AK 99709	907-474-2200	N/A
For Discoveries Between Pipeline MP 544 – 705.7			
BLM Glenallen Field Office Attn: Field Manager	PO Box 147 Glennallen, AK 99588	907-822-3217	N/A
For Discoveries Between Pipeline MP 705.7 – 733.47			
BLM Anchorage Field Office Attn: Field Manager	4700 BLM Rd Anchorage, AK 99507	907-267-1246	N/A
National Park Service			
For Discoveries between Pipeline MP 536.1 – 544.31			
Denali Denali National Park and Preserve:	P.O. Box 9, Denali Park, AK 99755	907-683-9581	

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Superintendent			
Boroughs and Municipalities			
North Slope Borough			
IHLC Central Office **Kathy Itta-Ahgeak**	PO Box 69 Utqiagvik, AK 99723	907-852-0422 Or 907-852-2611	kathy.ahgeak@north-slope.org
Fairbanks North Star Borough			
Manager, Lands Department **Sandra Mota**	PO Box 71267 Fairbanks, AK 99709	907-459-1241 Or 907-459-1000	land@fnsb.us
Denali Borough			
Planning and Land Use Department **Marsha Lambert**	PO Box 480 Healy, AK 99743	907-683-1330	mlambert@denaliborough.com
Matanuska-Susitna Borough			
Eileen Probasco	350 E. Dahlia Ave. Palmer, AK 99645	907-861-8501 Or 907-861-7801	eileen.probasco@matsugov.us
Municipality of Nenana			
Municipality Office and City of Nenana Port Authority	Municipality: PO Box 277 Nenana, AK 99760 Port Authority: PO Box 70 Nenana, AK 99730	907-832-5501 (Port Authority Only)	N/A
Alaska Native Regional Corporations			
Ahtna, Incorporated			
Land and Resources Department **Joe Bovee** **Or** **Ahtna, Inc. (General)**	Land and Resources: PO Box 649 Glenallen, AK 99588 Or Ahtna, Inc. (General): 110 W. 38th Ave, Ste. 100 Anchorage, AK 99503	907-822-3476 (Land and Resources) Or 907-868-8250 (Ahtna, Inc. General)	jbovee@ahtna-inc.com
Cook Inlet Region Inc.			
Land and Resources Department	PO Box 93330 Anchorage, AK 99509	907-263-5140 Or 907-263-5191	info@ciri.com
Doyon, Limited			
Lands and Natural Resources	1 Doyon Place, Suite 300 Fairbanks, AK 99701	907-459-2030 Or 907-459-2000	lands@doyon.com
Alaska Native Village Corporations			
Toghotthele Corporation			
Chief Administrative Officer **Kelly Ann Burk**	PO Box 249 Nenana, AK 99760	907-832-5832	kellann@togcorp.net
Knikatnu, Incorporated			
Knikatnu, Inc.	1075 S. Check St., #211, Wasilla, AK 99654	907-376-1845	N/A
Other			

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Alaska Mental Health Trust			
Trust Land Office	2600 Cordova St., Ste. 100 Anchorage, AK 99503	907-269-8658	mhtlo@alaska.gov
University of Alaska			
Facilities and Land Management, Regional Resource Manager Patrick Kelly	1815 Bragaw St., Ste. 101 Anchorage, AK 99508	907-786-7795 Or 907-786-7766	pkelly1@alaska.edu
Alaska Railroad Corporation			
Corporate Planning and Real Estate	327 W. Ship Creek Ave. Anchorage, AK 99501	907-265-2448 Or 907-265-2670	RealEstTech@akrr.com
Native Allotments (2) – Bureau of Indian Affairs			
BIA Alaska Regional Office, Realty Services	3601 C Street, Suite 1100 Anchorage AK 99503	907-271-4085	N/A

Table 10. Local Tribes and Tribes that have Expressed an Interest in Being Notified

Name	Address	Phone	Email
For Discoveries in the Northern Region (Pipeline MP 0-262)			
Native Village of Nuiqsut	PO Box 169 Nuiqsut, AK 99789	907-480-3010	N/A
Village of Anaktuvuk Pass	PO Box 21065 Anaktuvuk Pass, AK 99721	907-661-2535	N/A
Alatna Village	222 University Ave Fairbanks, AK 99709	907-474-2200	N/A
Allakaket Village	222 University Ave Fairbanks, AK 99709	907-474-2200	N/A
Evansville Village	PO Box 147 Glennallen, AK 99588	907-822-3217	N/A
Arctic Village Traditional Council	PO Box 22069 Arctic Village, AK 99722	907-587-5523	av_council@hotmail.com
Native Village of Venetie	PO Box 81080 Venetie, AK 99781	907-849-8165	N/A
For Discoveries in the Interior Region (Pipeline MP 263-561)			
Alatna Village	PO Box 70 Alatna, AK 99720	907-968-2261	alatnatribe@yahoo.com
Allakaket Village	PO Box 50 Allakaket, AK 99720	907-968-2237	allakaketepa@yahoo.com
Evansville Village	PO Box 26087 Bettles Field, AK 99726	907-692-5005	evansvillealaska@gmail.com
Arctic Village Traditional Council	PO Box 22069 Arctic Village, AK 99722	907-587-5523	av_council@hotmail.com
Native Village of Venetie	PO Box 81080 Venetie, AK 99781	907-849-8165	N/A
Native Village of Stevens	PO Box 74012 Stevens Village, AK 99774	907-478-7228	N/A

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Beaver Village	PO Box 24029 Beaver, AK 99724	907-628-6126	rpitka@beavercouncil.org

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Name	Address	Phone	Email
Gwichyaa Zhee Gwich'in Tribal Government	PO Box 126 Fort Yukon, AK 99740	907-662-2581	N/A
Birch Creek Tribe	909 Cushman Street, Ste. 207 Fairbanks, AK 99701	907-374-9925	birchcreektribe@gmail.com
Rampart Village	PO Box 29 Rampart, AK 99767	907-358-3312	N/A
Native Village of Tanana	PO Box 130 Tanana, AK 99777	907-366-7160	N/A
Manley Hot Springs Village	PO Box 105 Manley Hot Springs, AK 99756	907-672-3177	N/A
Native Village of Minto	PO Box 58026 Minto, AK 99758	907-798-7112	N/A
Nenana Native Association	PO Box 369 Nenana, AK 99760	907-832-5461	N/A
Native Village of Cantwell	PO Box 94 Cantwell, AK 99729	907-768-2591	N/A
For Discoveries in the Southern Region (Pipeline MP 562-733)			
Native Village of Cantwell	PO Box 94 Cantwell, AK 99729	907-768-2591	N/A
Knik Tribe	1744 N. Prospect Drive Palmer, AK 99645	907-373-7991	N/A
Native Village of Eklutna	26339 Eklutna Village Road Chugiak, AK 99567	907-688-6020	nve@eklutna-nsn.gov
Chickaloon Village Traditional Council	PO Box 1105 Chickaloon, AK 99674	907-745-0737	N/A
Native Village of Tyonek	PO Box 82009 Tyonek, AK 99682	907-583-2111	N/A
Kenaitze Indian Tribe	150 N. Willow Street PO Box 988 Kenai, AK 99611	907-335-7200	N/A

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

11. INADVERTENT DISCOVERY OF HUMAN REMAINS

The treatment of human remains following inadvertent discovery is governed by state and federal laws, land status, post-mortem interval, and biological/cultural affiliation. Human remains may include intact burials or isolated bones and fragmentary bone pieces.

Several Alaska state laws are applicable to the discovery of human remains. The State Medical Examiner has jurisdiction over all human remains in the state (with rare exceptions, such as military aircraft deaths); regardless of how long the remains have been deposited. Alaska state laws governing discovery of human remains include:

- AS 12.65.5, which requires immediate notification of a peace officer of the state (police, Village Public Safety Officer, or Alaska State Trooper) and the State Medical Examiner when death has "been caused by unknown or criminal means, during the commission of a crime, or by suicide, accident, or poisoning."

- AS 11.46.482(a) (3), which applies to all lands in Alaska, makes the "intentional and unauthorized destruction or removal of any human remains or the intentional disturbance of a grave" a class C felony.

- AS 41.35.200, which applies only to state lands, makes the disturbance of "historic, prehistoric, and archaeological resources" (including graves, per definition) a Class A misdemeanor.

- AS 18.50.250, which applies to all lands in Alaska, requires permits for transport, disinterment/exhumation, and reinternment of human remains.

On federal lands and federal trust lands, the unauthorized destruction or removal of archaeological human remains (*i.e.*, more than 100 years old) is a violation of 16 U.S.C. 470ee (ARPA). If human remains on federal or federal trust lands are determined to be Native American, their treatment and disposition are also governed by the Native American Graves and Repatriation Act (NAGPRA) of 1990 (P.L. 101-601; 25 U.S.C. 3001-30013; 104 Stat. 3048-3058; 43 CFR 10). NAGPRA also applies to the discovery of certain classes of cultural items, including funerary objects, sacred objects, and objects of cultural patrimony (together, NAGRPA items).

Per 42 CFR 10.2, the definitions of human remains and NAGPRA items are:

> *Human Remains means the physical remains of the body of a person of Native American ancestry. The term does not include remains or portions of remains that may reasonably be determined to have been freely given or naturally shed by the individual from whose body they were obtained, such as hair made into ropes or nets. For the purposes of determining cultural affiliation, human remains incorporated into a funerary object, sacred object, or object of cultural patrimony, as defined below, must be considered as part of that item.*

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Funerary Objects means items that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed intentionally at the time of death or later with or near individual human remains. Funerary objects must be identified by a preponderance of the evidence as having been removed from a specific burial site of an individual affiliated with a particular Indian tribe or Native Hawaiian organization or as being related to specific individuals or families or to known human remains. The term burial site means any natural or prepared physical location, whether originally below, on, or above the surface of the earth, into which as part of the death rite or ceremony of a culture, individual human remains were deposited, and includes rock cairns or pyres which do not fall within the ordinary definition of gravesite.

Sacred Objects means items that are specific ceremonial objects needed by traditional Native American religious leaders for the practice of traditional Native American religions by their present-day adherents. While many items, from ancient pottery sherds to arrowheads, might be imbued with sacredness in the eyes of an individual, these regulations are specifically limited to objects that were devoted to a traditional Native American religious ceremony or ritual and which have religious significance or function in the continued observance or renewal of such ceremony.

Objects of Cultural Patrimony means items having ongoing historical, traditional, or cultural importance central to the Indian tribe…rather than property owned by an individual tribal or organization member. These objects are of such central importance that they may not be alienated, appropriated, or conveyed by any individual tribal or organization member. Such objects must have been considered inalienable by the culturally affiliated Indian tribe…at the time the object was separated from eh group. Objects of cultural patrimony include items such as Zuni War Gods, the Confederacy Wampum Belts of the Iroquois, and other objects of similar character and significance to the Indian tribe…as a whole.

11.1 PLAN FOR THE INADVERTENT DISCOVERY AND TREATMENT OF HUMAN REMAINS, FUNERARY OBJECTS, SACRED OBJECTS, SACRED OBJECTS, AND OBJECTS OF CULTURAL PATRIMONY

In the event that human remains or NAGPRA items are inadvertently discovered, the following plan will be implemented, regardless of land ownership.

I. Stop Work

Stop work in the immediate area of the discovery, notify the Project Site Manager, leave the discovery in place, and delineate a 100-foot buffer zone of avoidance. The buffer zone should be flagged with highly visible flagging or staked with brightly colored staking placed no greater than 20 feet apart.

Treat all remains with dignity and respect at all times. Implement protection measures such as covering the remains with a tarp to protect the discovery from the elements and photographs, shoring up cut banks or

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

trench walls so that additional exposure does not occur, and making sure water will not flow through or pool in the immediate area of the discovery. These protection measures and avoidance zone should be maintained until AGDC receives formal notice that construction can resume in the area of the discovery.

II. Notify Officials

Once the remains are secure, the Project Site Manager should immediately notify the following contacts, in the order listed. Contacts should be notified by telephone, and then with written confirmation. Notification must take place within 24 hours of discovery and should include:

- Information regarding the nature and extent of the discovery;
- Photographs of the discovery (note to reviewers: *need consultation and guidance from PA Parties, in particular tribes, as to appropriateness/necessity of photographs for the purpose of notification*);
- Narrative description of the precise location of the discovery; and
- GPS coordinates (lat/long) of the location of the discovery.

If a Qualified Archaeologist is on site when the remains are discovered, notification should include an assessment of whether or not the remains are archaeological in nature.

Notify each office and official identified below:

Alaska State Troopers, Missing Persons Bureau
Phone: 907-269-5038
Fax: 907-337-2059

Lt. Paul Fussey
Phone: 907-269-5682
Email: paul.fussey@alaska.gov

*Malia Miller
Phone: 907-269-5038
Email: malia.miller@alaska.gov

*After contact by phone, send email with relevant information and photos to Lt. Fussey and Malia Miller.

Alaska State Medical Examiner's Office
Reporting Hotline (Death Hotline) to speak with on-duty investigator
Phone: 907-334-2356 or 1-888-332-3273 (Outside Anchorage)

Stephen Hoage Operations Administrator
Phone: 907-334-2202
Fax: 907-334-2216
Email: Stephen.Hoage@alaska.gov

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Dr. Gary Zientek, Chief Medical Examiner
Phone: 907-334-2200
Phone: 907-334-2216
Email: gary.zientek@alaska.gov

Local Law Enforcement
See Table 11 to identify appropriate local law enforcement contact

Table 11. Local Law Enforcement Contacts

Name	Address	Phone	Email
For Discoveries in the North Slope Borough			
North Slope Borough Police, Central Office	N/A	907-852-0311 ext. 2602	jeff.brown@north-slope.org
For Discoveries Along Dalton Hwy, South of North Slope Borough and Along Parks Hwy (including Fairbanks-North Star Borough and Denali Borough)			
Alaska State Troopers D Detachment Coldfoot Post	N/A	907-678-5211	N/A
Alaska State Troopers D Detachment Fairbanks Post	N/A	907-451-5100	N/A
Alaska State Troopers D Detachment Nenana Post	N/A	907-832-5554	N/A
Alaska State Troopers D Detachment Healy Post	N/A	907-683-2232	N/A
Alaska State Troopers D Detachment Cantwell Post	N/A	907-768-2202	N/A
For Discoveries within City of Fairbanks			
Fairbanks Police Department	N/A	907-459-6800 (Dispatch non-emergency line)	N/A
For Discoveries within Matanuska-Susitna Borough			
Alaska State Troopers B Detachment Mat-Su West Post	N/A	907-373-8300	N/A

Landowner
See Table 9 for landowner contact information[4]

AGDC
Frank Richards, Sr. Vice President, Program Mgmt
Alaska Gasline Development Corporation

[4] In the event that the DNPP Route is selected, AGDC will update Table 9 with NPS landowner contact information.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Office Phone: 907-330-6352
Email: frichards@agdc.us

USACE
(insert name/contact of appropriate USACE rep here)

Alaska Office of History and Archaeology (SHPO)
Office Phone: 907-269-8700
Email: oha.permits@alaska.gov

State Archaeologist/Deputy SHPO
Office phone: 907-269-8700
Fax: 907-269-8908
Email: oha.permits@alaska.gov

Local Tribes and Tribes Likely to be Culturally Affiliated with the Discovery

See Table 10 to identify appropriate tribal contacts.

III. Determine Need for Forensic or Criminal Investigation

If the remains appear to be recent (less than 50 years old), the peace officer and Medical Examiner will determine whether or not the remains are of a forensic nature and/or subject to criminal investigation.

If the peace officer and Medical Examiner determine the remains are historic or archaeological in nature, a qualified professional physical anthropologist with experience in the analysis of human remains will examine them to determine racial identity. Analysis techniques will be non-invasive and non-destructive, and throughout analysis, the remains will be treated with respect and dignity. The physical anthropologist shall be afforded no more than 30 days to complete their analysis.

IV. Determine Need for Plan of Action and Consult on Treatment, Custody, and Disposition

If the remains or NAGPRA items are determined to be Native American and the discovery is located on federal land[5], the federal land managing agency will consult with known lineal descendants and Tribes likely to be culturally affiliated with the discovery, and determine the need for a Plan of Action for custody, disposition and treatment (including any removal or excavation) of the human remains or NAGPRA items. Consultation will follow regulations laid out in 42 CFR 10.5, and the Plan of Action will be prepared per regulations laid out in 42 CFR 10.4. Construction may resume when a written, binding Plan of Action is executed between the federal land managing agency and the affiliated Tribes and prescribed on-site activities have been completed.

If the remains or NAGPRA items are determined to be Native American and the discovery is located on non-federal land, the landowner with support from AGDC, will consult with the Alaska SHPO, USACE,

[5] If lands are selected by, but not conveyed to, an Alaska Native Corporation or group, such land is still owned by the federal government and considered "federal land."

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

and local and potentially affiliated Tribes regarding treatment and handling of the discovery. The procedures for treatment and handling of the discovery will be outlined in a binding Memorandum of Agreement (MOA). If the remains are to be removed or moved, the landowner, with support from AGDC will acquire the appropriate permit (disinterment or burial transit) from Health Analytics and Vital Records, prior to any exhumation or transport activity. Construction may resume when the MOA has been executed, and prescribed on-site activities completed.

If the remains are not Native American, and a determination has been made by the peace officer and Medical Examiner that a death investigation is not warranted, the landowner, with support from AGDC, will attempt to identify, locate, and inform descendants of the deceased. If the remains are to be removed or moved, the landowner, with support from AGDC, will acquire the appropriate permit (disinterment or burial transit) from Health Analytics and Vital Records, prior to any exhumation or transport activity. An MOA with descendants or other entities may be necessary. Construction may resume when the remains have been exhumed or otherwise reinterred.

Health Analytics and Vital Records

For questions regarding disinterment/transit/re-interment or burial transit permits, contact the Registration Help Line (Phone: 907-465-5423).

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

12. GENERAL MONITORING PROCEDURES

To avoid and minimize effects to historic properties, archaeological monitoring may be implemented when ground disturbing project activities need to occur in close proximity to known archaeological sites, or in areas where previous cultural resource investigation may not have occurred. Monitoring is defined as active observation of earth-moving or other work that could adversely affect historic properties within the APE. Monitoring activities, to be conducted by Qualified Archaeologists, shall include observation, data recording, photography, ancillary special studies, and production of a written report that meets professional archaeological standards.

The specific locations for archaeological monitoring will be identified and consulted on during the development of site treatment plans, and in the assessment of effect process (see Section 7). Specific monitoring plans will be developed for each set of regional project components and included in the RPCAs. However, the following general monitoring procedures will be adhered to during monitoring activities.

12.1 REGIONAL PROJECT COMPONENT MONITORING PLAN CONTENTS

For each RPCA, a monitoring plan will be completed. The RPCA monitoring plan will delineate the locations wherein construction must be monitored by a Qualified Archaeologist, the type of activities that will be monitored, how and when monitoring will occur (one monitor per earth moving machine for example), the type(s) of cultural material that may be encountered during construction in that area, and the specific stipulations and thresholds for stopping construction, protecting the resource, notification, consultation, evaluation and resuming work. The RPCA monitoring plans will be developed in consultation with Tribes and SHPO, and endeavor to involve Tribal liaisons in monitoring activities.

12.2 PRE-CONSTRUCTION MEETING

Archaeologist monitors shall attend the pre-construction meeting for the regional project component; the meeting shall be held prior to the commencement of ground-disturbing activity associated with construction of the regional project component. The pre-construction meeting shall also be attended by the Project Site Manager, crew supervisors, and contractors. The corresponding landowner and Tribal liaisons participating in the monitoring shall also be invited to attend. The Project Site Manager, in cooperation with the Archaeologist Monitor, will present the boundaries of the area to be monitored, and explain the monitoring procedures and stop work authorities to the meeting attendees.

12.3 PROFESSIONAL QUALIFICATIONS

Unless otherwise discussed in the RPCA monitoring plan, archaeologist monitors must meet the Secretary of the Interior's Professional Qualifications Standards for Archaeology (36 CFR Part 61) and have a minimum of 6 months archaeology experience in Alaska.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

12.4 CONTRACTOR TRAINING

The cultural resource awareness training for applicable contractors (see Section 8.2) shall include curriculum about what to expect during construction monitoring, and how to implement the stop work, protection measures, and notification procedures of a monitoring plan.

12.5 STOP WORK, NOTIFICATION, CONSULTATION, AND EVALUATION PROCEDURES

The Archaeologist Monitor will have the authority to temporarily halt construction with 100 feet of observed cultural resources. If cultural resources, are encountered during construction

I. Work must halt in the vicinity of the find; and

II. Unless otherwise directed in the RPCA monitoring plan, the Archaeologist Monitor will immediately implement the provisions of the Plan for the Inadvertent Discovery of Cultural Resources (see Section 10) and/or the Plan for the Inadvertent Discovery and Treatment of Human Remains (see Section 11).

III. Construction in the area of the discovery may resume upon successful completion of the evaluation procedures identified in the RPCA monitoring plan or upon successful completion of the consultation and evaluation procedures delineated in the Plan for the Inadvertent Discovery of Cultural Resources (see Section 10), and/or Plan for the Inadvertent Discovery and Treatment of Human Remains (see Section 12).

12.6 RECORD-KEEPING AND REPORTING

The RPCA monitoring plan will identify the process for daily and monthly record keeping of monitoring observations, including a format for tracking work stoppage (work stoppage log).

The results of monitoring for each RPCA will be documented in a report to the PA Parties, to be completed within 6 months of the completion of monitoring activities. AGDC will submit the report to the USACE for distribution to PA Parties. PA Parties will have 30 working days to review and provide comment. AGDC will address comments and revise the report within 30 working days of the closure of thecomment period, or as negotiated. If no comments are received within the 30 working day review period, the RPCA monitoring report will be considered complete.

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

13. REFERENCES

Adkins, Charles. 2001. Assessment of Archaeological, Historic and Paleontological Resources, F-93334, EA-CX-025-01-102, Kiewit Pacific Inc. Bureau of Land Management, Northern Field Office. Fairbanks, Alaska.

Adkins, Charles. 2000a. Assessment of Archaeological, Historic and Paleontological Resources, F-93655, EA-AK-993-02-003, DOT&PF, OMS 100-1.2, DOT 65-9-051-2. Bureau of Land Management, Northern Field Office. Fairbanks, Alaska.

Adkins, Charles. 2000b. Assessment of Archaeological, Historic and Paleontological Resources, F-93008, EA-AK-024-00-100, AK DOT/PF, Gravel Material Site. Bureau of Land Management, Northern Field Office. Fairbanks, Alaska.

Adkins, Charles. 2000c. Assessment of Archaeological, Historic and Paleontological Resources, F-93009, EA-AK-024-00-100, AK DOT&PF. Bureau of Land Management, Northern Field Office. Fairbanks, Alaska.

Adkins, Charles. 2000d. Assessment of Archaeological, Historic and Paleontological Resources, F-93010, EA-AK-024-00-100, AK DOT&PF. Bureau of Land Management, Northern Field Office. Fairbanks, Alaska.

Adkins, Charles. 2000e. Assessment of Archaeological, Historic and Paleontological Resources, F-87906. Bureau of Land Management, Dalton Area Management Unit. Fairbanks, Alaska.

Adkins, Charles. 2000f. Assessment of Archaeological, Historic and Paleontological Resources, F-92997, EA-AK-024-0-100, AK DOT&PF. Bureau of Land Management, Northern Field Office. Fairbanks, Alaska.

Adkins, Charles. 2000g. Assessment of Archaeological, Historic and Paleontological Resources, F-93001, EA-AK-024-00-10, AK DOT&PF. Bureau of Land Management, Northern Field Office, Fairbanks, Alaska.

Aigner, Jean S. and Brian L. Gannon. 1981. Archaeological Survey in Alaska: Final Report on the 1981 Survey along the Northwest Alaska Pipeline Company Natural Gas Pipeline Corridor from Prudhoe Bay, Alaska to Delta Junction. University of Alaska, Fairbanks. Anthropology Program and Institute of Arctic Biology, Fairbanks, Alaska.

Alaska Department of Fish and Game. 1988. *Susitna Flats State Game Refuge Management Plan*. Divisions of Habitat and Game, Alaska Department of Fish and Game, Anchorage.

Alaska Department of Natural Resources (ADNR). 1999. Independence Mine State Historical Park. Electronic document, http://dnr.alaska.gov/parks/units/indmine.htm Accessed January 23, 2015.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

DRAFT

ADNR. 2004. The Historical Resource and Recovery Growth in Developed Fields on the Arctic Slope of Alaska. Alaska Department of Natural Resources, Division of Oil and Gas, Anchorage.

Alaska Department of Transportation & Public Facilities. 2012 .Alaska Highway Systems Roads Programmatic Agreement Second Amendment.

Alaska Gasline Development Corporation (AGDC). 2018. 2018 Phase II Cultural Resource Report for Alaska LNG, DNPP Alt 2: Survey, Site Documentation, and Site Evaluation. September 7. AKLNG-6010-CRM-RTA-DOC-00002.

AGDC. 2016. Alaska Stand Alone Pipeline (ASAP) Environmental Evaluation Document. Jan 22. 001-C-22-GRD-W-0055.

AGDC. 2015a. Joint Application for Permit (404 / 10). December 29, 2015. Submitted to the USACE in January 2016.

AGDC. 2015b. Design Basis – Pipeline. Alaska Stand Alone Pipeline Project. Sept 17, 2015. 002-C-27-BDC-YYY-0001.

AGDC. 2015c. Cultural Resources Data Gap Analysis for Off Right-of-Way Project Components. June 2015. 026-22-RTA-DDD-0001.

AGDC. 2015d. Cultural Resources Report for the 2014 Field Season. April 30, 2015. 001-C-22-RTA-DDD-0036.

AGDC. 2014a. Alaska Stand Alone Gas Pipeline Project/ASAP Cultural Resource Report for the 2013 Field Season.

AGDC. 2014b. Alaska Stand Alone Gas Pipeline Project/ASAP Cultural Resource Report for the 2013 Field Season, north of Livengood.

AGDC. 2014c. Alaska Stand Alone Gas Pipeline Project/ASAP 2014 Cultural Resources Data Gap. 003-14-914-001.

AGDC. 2013. Alaska Stand Alone Gas Pipeline Project/ASAP Cultural Resources Data Gap Analysis. 003-C-22-R-D-0013-A.

AGDC. 2012. Alaska Stand Alone Gas Pipeline Project/ASAP Cultural Resource Report for the 2010 and 2011 Field Seasons.

Alaska LNG. 2016. Docket No. PF14-21-00, Draft Resource Report No.4: Cultural Resources. USAI-PE-SRREG-00-000004-000.

Alaska Railroad Corporation. 2011 Alaska Railroad History. Electronic document, http://www.alaskarailroad.com/corporate/AboutARRC/ARRCHistory/tabid/453/Default.aspx. Accessed February 24, 2015.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

DRAFT

Allan, Chris. 2013. *Arctic Citadel: A History of Exploration in the Brooks Range Region of Northern Alaska*. United States Department of the Interior, National Park Service, Washington.

Anderson, Douglas D. 2008. Northern Archaic Tradition Forty Years Later. *Arctic Anthropology* 45:169-178.

Anderson, Douglas D. 1970. Microblade Traditions in Northwestern Alaska. *Arctic Anthropology* 7:2-16.

Anderson, Douglas D. 1968. A Stone Age Campsite at the Gateway to America. *Scientific American* 218:24-33.

Bacon, Glenn, Charles Holmes, and Charles Mobley. 1981. Anchorage-Fairbanks Transmission Intertie, Alaska Power Authority, A Preliminary Report of the 1981 Cultural Resource Survey. Report on file with the Alaska Office of History and Archaeology.

Banet, Arthur C. 1991. *Oil and Gas Development on Alaska's North Slope: Past Results and Future Prospects*. BLM-Alaska Open File Report 34. United States Department of the Interior, Bureau of Land Management, Anchorage.

Barnes, Farrell F. 1967. *Coal Resources of Alaska: Contributions to Economic Geology*. Geological Survey Bulletin 1242-B. United States Department of the Interior, US Geological Survey, Washington.

Bever, Michael R. 2001. Stone Tool Technology and the Mesa Complex: Developing a Framework of Alaskan Paleoindian Prehistory. *Arctic Anthropology* 38:98-118.

Black, Lydia T. 2004. *Russians in Alaska 1732 – 1867*. University of Alaska Press, Fairbanks.

Bockstoce, John. 1978. History of Commercial Whaling in Arctic Alaska. *Alaska Geographic*, Vol. 5, Issue 4, pp. 18-25. Alaska Geographic Society, Anchorage.

Bowers, Peter M. 1983. A Status Report on the Gallagher Flint Station National Historic Landmark. Bureau of Land Management, Fairbanks.

Brown, Charles Michael. 1975. *The Alaska Railroad: Probing the Interior*. Office of Statewide Cultural Programs, Alaska Division of Parks, Anchorage.

Brown, William E. 2001. Thoughts on the Arctic Refuge's Future. Electronic Document http//www.georgewright.org/182box65.pdf. Accessed on June 23, 2018.

Brown, William E. 1979. Nuiqsut Paisanich: Nuiqsut Heritage A Cultural Plan. Prepared for the North Slope Borough Planning Commission on History and Culture, North Slope Borough Planning commission and the Native Village of Nuiqsut.

Bureau of Land Management (BLM). 2018. Iditarod National Historic Trail Electronic Document, http://www.blm.gov/programs/national-conservation-lands/national-scenic-and-historic-trails/iditarod. Accessed July 2, 2018.

BLM. 2012. Letter Report from Marko Radonich, AGDC to Earle Williams, BLM, dated 10/12/2012.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

BLM. 1986. The Iditarod National Historic Trail Seward to Nome Route: A Comprehensive Management Plan. U.S. Department of the Interior Bureau of Land Management, Anchorage.

Calkin, Parker E., Leah A. Haworth, and James M. Ellis. 1986. Holocene Glacier Fluctuations in the Brooks Range, Alaska. In *Glaciation In Alaska: Extended Abstracts from a Workshop,* edited by Robert M. Thorson and Thomas D. Hamilton, pp. 11-14. Alaskan Quaternary Center, University of Alaska Fairbanks, Fairbanks.

Capps, Stephen. 1911. *Gold Placers of the Yentna District*. USGS Survey Bulletin 520, pp. 174-200.

Carter, L. David. 1986. Cenozoic Glacial and Glaciomarine Deposits of the Central North Slope, Alaska". *In Glaciation In Alaska: Extended Abstracts from a Workshop*, edited by Robert M. Thorson and Thomas D. Hamilton, pp. 17-21. Alaskan Quaternary Center, University of Alaska Fairbanks, Fairbanks.

Coates, Peter A. 1991. *The Trans-Alaska Pipeline Controversy*. University of Alaska Press, Anchorage.

Chumis/Wooley, C.B. 1999. NPS National Register Of Historic Places Registration Form Prudhoe Bay Oil Field Discovery Well Site. Prepared by Wooley, C.B. Report on file with the Alaska Office of History and Archaeology.

Cobb, Edward H. 1973. Placer Deposits of Alaska. Geological Survey Bulletin 1374, An Inventory of the Placer Mines and Prospects of Alaska, their History, and Geologic Setting. United States Geological Survey, Washington.

Cook, John O. 1996. Healy Lake. *In American Beginnings: the Prehistory and Paleoecology of Beringia*, edited by F.H. West, pp. 323-327. University of Chicago Press, Chicago.

Cook, J.P. Final Report of the Archaeological Survey and Excavations Along the Alyeska Pipeline Service Company Pipeline Route. Report on file with the Alaska Office of History and Archaeology.

Cook, John P., ed. 1977. *Archaeological Investigations along the Trans-Alaska Pipeline*. Fairbanks, AK: University of Alaska, Institute of Arctic Biology.

Cultural Resource Consultants, LLC. 2005. *Colorado to Broad Pass Cultural Resources Survey*. Report prepared for the Alaska Railroad Corporation. Report on file with the Alaska Office of History and Archaeology.

DePew, Alan D. 2001. Archaeological Survey of Six Proposed Material Sites and Three Waysides, Dalton Highway Milepost 335-362 Rehabilitation Project No. 67020, Located near Deadhorse, Alaska. Office of History and Archaeology Report Number 77. Report on file with the Alaska Office of History and Archaeology.

DePew, Alan D., and Catherine L. Pendleton. 2003. Archaeological Survey of Proposed Improvements to the Parks Highway, MP 240-262, Alaska Department of Transportation and

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Public Facilities Project No. 61275. Office of History and Archaeology, Alaska Department of Natural Resources, Anchorage.

Dixon, James E. 1975. The Gallagher Flint Station, An Early Man Site on the North Slope, Arctic Alaska, and its Role in Relation to the Bering Land Bridge. *Arctic Anthropology,* 12:68-75.

Dixon, James E. 1993. Golden Valley Electric Association, Ft. Knox Transmission Line Cultural Resources Survey. Northern Land Use Research, Inc., Fairbanks.

Department of Transportation and Public Facilities. 2012. Alaska Highway Systems Roads Programmatic Agreement Second Amendment. Online at: http://www.dot.state.ak.us/stwddes/desenviron/resources/historicproperties.shtml

DePew, Alan D. 2001. Archaeological Survey of Six Proposed Material Sites and Three Waysides, Dalton Highway Milepost 335-362 Rehabilitation Project No. 67020, Located near Deadhorse, Alaska. Office of History and Archaeology Report Number 77. Report on file with the Alaska Office of History and Archaeology.

Edwards, M.E., P.M. Anderson, L.B. Brubaker, T.A. Ager, A.A. Andreev, N.H. Bigelow, L.C. Cwynar, W.R. Eisner, S.P. Harrison, F.S. Hu, D. Jolly, A.V. Lozhkin, G.M. MacDonald, C.J. Mock, J.C. Ritchie, A.V. Sher, R.W. Spear, J.W. Williams, and G. Yu. 2002. Pollen-based biomes for Beringia 18,000, 6,000, and 0 14C yr BP. *Journal of Biogeography* 27:521-554.

Esdale, Julie A. 2008. A Current Synthesis of the Northern Archaic. *Arctic Anthropology* 45:3-38.

Farmen, Kris. 2008. *Historical Assessment and Determination of Eligibility for the Abandoned Usibelli Coal Wash Plant, Healy, Alaska, HEA-410*. Office of History and Archaeology Report Number 127. State of Alaska Office of History and Archaeology, Anchorage.

Ferguson, Daryl E. 1997. Gallagher Flint Station, Locality 1: A Reappraisal of a proposed Late Pleistocene Site in the Sagavanirktok River Valley, Arctic Alaska. Thesis completed in partial fulfillment of M.A, University of Alaska Fairbanks.

Fraker, Mark A. 1984. *Balaena Mysticetus: Whales, Oil, and Whaling in the Arctic*. Sohio Alaska Petroleum Company, Anchorage.

Friends of the Tanana Valley Railroad. n.d. Tanana Valley Railroad. Electronic document, http://www.fairnet.org/agencies/tvrr/history.html. Accessed February 24, 2015.

Gerlach, S. Craig, Potter, Ben A., and Peter Bower. 2001. Cultural Resource Survey of OMS-119-04, Dalton Highway Milepost 305.5, North Slope Alaska. Report prepared for Alyeska Pipeline Service Company and Chumis Cultural Resources Services. Report on file with the Alaska Office of History and Archaeology, Anchorage.

Goebel, Ted, Michael R. Waters, and Margarita Dikova. 2003. The Archaeology of Ushki Lake, Kamchatka, and the Pleistocene Peopling of the Americas. *Science* 301:501-505.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Hardesty, D. and M. Blanchard. 2004. Preliminary Report on the 2004 University of Nevada, Reno Historical Archaeology Field School. Report on File at the Office History and Archaeology, Anchorage, Alaska.

Hamilton, Thomas D. 1975. *Geologic Road Log, Alyeska Haul Road, Alaska, June-August 1975*. Open File Report 79-227, Department of the Interior, United States Geologic Survey, Menlo Park.

Hawley, Charles. 2003. *Wesley Earl Dunkle, Alaska's Flying Miner*. University Press of Colorado, Boulder.

Higgs, Andrew S., and Molly Proue. 2010. Cultural Resource Survey along a Proposed South Mack Drive Extension Corridor, Wasilla, Alaska. Northern Land Use Research, Inc. Anchorage.

Holmes, Charles E. 2008. The Taiga Period: Holocene Archaeology of the Northern Boreal Forrest, Alaska. *Alaska Journal of Anthropology* 6:69-81.

Holmes, Charles E. 2001. Tanana River Valley Archaeology Circa 14,000 To 9000 B.P. *Arctic Anthropology* 38:154-170.

Irving, William N. 1964. *Punyik Point and the Arctic Small Tool Tradition*. Ph.D. dissertation, University of Wisconsin, Madison.

Kari, James, and James Fall (editors). 2003 . *Shem Pete's Alaska*. University of Alaska Press, Fairbanks.

Karlstrom, Thor N. V. 1953. Upper Cook Inlet Region, Alaska. In *Multiple Glaciation In Alaska: A Progress Report,* edited by Troy Pewe, pp. 3-4 Geological Survey Circular 289. United States Department of the Interior, Geological Survey, Washington, D.C.

Krebs, Paula V., Kenneson G. Dean and Wayne S. Lonn. 1978. *Geomorphology and Vegetation of the Lower Susitna River Basin*. Final Report prepared for Soil Conservation Service, United States Department of Agriculture. Geophysical Institute, University of Alaska, Fairbanks Alaska.

Kriz, P.J. 2003. *Cultural Resources Survey Of A Proposed Railroad Re-Route In Nenana, Alaska*. Written For URS Corporation. ADP File 3130-2R ARRC and 3130-1R FTA. Report on file with the Alaska Office of History and Archaeology.

Kunz, Michael, Michael Bever, and Constance Adkins. 2003. *The Mesa Site: Paleoindians above the Arctic Circle*. BLM Alaska Open File Report 86, U.S. Department of the Interior, Bureau of Land Management, Anchorage.

Kurtak, Joseph M., Robert F. Klieeforth, John M. Clark, and Elizabeth A. Maclean. 2002. Mineral Investigations in the Koyukuk Mining District, Northern Alaska: Volume I – Introductory text and summaries of mines, prospects, and mineral occurrences in the Bettles, Chandalar, Chandler Lake, and Hughes Quadrangles. BLM-Alaska Technical Report 50, U.S. Department of Interior, Bureau of Land Management, Anchorage.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

L'Ecuyer, Rosalie E. 1997. Prospecting and Mining Activity in the Rampart, Manley Hot Springs, and Fort Gibbon Mining Districts of Alaska, 1894 to the Present Era. U.S. Department of Interior, Bureau of Land Management, Anchorage.

Maddren, A. G. 1913. *The Koyukuk-Chandalar Region Alaska*. United States Geological Survey Bulletin 532, United States Geological Survey, Washington.

Mason, Owen K. and Bigelow, Nancy H. 2008. The Crucible of Early to Mid-Holocene Climate in Northern Alaska: Does Northern Archaic Represent the People of the Spreading Forest? *Arctic Anthropology* 45:39-70.

Matanuska-Susitna Borough (MSB). 1995. *Survey and Inventory of Chief Wasilla House Site*. Cultural Resources Division, Matanuska-Susitna Borough, Palmer.

MSB. 1990. *Evaluation of Historic Sites Talkeetna, Alaska*. Cultural Resources Division, Matanuska-Susitna Borough, Palmer.

Matheson, Janet and F. Bruce Haldeman. 1981. *Historic Resources in the Fairbanks North Star Borough*. Prepared for Fairbanks North Star Borough Planning Department, Fairbanks.

Mead and Hunt Inc., and Cultural Resource Consultants, LLC. 2014. *Alaska Roads Historic Overview: Applied Historic Context of Alaska's Roads*. Mead and Hunt Inc. (meadhunt.com), and Cultural Resource Consultants LLC, Anchorage.

Mertie, J.B. 1934. Mineral Deposits of the Rampart and Hot Springs Districts Alaska. United States Geological Survey Bulletin No. 844. Government Printing Office, Washington, D.C.

Mills, Robin Owen. 2003. BLM Assessment of Archaeological and Historic Resources, Serial # N/A, CX AK-025-04-002, Alaska Dept. Of Transportation, Written By Mills, R.O. Report on file with the Alaska Office of History and Archaeology.

Morton, Susan D. 1985. National Register of Historic Places Inventory-Nomination Form for Gallagher Flint Station (PSM-050).

Murray, A. H. 1910. *Journal of the Yukon, 1847-48*. Edited by L. J. Burpee, Publication of Canada Archives No. 4, Government Printing Bureau, Ottawa.

National Park Service (NPS). n.d. *Yukon-Charley Rivers Mining History and Techniques*. U.S. Department of the Interior, National Park Service, Yukon-Charley Rivers National Preserve.

NPS. 2012a. Archaeology of the Tundra and Arctic Alaska. Electronic document, http://www.nps.gov/akso/akarc/arctic.cfm. Accessed March 12, 2015.

NPS. 2012b. The Hickel Highway: An Early Road Across Arctic Alaska. Electronic document, http://www.nps.gov/gaar/learn/historyculture/upload/hickelhighway2012-2.pdf. Accessed on February 24, 2015. Gates of the Arctic National Park and Preserve, Coldfoot.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Neely, Ronald J. Jr. 2001. *Early Mining History: Fort Wainwright and Fort Greely, Alaska*. Center for Ecological Management of Military Lands, Colorado State University, Fort Collins.

Northern Land Use Research/NHG (NLUR/NHG). n.d. Phase I Cultural Resources Overview and Survey Report for the Alaska Pipeline Project, Prudhoe Bay to the Alaska, United States-Canada Border, 2010-2011, USAG-UR-SRZZZ-000030. Anchorage, AK.

Office of History and Archaeology (OHA). 2018. Alaska Heritage Resources Survey Database. Accessed throughout 2017 and 2018.

OHA. 2014. Alaska Heritage Resources Survey: What types of cultural resources get and AHRS number? http://dnr.alaska.gov/parks/oha/ahrs/ahrs.htm. Accessed February 24, 2015.

Page, Robert R., Cathy A. Gilbert, and Susan A. Dolan. 1998. A Guide to Cultural Landscape Reports: Contents, Process, and Techniques. Electronic Document. https://archive.org/details/AGuideToCulturalLandscapeReports. Accessed June 23, 2018.

Parker, Audrey E. 2003. *Livengood: The Last Stampede*. Hats Off Publishing Company, Tucson.

Pearson, Georges A. and W.R. Powers. 2001. The Campus Site Re-Excavation: New Efforts to Unravel Its Ancient and Recent Past. *Arctic Anthropology* 38:100-119.

Pewe, Troy L. 1952. *Geomorphology of the Fairbanks Area, Alaska*. Ph. D. dissertation, Stanford University, University Microfilms, Ann Arbor.

Pewe, Troy L. 1975. *Quaternary Geology of Alaska: Geological Survey Professional Paper 835*. United States Geological Survey, United States Government Printing Office, Washington.

Pewe, Troy Lewis and R. D. Reger. 1983. Guidebook to Permafrost and Quaternary Geology along the Richardson and Glenn Highways between Fairbanks and Anchorage, Alaska: Fourth International Conference on Permafrost, July 18-22, 1983, University of Alaska Fairbanks. Division of Geological and Geophysical Surveys, Department of Natural Resources, State of Alaska, Fairbanks.

Pipkin, Mark E. 2006. 2005 Archaeological Survey of the Proposed Alaska Railroad Siding Extensions at North Nenana, Dundar, and Saulich. Report prepared for ECI/Hyer, Anchorage.

Potter, Ben A. 2008. Radiocarbon Chronology of Central Alaska: Technological Continuity and Economic Change. *Radiocarbon* 50:181-204.

Potter and Bowers. 2004. Cultural Resources Survey Of Proposed Electric Distribution Lines, Healy To Rex Bridge, Alaska, Supplement: 2004 Survey, Written For Golden Valley Electric. Report on file with the Alaska Office of History and Archaeology.

Potter, B. A., P.M. Bowers, S.C. Gerlach. O.K. Mason, M. Ganley, and S.S. Legge. 2001. Site Location Model and Survey Strategy for Cultural Resources in the Alaska Gas Producers Pipeline Project

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Area. Report Prepared for Alaska Gas Producers Pipeline Team by Northern Land Use Research, Inc., and Chumis Cultural Resource Services, Anchorage.

Porter, Richard. 2017. Letter to Mary Romero, Project Manager USACE Alaska District Regulatory Division, dated September 21, 2017.

Powers, William R., and John F. Hoffecker. 1989. Late Pleistocene Settlement in the Nenana Valley, Central Alaska. *American Antiquity* 54:263-287.

Proue, Molly, Jill Baxter-McIntosh, T. Weber Greiser, Andy Higgs, Hayley Brown, Patrick Hall, Tim King, and James Gallison. 2016. Alaska LNG 2015 Phase I Cultural Resource Report: Archaeological Survey and Site Documentation. USAI-P1-SRZZZ-00-000008-000. Report prepared for AECOM by Northern Land Use Research Alaska, LLC, Fairbanks.

Ray, Richard. 1954. Geology and Ore Deposits of the Willow Creek Mining District, Alaska. United States Geological Survey Bulletin 1004. United States Government Printing Office, Washington D.C.

Reanier, Richard E. 2001. Archaeological and cultural resources reconnaissance in the Phillips Alaska Exploration Area, National Petroleum Reserve, Alaska, for the year 2000. Prepared by Reanier and Associates for PHILLIPS Alaska, Inc.

Reanier, Richard E. and Michael L. Kunz. 2010. Final Report for the Bureau of Land Management and ConocoPhillips, Alaska, Inc. Joint Cultural Resources Reconnaissance National Petroleum Reserve, Alaska for the Years 2008 and 2009. Reanier and Associates, Inc., Seattle, and the Bureau of Land Management, Arctic Field Office, Anchorage.

Reger, Richard D. 2003. Upper Cook Inlet Prehistory: The Archaeological Evidence. In, *Shem Pete's Alaska The Territory of the Upper Cook Inlet Dena'ina*, edited by James Kari and James A Fall, pp. 15 - 16. University of Alaska Press, Fairbanks.

Reger, Richard D. 1981. A Model for Culture History in Upper Cook Inlet, Alaska. Unpublished Ph. D. Dissertation, Department of Anthropology, Washington State University.

Resources Inventory Committee (RIC). 2001. *Culturally Modified Trees of British Columbia: A Handbook for the Identification and Recording of Culturally Modified Trees*. Report prepared for the Resources Inventory Committee by Archaeology Branch, B.C. Ministry of Small Business, Tourism and Culture.

Reuther, J.D., P.J. Kriz, B.A. Potter, P.M. Bowers. 2003. Cultural Resources Survey and Evaluation of Tunnels and Proposed Stabilization Areas along the Alaska Railroad, Healy Canyon, Alaska. Prepared For Alaska Railroad Co., And URS Corp., ADP FILES 3130-1R FRA, 3330-6 Moody Tunnel, Healy's Lucky Strike, HEA-329, 3330-6N Tunnel 9, Garner Tunnel, And HEA-328. Report on file with the Alaska Office of History and Archaeology.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Rutledge, F. A. 1948. *Investigation of the W. E. Dunkle Coal Mine Costello Creek, Chultina District, Alaska*. Report of Investigations 4360, United States Department of the Interior, Bureau of Mines, Washington D.C.

Saltonstall, Patrick G., Amy F. Steffian, and Mark A. Rusk. 2012. *The Penguq Site in Alaska Peninsula Prehistory*. An Occasional Papers Publication: Number 4. Bureau of Indian Affairs, Alaska Region, Branch of Regional Archaeology.

Sanders, Robert B. 1980. Coal Resources of Alaska. In, MIRL Report Number 50: Focus on Alaska's Coal '80 Proceedings of the Conference held at the University of Alaska, Fairbanks, October 21-23, 1980, edited by P. Dharma Rao and Ernest N. Wolff, pp. 11 – 31. Diamond Shamrock Corporation, Anchorage.

Saunders, Robert E. 1958. Notes on the Mineral Risources of Livengood Creek, Hess Creek, and their Tributaries. Territorial Department of Mines Report.

Schneider, William H. 2013. *Hewitt Lake (Tiq'atl'ena Bena) Archaeological Investigations*. University of Alaska, Anchorage.

Schoenberg, Kenneth M. 1995. The Post-Paleoarctic Interval in the Central Brooks Range. *Arctic Anthropology* 32:51-56.

Schmoll, H. R. and L. A. Yehle. 1986. Pleistocene glaciation of the upper Cook Inlet basin. In *Glaciation in Alaska: The Geologic Record,* Edited by Thomas D. Hamilton, Katherine M. Reed and Robert M. Thorson, pp. 193-218, Alaska Geological Society, Anchorage.

Seager-Boss, Fran, and Lawrence E. Roberts. 1991. *Major Coal Towns of the Matanuska Valley: A Pictorial History*. Matanuska –Susitna Borough, Palmer.

Shimkin, D. B. 1951. *Fort Yukon, Alaska: An Essay in Human Ecology*, I. Alaska Development Board, Juneau.

Simeone, William E. 1985. *A History of Alaskan Athapaskans*. Alaska Pacific University, Anchorage.

Smith, Howard L. 2004. Assessment of Archaeological and Historic Resources, CX-AK-025-057, Alaska DOT-PF. Northern Field Office, Bureau of Land Management. Report on file at the Alaska Office of History and Archaeology.

Spencer, Robert F. 1984. North Alaska Eskimo: Introduction. In *Arctic*, edited by David Damas, pp. 278 – 284. Handbook of North American Indians, Vol. 5, William C. Sturtevant, general editor. Smithsonian Institution, Washington D.C.

Stephen R. Braund and Associates (SRB&A). 2010. *Port MacKenzie Rail Extension Project: 2009 Cultural Resources Annual Report*. Submitted to ICF International July 2010. Anchorage, Alaska.

SRB&A. 2009. *Port MacKenzie Rail Extension Project Report of 2008 Cultural Resources* Fieldwork. Prepared by Stephen R. Braund & Associates, Anchorage, Alaska. July 2009 (Updated April 2010).

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Thompson, Daniel R. 2013a. *Cultural Resources Investigation of the Dalton Highway Milepost (MP) 209-235, DOT Project 60919*. Office of History and Archaeology, Alaska Department of Natural Resources. Report on file with the Alaska Office of History and Archaeology.

Thompson, Daniel R. 2013b. *Cultural Resources Investigation of the Dalton Highway Milepost (MP) 209 Dietrich Camp Material Site, DOT Project 60919*. Office of History and Archaeology, Alaska Department of Natural Resources. Report on file with the Alaska Office of History and Archaeology.

Thompson, Daniel. 2011. Cultural Resource Investigation of the Parks Highway Milepost 163-305 Passing Lanes: DOT&PF Project IM-000S(716)/63515. Office of History and Archaeology Short Report 11-02, Anchorage.

Thompson, Daniel R. 2002. Cultural Resources Reconnaissance of Two Proposed Material Sites at MP 180.3 and MP 195.2 of the James Dalton Highway: Marion and Nugget Creeks. (Alaska Department of Transportation and Public Facilities Project No. 61214). OHA Short Report 2002-07. Report on file with the Alaska Office of History and Archaeology.

United States Army Corps of Engineers (USACE). 2018. Alaska Stand Alone Pipeline Project. Final Supplemental Environmental Impact Statement. US Army Corps of Engineers, Alaska District.

Usibelli Coal Mine, Inc. 2013. History: The Usibelli Story. Electronic document, http://www.usibelli.com/History-Story.php. Accessed February 20, 2015.

Wahrhaftig, Clyde. 1965. *Physiogeographic Divisions of Alaska*. United States Geological Survey Professional Paper 482. United States Government Printing Office, Washington.

Wahrhaftig, Clyde. 1958. *Quaternary and Engineering Geology in the Central Part of the Alaska Range*. United States Geological Survey Professional Paper 293. United States Government Printing Office, Washington.

Walker, Marilyn, Donald A. Walker, and Kaye R. Everett. 1989. *Wetland soils and vegetation, Arctic Foothills, Alaska*. Biological Report 89, United States Department of Interior, Fish and Wildlife Service, Research and Development, Washington D.C.

West, F.H. 1981. *Archaeology of Beringia*. Columbia University Press, New York, New York.

Williams and Ream. 2005. *Cultural Resources Survey of Proposed Re-Alignment Sections along the Alaska Railroad, Healy Canyon, Alaska*. Written For AK. Railroad Co., ADP 3130-1R FRA, 3130-2R AK RRC, 3330-6 Nenana River Gorge Site. Report on file with the Alaska Office of History and Archaeology.

Wilson, Aaron K., and Jeffery T. Rasic. 2008. Northern Archaic Settlement and Subsistence Patterns at Agiak Lake, Brooks Range, Alaska. *Arctic Anthropology* 45:128-145.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Wygal, Brian T. and Ted Goebel. 2012. Early Prehistoric Archaeology of the Middle Susitna Valley, Alaska. *Arctic Anthropology* 49:45-67.

Yarborough, Michael R. 2005. *Colorado to Broad Pass Cultural Resources Survey*. Written For AK Railroad Corp., ADP File 3130-1R FTA, 3130-2R ARRC. Report on file with the Alaska Office of History and Archaeology.

Yarborough, Michael R. 2001. *Archaeological Survey of Ten Installations of the 611th Air Support Group, Alaska*. Report submitted to the US Air Force, Anchorage, AK. Argonne National Laboratory, Lemont.

Yeend, Warren E. 1996. *Gold Placers of the Historical Fortymile River region, Alaska*. U.S. Geological Survey Bulletin 2125, Department of the Interior, United States Geological Survey, Washington D.C.

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

14. ATTACHMENTS

Attachment A: Known Sites and Associated Start of Construction

Attachment B: Areas of Potential Effect and Areas Surveyed Mapbook

Attachment C: Previous Survey Investigations in the APE

Attachment D: AHRS Sites within the APE

Attachment E: AHRS Site Location Mapbook

Attachment F: Environmental and Cultural Overview

Attachment G: Annual Report and Progress Report Templates

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

This page intentionally left blank.

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

ATTACHMENT A: KNOWN SITES AND ASSOCIATED START OF CONSTRUCTION

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

ATTACHMENT B: AREAS OF POTENTIAL EFFECT AND AREAS SURVEYED MAPBOOK

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

ATTACHMENT C: PREVIOUS SURVEY INVESTIGATIONS IN THE APE

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

MTRS	Survey Type	Report Title	Report Author	Report Date
F31N10W17	Level II - Reconnaissance Survey	AHRS SITE FORMS, CHN-034. ADP FILE 3130-1R BLM.	BLM Arctic District Field Notes	n.d.
Numerous	None	Fairbanks District Office's Annual Report for 2014 pursuant to BLM protocol in Alaska	BLM/La Marr, T.	2015
F002S006W28, F002S006W36	Level II - Reconnaissance Survey	United States Department of Agriculture Request for SHPO Section 106 Review, Toghotthele Corporation Forest Stand Improvement USDA Conservation Stewardship Program	NRCS/Denniston, D.	2015
U008N014E05, U008N014E11, U008N014E14, U008N014E16, U008N014E17, U008N014E18, U008N014E19, U008N014E20, U008N014E22, U008N014E23, U008N014E26, U008N014E35	Level II - Reconnaissance Survey	Kad River 3D Seismic Survey	REANIER & ASSOC/Reanier, R.	2014
U008N014E01, U008N014E02, U009N014E34, U009N014E35	Level IIC - Pedestrian	Dalton Highway MP 362-414 Reconstruction DP-065-7(3)/61366	CRC/Meitl, S., Yarborough, M., and A. Morrison	2014
S020N005W35	Level II - Reconnaissance Survey	There Be Spirits Here. TYO-309, A Dena'ina Village Along the Lower Willow Creek (Nubendaltuntnu), Alaska. Cultural Resource Evaluators 2014	CRE/Stone, D.E.	2014
None Listed	None	BLM Annual Report for 2013, Fairbanks District Office	BLM	2014
Numerous	Level II - Reconnaissance Survey	Survey Report for Thirteen Sites Associated with the Terra-Yukon Project	NLURA/Blanchard , M., Russell, A.	2014
F35N10W04,11,14, 23, 24	Level II - Reconnaissance Survey	Cultural Resources Investigation of the Dalton Highway Milepost (MP) 209 Dietrich Camp Material Site, DOT&PF Project 60919 (OHA Short Report 2013-05)	Thompson, D.	2014
F36N10W04, F36N10W28	Level III - Intensive survey	Cultural Resources Investigation of the Dalton Highway Milepost (MP) 226 Material Site, DOT&PF Project 60919 (OHA Short Report 2013-09)	OHA/Thompson, D.	2014
F35N10W09, F35N10W16	Level III - Intensive survey	Cultural Resources Investigation of the Dalton Highway Milepost (MP) 223 Material Site [MS-65-9-055-2] DOT&PF Project 60919 (OHA Short Report 2013-07)	OHA/Thompson, D.	2014
Numerous	Level II - Reconnaissance Survey	2012 Cultural Resources Survey Report for the Tower Hill Mines Livengood Project. NLURA, Fairbanks.	NLURA/Molly Proue, Andrew Higgs, Hayley Brown, Sarah McGowan	2014

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

MTRS	Survey Type	Report Title	Report Author	Report Date
Numerous	Level II - Reconnaissance Survey	Alaska LNG, 2013 Phase I Cultural Resource Report: Archaeological Survey and Site Documentation, USAKE-UR-SRZZZ-00-0021	NLURA/Greiser, Proue, King, Higgs, Argo, Neely, Kelly, and Gray	2013
U016S011E09, U016S011E10	Level III - Intensive survey	Cultural Resources Investigation of the Dalton Highway Milepost (MP) 239 Chandalar Material Site, DOT&PF Project 60919 (OHA Short Report 2013-10)	OHA/Thompson, D.	2013
F001N001W31, F001N002W36, F001S001W06, F001S002W01	Level IIC - Pedestrian	Letter Report RE: Preliminary Cultural Resources Evaluation of ADOT&PF Yankovich Miller Hill Multi-Use Path Project (2009) Written By UAF/Potter, B.A., Submitted by ADOT&PF 12/2/2013, File No.: 3130-2R ADOT&PF	UAF/Potter, B.A.	2013
Numerous	Level IIC - Pedestrian	2012 Cultural Resources Survey Report Foothills West Transportation Access Project, Volume(s) I and II, DOT&PF Project No. 62210	SRB&A	2013
Numerous	Level II - Reconnaissance Survey	2011 and 2012 Cultural Resources Survey for the Tower Hill Mines Livengood Tieline Project. NLUR Fairbanks	Proue, M., Brown, H.E., McGowan, S., Higgs, A.	2013
F13N11W25	Level II - Reconnaissance Survey	BLM FY 2012 Annual Report, Fairbanks Field Office. Serial Number FF092992. NEPA Number DOI-BLM-AK-03000-2011-00032-CX. BLM report pp. 188	BLM/Hartmann, S.	2013
Numerous	Level II - Reconnaissance Survey	Cultural Resources Investigation of the Dalton Highway Milepost (MP) 209-235, DOT Project 60919	Thompson, D.	2013
F35N10W04, F35N10W28, 33	Level III - Intensive survey	Cultural Resources Investigation of the Dalton Highway Milepost (MP) 219 Realignments, DOT&PF Project 60919 (OHA Short Report 2013-06)	OHA/Thompson, D.	2013
Numerous	Level II - Reconnaissance Survey	Letter Report RE: Nunivak No. 2 Exploration Project 2013 11/04/2012 Written By REANIER AND ASSOC/Reanier, R.E. File No.: 3130-1R COE	REANIER & ASSOC/Reanier, R.E.	2012
Numerous	Level II - Reconnaissance Survey	Port MacKenzie Rail Extension Project 2012 Survey Report, Segments 3 and 4	HDR/PMRE WORKING GROUP	2012
Numerous	Level IIC - Pedestrian	Follow Up Cultural Resource Study of the Dalton Highway MP 197-209, Dalton Highway 175-209 (IM-DP-065-4(8)) 61214 ADOT&PF/Woodcock, J., Storey, B.	Woodcock, J and B. Storey	2012

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

MTRS	Survey Type	Report Title	Report Author	Report Date
Numerous	Level IIC - Pedestrian	Cultural Resource Study of the Dalton Highway MP 197-209 Dalton Highway 175-209 (IM-DP-065-4(8)) 61214	Woodcock, J., and B. Story	2012
Numerous	Level IIC - Pedestrian	Knik Arm Crossing Cultural Resource Survey 2012	MSB/Stone, D.E., et al.	2012
Numerous	Level IIC - Pedestrian	Archaeological Survey for the Dalton Highway MP 362-414 Reconstruction Project (DP-065-7(3)/61366)	CRC/Yarborough, M.R., et al.	2012
Numerous	Level IIC - Pedestrian	Cultural Resource Investigation of the Parks Highway Milepost 163-306 Passing Lanes: DOT&PF Project IM-000S(716)/63515, OHA Short Report 2011-02	OHA/Thompson, D.R.	2011
Numerous	Level IIC - Pedestrian	Alaska Stand Alone Gas Pipeline/ASAP, Cultural Resource Report for the 2010 Field Season	ASRC ENERGY/Rider, S., Miller, R., Stotts, I.	2011
F008S008W13, F010S008W17, F010S008W21, F013S007W27, F013S007W28	Level IIC - Pedestrian	Cultural Resource Investigation of the Parks Highway Milepost (MP) 239-240, MP 262-263, and Material Site MS 37-2-069-2 near Healy, Alaska DOT&PF Project Number 61275, OHA Short Report 2011-01	OHA/Thompson, D.R., Tedor, R.	2011
Numerous	Level IIC - Pedestrian	Knik Arm Crossing Cultural Resource Survey 2011	MSB/Stone, D.E., et al.	2011
Numerous	Level IIC - Pedestrian	BLM FY 2010 Annual Report, Glennallen Field Office	BLM/Jangala, J.	2010
F35N10W21	Level II - Reconnaissance Survey, Level IIC - Pedestrian	BLM FY 2010 Annual Report, Fairbanks District Office. Serial Number FF095684. NEPA Number DOI-BLM-AK-9940-2010-010-DNA	BLM/Schneider, R.	2010
F013S007W34, F023S007W33	Level IIC - Pedestrian	Reroute Horseshoe Lake and Taiga Trails	Daniels, P.A.	2010
Numerous	Level IIC - Pedestrian	Letter Report RE: Borehole Program, Cultural Resource Surveys Request for Concurrence Alaska Pipeline Project (Alaska Cultural Resource Permit No.: 2010-17) 07/22/2010 Written By EXXONMOBIL	EXXONMOBIL/Fedak, M.E.	2010
Numerous	Level IIC - Pedestrian	Port MacKenzie Rail Extension Project, Report of 2008 Cultural Resources Fieldwork	SRB&A	2010
Numerous	Level II - Reconnaissance Survey	Cultural Resources Reconnaissance for the West Mikkelsen No. 1, Susie Unit No.1, and Nora Federal No. 1 Well Remediation Projects, North Slope, Alaska, for the Year 2009	REANIER AND ASSOC/Reanier, R.E.	2009

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

MTRS	Survey Type	Report Title	Report Author	Report Date
S15N04W04, 05, 08, 16, 17, 20, 21, 28, 29, S016N004W32, 33	Level II - Reconnaissance Survey	Cultural Resources Survey For The Proposed Point Mackenzie Natural Gas Distribution Line, Point Mackenzie, Alaska	ASRC ENERGY/Rider, S., Tobey, J	2009
F09N07W17, F09N07W19, F09N07W20, F09N07W26, F09N07W27, F09N07W28, F09N07W29, F09N07W30, F09N07W36	Level III - Intensive survey	Cultural Resources Survey of Dalton Highway MP 11-18 Rehabilitation Project, Interior Alaska	NLUR/Proue, M., Neely, B., Hardy, H.	2009
F013S007W08, F013S007W09	Level II - Reconnaissance Survey	Data Recovery At Locus 1B Of HEA-062, The Nenana River Gorge Site, Interior Alaska, Written For AK Railroad Corp., Written By Reuther, J. D., et al., ADP Files 3130-1R FTA, 3130-2R ARRC, 3490 FTA/ARRC/MOODY TUNNEL REMOVAL	NLUR	2009
C006N007W28, S014N004W21, S014N004W22, S014N004W24, S014N004W25, S014N004W26, S015N004W09, S015N004W17, S015N004W21, S015N004W28, S016N002W02, S016N003W24, S017N001W14, S019N004W28, S019N006W26, S025N004W05, S026N004W31, S026N004W32	Level IIC - Pedestrian	2008 Matanuska-Susitna Borough Archaeological Surveys	MAT-SU B/Stone, D.E., Seager-Boss, F.	2009
F013S007W08, F013S007W09	Level III - Intensive survey	Data Recovery At Locus 1B Of HEA-062, The Nenana River Gorge Site, Interior Alaska, Written For AK Railroad Corp., Written By Reuther, J. D., et al., ADP Files 3130-1R FTA, 3130-2R ARRC, 3490 FTA/ARRC/MOODY TUNNEL REMOVAL	NLUR/Reuther, J.D., Proue, M., Hays, J.M., Hardy, H., Florey, V.	2009
F28N12W26, F31N10W18, F31N11W19, F31N11W29, F31N11W30, F31N11W35, F31N12W24, F31N12W28, F31N12W33, U12S12E08	Level IIC - Pedestrian	Upper Middle Fork of the Koyukuk River Drainage Class III Pedestrian Surveys, May-June 2008	Mills, R.O. and W. Hedman	2008
S015N004W09	Level II - Reconnaissance Survey	Preliminary Report Of The Archaeological Survey Of The Proposed North Gravel Extraction Pit On Point Mackenzie Road Written By Cole, V. Mat-Su Borough. 3130-3R Mat-Su Borough	MAT-SU B/Cole, V.	2008
F08N06W16, F08N06W17, F08N06W20, F08N06W21	Level IIC - Pedestrian	Cultural Resource Reconnaissance of the Dalton Highway 9-Mile Hill North Material Source (MS 65-3-020-2) ADOT&PF Project Number 64899, OHA Short Report 2008-02	OHA/Thompson, D.R., Schneider, W.H.	2008

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

MTRS	Survey Type	Report Title	Report Author	Report Date
Numerous	Level II - Reconnaissance Survey	Cultural Resources Assessment For The Port Mackenzie Access Road, Reconstruction Grading And Drainage Flume Sdp-0001 (370)/58168 And The Point Mackenzie Road Paving Realignment, Written By Seager-Boss, F., D. Stone, V. Cole, Written For The AKDOT&PF And FHWA, ADP File 3130-1R FHWA	MSB CRD/Seager-Boss, F., Stone, D., Cole, V.	2008
Numerous	Level IIC - Pedestrian	Taking the Trail Home: Settlement Patterns of the K'enaht'ana Dena'ina and Forgotten Knowledge	NV EKLUTNA/Stone, D.E.	2008
S028N005W03, S028N005W04, S028N005W05	Level II - Reconnaissance Survey	Great Alaska Council Of Boy Scouts Of America, Supplemental Cultural Resources Survey, Denali High Adventure Scout Base, Mile 132 George Parks Highway, Alaska, ADP Files 3130-1R FHWA, 3130-2R DPOR	CLARUS/Anders, J., Ream, B	2007
F019S009W22, F019S009W27, F019S009W28	Level II - Reconnaissance Survey	Cultural Resource Survey Of The Proposed Broad Pass Siding Extension And Access Road North Of MP 304 Of The Alaska Railroad, Written For AK Railroad Corp., Written By Neely, B., ADP Files 3130-1R FTA, 3330-6 BROAD PASS (HEA-066), 3330-6N HEA-401	NLUR/Neely, B.	2007
F022N014W07 - 10, F023N014W03, 25, 26, 27, 34	Level II - Reconnaissance Survey	BLM Fairbanks District Office Assessment of Archaeological and Historic Resources UPDATE, FF-79425, EA-AK-025-07-007	BLM-FDO/Hedman, W.	2007
U005S014E05, U005S014E32, U007S014E05, U007S014E08, U007S014E09, U007S014E16, U008S014E08, U009S012E20, U009S012E21, U009S013E04, U011S011E22, U011S012E32, U012S012E05, U012S012E09, U012S012E16, U013S012E15	Level II - Reconnaissance Survey	Cultural Resources Survey For Proposed Culvert Upgrades And Repair, Mile 260-321 Dalton Highway, Northern Alaska, Written By Slaughter, D., B. Iverson, Written For PDC, Inc. Engineers, ADP File 3130-1R FHWA	NLUR/Slaughter, D.C., Iverson, B.	2007
S028N005W01, S028N005W02, S028N005W03, S028N005W04, S028N005W05, S028N005W09, S028N005W10, S028N005W11, S028N005W12	Level II - Reconnaissance Survey	Great Alaska Council Boy Scouts Of America, Cultural Resources Survey Of Blair Lake High Adventure Camp, Talkeetna, Alaska, ADP File 3130-1R FHWA	CLARUS/Anders, J., Ream, B.	2006
F001N003W20, F001N003W29, F001N003W30, F001N003W31, F001N004W36, F001S004W11, F002S005W24, F002S006W03, F002S006W07, F002S006W08, F003S008W25, F004S008W02, F004S008W11, F004S008W13, F007S008W28, F007S008W29	Level II - Reconnaissance Survey	2005 Archaeological Survey Of The Proposed Alaska Railroad Siding Extensions At North Nenana, Dunbar, And Saulich, Written By Pipkin, M. E., Written For ECI/Hyer, ADP File 3130-2R AK RAILROAD	WALKING DOG/Pipkin, M.E.	2006

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

MTRS	Survey Type	Report Title	Report Author	Report Date
F30N11W30, F31N10W17, F31N11W20	Level II - Reconnaissance Survey	Evaluation Of Potential Impacts On Cultural Resources Associated With The Expansion Of Three Material Sites Near Wiseman, Alaska, Written By Neely, B., J. Reuther, Northern Land Use Research. Written For AK DOT&PF, ADP Files 3130-1R FHWA, 3330-6P CHN-005, CHN-006, CHN-010, CHN-022, CHN-025, CHN-034, WIS-015	Neely, B., and Reuther, J.	2006
Numerous	Level II - Reconnaissance Survey	BLM Fairbanks, Baer Cultural Monitoring, 2006	Mills, R.O.	2006
F28N12W03, 21, 28, F29N12W35	Level II – Reconnaissance Survey	Cultural Resources Survey in the Vicinity of Coldfoot, Alaska	Slaughter, Dale C., and Lisa J. Slayton	2005
F012S007W28, 29, 32, F13S07W08, 9	Level II - Reconnaissance Survey	Cultural Resources Survey Of Proposed Re-Alignment Sections Along The Alaska Railroad, Healy Canyon, Alaska, Written For AK. Railroad Co., Written By Williams, C. M., B. A. Ream, ADP 3130-1R FRA, 3130-2R AK RRC, 3330-6 Nenana River Gorge Site.	NLUR/Williams, C.M., Ream, B.A.	2005
F19S09W22, 27, 28, 32, 33, F020S009W05, 06, 07, F020S010W12, 13, F20S10W14, 21, 22, 23	Level II - Reconnaissance Survey	Colorado To Broad Pass Cultural Resources Survey, Written By Yarborough, M., And HDR Alaska, Inc., Written For AK Railroad Corp., ADP File 3130-1R FTA, 3130-2R ARRC	CRC/Yarborough, M.R.	2005
Numerous	Level II - Reconnaissance Survey	BIA 2002 Native Allotment Surveys	BIA/Hoff, R.	2005
F17S06W07, F17S07W12	Level II - Reconnaissance Survey	DNR OHA Memo Re ADL 417419 and 417426, James Caswell DBA Alaska Line Co., HEA-204 and HEA-205, Written By DePew, A. D., ADP File 3130-1R DOM	OHA/DePew, A.D	2005
Numerous	Level IIC - Pedestrian	Coastal Zone Management, Middle Susitna Archaeological Survey and Inventory	MAT-SU B/Seager-Boss, F., Stone, D.	2005
F20N15W20, F21N14W07, F21N14W08, F25N13W01, F27N13W22, F27N13W23, F27N13W26	Level III - Intensive survey	BLM Assessment Of Archaeological And Historic Resources, Serial # N/A, EA CX-AK-025-057, Alaska DOT&PF, Written By Smith, H.L. ADP File 3130-1R BLM	BLM/Smith, H.L.	2004
F30N11W17, F30N11W18, F30N11W20, F30N11W21	Level II - Reconnaissance Survey	BLM Trip Report: Minnie Creek Archaeological Reconnaissance 2004. Mills, R.O. ADP File 3130-1R BLM	Mills, R.O.	2004

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

MTRS	Survey Type	Report Title	Report Author	Report Date
F04S08W23, 24, 25	Level II - Reconnaissance Survey	Cultural Resources Survey Of Alaska Railroad Corporation Staging And Dike Areas, Nenana, Alaska, Written For AK Railroad, ADP File 3130-2R ARR	NLUR/Potter, B.A., Kriz, P.J., Bowers, P.M.	2004
Numerous	Level II - Reconnaissance Survey	Cultural Resources Survey Of Proposed Electric Distribution Lines, Healy To Rex Bridge, Alaska, Supplement: 2004 Survey, Written For Golden Valley Electric	NLUR/Potter, B.A., Bowers, P.M.	2004
F08S08W06, F08S09W01	Level II - Reconnaissance Survey	Cultural Resources Survey Of Alaska Railroad Corporation Mile 388 Gravel Pit, Clear, Alaska, Written For AK Railroad, ADP File 3130-2R ARR	NLUR/Potter, B.A., Bowers, P.M	2004
F15S07W36, F21S10W30	Level II - Reconnaissance Survey	ADOT&PF Letter Report Re: Rehabilitate Bridge Erosion At Carlo Creek And Honolulu Creek Bridges ADP File # 3130-2R ADOT&PF	ADOT&PF/Wight man, P.L.	2004
F02S32E01, F28N12W16	Level III - Intensive survey	Preliminary Report On The 2004 University Of Nevada, Reno Historical Archaeology Field School. Hardesty, D. AND M. Blanchard. ADP File 3130-1R BLM	UNIVERSITY OF NEVADA/Hardest y, D., Blanchard, M.	2004
F02S32E01, F28N12W16	Level II - Reconnaissance Survey/Excavatio n	Preliminary Report On The 2004 University Of Nevada, Reno Historical Archaeology Field School. Hardesty, D. AND M. Blanchard. ADP File 3130-1R BLM	Hardesty, D., and M. Blanchard	2004
F13N11W26, F13N012W02, F14N012W34, F15N12W19, F15N13W01	Level III - Intensive survey	BLM Assessment Of Archaeological And Historic Resources, Serial # N/A, CX AK-025-04-002, Alaska Dept. Of Transportation, Written By Mills, R.O	BLM/Mills, R.O.	2003
F018S008W11, 12, 14, 15, 21, 22	Level II - Reconnaissance Survey	BLM Glennallen Field Office Assessment of Heritage and Paleontological Resources, GFO-03-21, AA-57043, EA-AK-050-CX-03-027, Matanuska Telephone Association ROW	BLM/Jangala, J	2003
F01N02W07, F01N02W08, F01S02W17	Level II – Reconnaissance Survey	Letter Report Re: Goldstream Siding, Mile 458.2 to 459.7, Fairbanks, AK ADP File # 3130-1R FTA	ARRC/Hotchkin, B.C.	2003
F04S08W13, F04S08W23, F04S08W24	Level II - Reconnaissance Survey	Cultural Resources Survey Of A Proposed Railroad Re-Route In Nenana, Alaska. Written By Kriz. P.J. Written For URS Corporation. ADP File 3130-2R ARRC and 3130-1R FTA	NLUR/Kriz, P.J.	2003

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

MTRS	Survey Type	Report Title	Report Author	Report Date
F36N10W21	Level II - Reconnaissance Survey, Level IIC - Pedestrian	Findings of Section 106 Review, Bureau of Indian Affairs, Native Allotment FF018133, Theodore C. Harwood, Jr.	Gillepsie, T.E.	2003
F12S07W28, 32, F13S07W05,08, 09	Level II - Reconnaissance Survey	Cultural Resources Survey And Evaluation Of Tunnels And Proposed Stabilization Areas Along The Alaska Railroad, Healy Canyon, Alaska, Prepared For Alaska Railroad Co., And URS Corp., Written By Reuther, J. D., et al., ADP FILES 3130-1R FRA, 3330-6 Moody Tunnel, Healy's Lucky Strike, HEA-329, 3330-6N Tunnel 9, Garner Tunnel, And HEA-328	NLUR/Reuther, J.D., et al	2003
U003N014E35, U003N014E36, U004N014E22, U004N014E23, U004N014E26, U004N014E27, U005N014E21, U005N014E28, U005N014E29, U006N013E12, U006N013E13, U006N014E07, U006N014E18, U008N014E11, U008N014E26, U008N014E33, U010N013E36, U010N014E31	Level II - Reconnaissance Survey	Archaeological Survey Of Seven Material Sites Along The Dalton Highway, MP 362-414 (ADOT&PF Project 61366), Office Of History And Archaeology Report Number 96, Written By DePew, A.D. and C.L. Pendleton	OHA/DePew, A.D., Pendleton, C.L.	2003
F11N09W04, F11N09W05, F11N09W09, F11N09W10, F11N09W14, F11N09W15, F11N09W16, F11N09W22, F11N09W23, F11N09W26, F12N09W30, F12N09W31, F12N09W32, F12N09W35, F12N09W36	Level IIC - Pedestrian	Archaeological Survey of Proposed Reconstruction, Dalton Highway, Mile 37 to 49, Project No. 66321, OHA Short Report 2003-10	OHA/Holmes, C.E.	2003
F19S09W22, 27	Level II - Reconnaissance Survey	Archaeological Survey Of Proposed Broad Pass Railroad Overcrossing, Parks Highway MP 194, ADOT&PF Project No. 61277, OHA Short Report 2003-7, Written By DePew, A.D. And C.L. Pendleton.	OHA/DePew, A.D., Pendleton, C.L.	2003
Numerous	Level II - Reconnaissance Survey	Archaeological Survey Of Proposed Improvements To The Parks Highway, Mp 240-262, ADOT&PF Project # 61275 Written By Depew, A. D. And C. L. Pendleton (Short Report 2003-8) ADP File # 3130-2R DOT	OHA/DePew, A.D., Pendleton, C.L.	2003
F022N014W07	Level III - Intensive survey	BLM Assessment Of Archaeological, Historic, And Paleontological Resources, F93916, JPO EA-03-004, Alyeska Pipeline Service Company, Written By Adkins, C.	BLM/Adkins, C.	2003

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

MTRS	Survey Type	Report Title	Report Author	Report Date
F29N12W23, 24, F31N10W19, 20	Level IIC - Pedestrian	Cultural Resource Reconnaissance of Two Proposed Material Sites at MP 180.3 and MP 195.2 of the James Dalton Highway: Marion and Nugget Creeks (ADOT&PF Project No. 61214), OHA Short Report 2002-07	Thompson, D.	2002
F31N10W19, F31N10W30	Level II - Reconnaissance Survey	BLM Northern Field Office, Assessment of Archaeological, Historic, and Paleontological Resources, F-93442, EA-AK-025-02-014, AK.	Adkins, Charles	2002
F10N07W33, F14S10E30	Level IIC - Pedestrian	Cultural Resources Survey of OMS 73-1R, Erickson Creek, and OMS 41-3, Donnelly Creek, Alaska	NLUR/Bowers, P.M., et al.	2002
F31N10W17	Level II - Reconnaissance Survey	BLM Northern Field Office Assessment of Archaeological and Historic Resources, F-93657, EA-AK-993-02-003, Alyeska Pipeline Service Company	Adkins, Charles	2002
Numerous	Level II - Reconnaissance Survey	Letter Report Re BP Exploration (Alaska), Inc. Proposal To Conduct PSI Gravity Survey In The Prudhoe Bay Vicinity, Written For BP Exploration, ADP File 3130-2R DOG	REANIER & ASSOC/Reanier, R.E.	2001
U008S014E08	Level IIC - Pedestrian	Cultural Resource Survey of OMS 119-04 Dalton Highway Milepost 305.5, North Slope, Alaska	NLUR/Gerlach, S.C., Potter, B.A., Bowers, P.	2001
F21N14W08	Level II - Reconnaissance Survey	BLM Northern Field Office Assessment of Archaeological, Historic, and Paleontological Resources, F-93334, EA-CX-025-01-102, Kiewit Pacific Inc., Construction of Camp	Adkins, Charles	2001
F030N011W20	Level II - Reconnaissance Survey	BLM Northern Field Office Assessment of Archaeological, Historic, and Paleontological Resources, F-93655, EA-AK-993-02-003, DOT&PF, OMS 100-1.2, DOT 65-9-051-2	Adkins, Charles	2000
F31N10W17	Level II - Reconnaissance Survey	BLM Assessment Of Archaeological, Historic, And Paleontological Resources. Serial No. F-93020. Applicant Is DOT&PF. Written By Adkins, C.E. ADP File 3130-1R BLM	Adkins, Charles	2000
U013S012E21	Level II - Reconnaissance Survey	BLM Northern Field Office Assessment of Archaeological, Historic, and Paleontological Resources, F-93026, EA-AK-024-00-100, AK DOT/PF	BLM/Adkins, C.	2000

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

MTRS	Survey Type	Report Title	Report Author	Report Date
F35N10W16	Level II - Reconnaissance Survey	BLM Northern Field Office Assessment of Archaeological, Historic, and Paleontological Resources, F-93021, EA-AK-024-00-100, AK DOT/PF	Adkins, Charles	2000
F23N14W08	Level II - Reconnaissance Survey	BLM Northern Field Office Assessment of Archaeological, Historic, and Paleontological Resources, F-93006, EA-AK-024-00-100, AK DOT/PF	BLM/Adkins, C.	2000
F24N14W23	Level II - Reconnaissance Survey	BLM Northern Field Office Assessment of Archaeological, Historic, and Paleontological Resources, F-93007, EA-AK-024-00-100, AK DOT & PF	BLM/Adkins, C	2000
F022N014W07	Level II - Reconnaissance Survey	BLM Northern Field Office Assessment of Archaeological, Historic, and Paleontological Resources, F-93004 EA-AK-024-00-100, AK DOT/PF	BLM/Adkins, C.	2000
F22N14W32	Level II - Reconnaissance Survey	BLM Northern Field Office Assessment of Archaeological, Historic, and Paleontological Resources, F-93002, EA-AK-024-00-100, AK DOT/PF	BLM/Adkins, C.	2000
F22N14W19	Level II - Reconnaissance Survey	BLM Northern Field Office Assessment of Archaeological, Historic, and Paleontological Resources, F-93003 EA-AK-024-00-100, AK DOT & PF	BLM/Adkins, C.	2000
U013S012E21	Level II - Reconnaissance Survey	BLM Northern Field Office Assessment of Archaeological, Historic, and Paleontological Resources, F-93072, EA-AK-024-00-102, Philips Alaska, Inc.	BLM (Investigator not listed)	2000
F24N013W07, 08	Level II - Reconnaissance Survey	BLM Northern Field Office Assessment of Archaeological, Historic, and Paleontological Resources, F-93008, EA-AK-024-00-100, AK DOT/PF, Gravel Material Site	Adkins, Charles	2000
F25N13W23	Level II - Reconnaissance Survey	BLM Northern Field Office Assessment of Archaeological, Historic, and Paleontological Resources, F-93009, EA-AK-024-00-100, AK DOT/PF	Adkins, Charles	2000
F25N012W18	Level II - Reconnaissance Survey	BLM Northern Field Office Assessment of Archaeological, Historic, and Paleontological Resources, F-93010, EA-AK-024-00-100, AK DOT/PF	Adkins, Charles	2000
F30N11W20	Level II - Reconnaissance Survey	BLM Assessment of Archaeological, Historic, and Paleontological Resources, F-	Adkins, Charles	2000

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

MTRS	Survey Type	Report Title	Report Author	Report Date
		87906, BLM Dalton Area Management Unit		
F16N13W03	Level II - Reconnaissance Survey	BLM Northern Field Office Assessment of Archaeological, Historic, and Paleontological Resources, F-92997 EA-AK-024-00-100, AK DOT & PF	Adkins, Charles	2000
F21N14W05	Level II - Reconnaissance Survey	BLM Northern Field Office Assessment of Archaeological, Historic, and Paleontological Resources, F-93001 EA-AK-024-00-100, AK DOT & PF	Adkins, Charles	2000
F30N11W20	Level II - Reconnaissance Survey	BLM Northern Field Office Assessment of Archaeological, Historic, and Paleontological Resources, F-93018, EA-AK-024-00-100, AK DOT/PF, Material Site	Adkins, Charles	2000
U012S012E09, U012S012E16	Level II - Reconnaissance Survey	BLM Northern Field Office Annual Report to SHPO, F-73466 AK-028-EA1-051, AK DOT- PF	BLM/Kunz, M.L. and C. Adkins	1999
F27N13W26	Level II - Reconnaissance Survey	BLM Northern Field Office Assessment of Archaeological, Historic, and Paleontological Resources, F-92769, EA-AK-020-99-105, AK DOT/PF	Kunz, M.L. and C. Adkins	1999
Numerous	Level III - Intensive survey	Draft Archaeological Survey of Ten Installations of the 611th Air Support Group, Alaska, Phase I, Summer 1998 Written by John F. Hoffecker, Argonne National Laboratory	Hoffecker, J.F.	1999
F18S04W08,F18S08W21,F21S06E17,F22N03E03	Level II - Reconnaissance Survey	BLM Glennallen Annual Report to SHPO, GDO-99-6, AA-81684, University of Alaska Geophysical Institute Research	BLM/Muenster, D.	1999
U011S012E29, U011S012E32, U014S012E20	Level II - Reconnaissance Survey	BLM Northern Field Office Annual Report to SHPO, F-21145 AK-020-99-022, AK DOT SE District	BLM/Kunz, M.L. and C. Adkins	1999
F31N09W17, 18, F31N10W01 – 04, 9, 12, 17	Level II - Reconnaissance Survey	BLM Northern Field Office Assessment of Archaeological, Historic, and Paleontological Resources, AK-020-99-003	Kunz, M. L.	1999
Numerous	Level II - Reconnaissance Survey	USAF Final Historic Building Inventory and Evaluation for Aircraft Control and Warning (AC&W) Sites. 6th Civil Engineers Squadron, Elmendorf Air Force Base, Alaska. ADP File 3130-1R USAF/Elmendorf	U.S. Department of the Air Force	1998
F29N12W23, F29N12W24	Level II – Reconnaissance Survey	BLM Assessment of Archaeological, Historical, and Paleontological Resources For BLM-Northern Field Office Serial	King, R. E.	1998

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

MTRS	Survey Type	Report Title	Report Author	Report Date
		#F-87167, EA #AK-020-98-116, Applicant: BLM Northern Field Office		
F26N13W14	Level II - Reconnaissance Survey	Evaluation Of Potential Cultural Resources Impacts Associated With Expansion Of Haul Road Gravel Pit 96-1 (#65-9-35-2), 15 Miles South Of Coldfoot, Alaska, 3130-2R AKDOT&PF. Northern Land Use Research, Inc., Fairbanks.	Simon, J.J.K.	1998
F03N12W24, F03N16W18, F28N12W16	Level II - Reconnaissance Survey	Historic Archaeology Of Alaskan Placer Gold Mining Settlements: Evaluating Process-Pattern Relationships. Doctoral Dissertation, Department of Anthropology, University of Alaska, Fairbanks.	Mills, R. O.	1998
F013N011W26, 27, 34, 35	Level III - Intensive survey	BLM Assessment Of Archaeological, Historic, And Paleontological Resources, F91027, EA AK-060-94-006, Dalton Management Unit, Written By Adkins, C.E.	BLM/Adkins, C.E.	1997
U013S012E21	Level III - Intensive survey	BLM Assessment Of Archaeological, Historic, And Paleontological Resources, F73935, EA N/A, State Of Alaska, Dept Of Transportation & Public Facilities, Written By Adkins, C.E.	BLM/Adkins, C.E.	1997
U011N014E10	Level III - Intensive survey	NPS National Register Of Historic Places Registration Form Prudhoe Bay Oil Field Discovery Well Site. Prepared By Wooley, C.B.	CHUMIS/Wooley, C.B.	1997
U009S012E33	Level III - Intensive survey	BLM Assessment Of Archaeological, Historic, And Paleontological Resources, F73468, EA N/A, State Of Alaska, Dept Of Transportation & Public Facilities, Written By Adkins, C.E.	BLM/Adkins, C.E.	1997
U012S012E16	Level III - Intensive survey	BLM Assessment Of Archaeological, Historic, And Paleontological Resources, F73466, EA N/A, State Of Alaska, Dept Of Transportation & Public Facilities, Written By Adkins, C.E.	BLM/Adkins, C.E.	1997
U014S012E20	Level III - Intensive survey	BLM Assessment Of Archaeological, Historic, And Paleontological Resources, F73460, EA N/A, State Of Alaska, Dept Of Transportation & Public Facilities, Written By Adkins, C.E.	BLM/Adkins, C.E.	1997

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

MTRS	Survey Type	Report Title	Report Author	Report Date
S24N04W18	Level II - Reconnaissance Survey, Level III - Intensive survey	NPS National Register Of Historic Places Continuation Sheet Supplementary Listing Record Kirsch's Place (TAL-065). 3330-3 Kirsch's Place. Prepared By Kluberton, T.G.	Kluberton, T.G.	1997
F031N010W17, 18	Level III - Intensive survey	BLM Assessment Of Archaeological, Historic, And Paleontological Resources, F91976, EA 96-085, BLM, Dalton Area Management Unit, Written By Adkins, C.E	BLM/Adkins, C.E.	1996
F31N10W08, F31N10W17	Level II - Reconnaissance Survey, Level III - Intensive survey	BLM Assessment Of Cultural And Paleontological Resources, F-90722, EA AK-060-94-028. Bureau of Land Management, Northern Field Office.	Kunz, M.L.	1994
U009S011E28, U009S011E31, U009S011E32, U016S011E30, U016S011E31	Level II - Reconnaissance Survey, Level IIC - Pedestrian	BLM Assessment Of Cultural And Paleontological Resources, F-91142, EA AK-060-94-034, F. Stuart Chapin III, Department Of Integrative Biology, University Of California, Berkeley, Written By Kunz, M.L	BLM/Kunz, M.L.	1994
F28N12W09, F28N12W16, F28N12W21	Level II - Reconnaissance Survey, Level III - Intensive survey	BLM Assessment Of Cultural And Paleontological Resources, F-84553, EA AK-060-94-029, ADOT&PF, Written By Kunz, M.L	Kunz, M.L.	1994
U011S011E10, U011S011E14, U011S011E22, U011S011E23, U011S011E25, U011S011E26	Level II - Reconnaissance Survey, Level III - Intensive survey	BLM Assessment Of Cultural And Paleontological Resources, F-12632, EA AK-060-94-026, ADOT&PF, Written By Kunz, M.L.	BLM/Kunz, M.L.	1994
U015S012E06	Level II - Reconnaissance Survey, Level III - Intensive survey	BLM Assessment Of Cultural And Paleontological Resources, F-91062, EA AK-060-94-016, SOA, Dept Of Transportation/Public Facilities, Written By Kunz, M.L	BLM/Kunz, M.L.	1994
F16S07W24	Level II - Reconnaissance Survey	BLM Glennallen District Archaeological Coordination, AA-075235, File 2800, MP 216 Parks Hwy Gravel Source Expansion	BLM/McCoy, P.	1991
F022S010W05, F022S010W06, F022S010W07, F022S010W08, F022S010W17, F022S010W18	Level III - Intensive survey	BLM Report Of Examination For Cultural Resources, AA-73963, U.S. Army Engineer District, Written By McCoy, P.	BLM/McCoy, P.	1990
F28N12W22	Level II - Reconnaissance Survey	BLM Steese/White Mountains Field Office Cultural Resource Inventory, F-85114, Phillip Sutton/Beck & Sutton Mining Notice	BLM	1986

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

MTRS	Survey Type	Report Title	Report Author	Report Date
F30N11W20	Level II - Reconnaissance Survey	BLM Cultural Resource Inventory, F-85251, Robert Cross Mining Claim, Written By Will, S., ADP 3130-1R BLM File	Will, S.	1986
F31N10W17	Level II - Reconnaissance Survey	BLM 2809 Compliance Inspection. Letter Report. Case File F-54166, Applicants Are Mamie Boese And John Hall. Will, S.M. ADP File 3130-1R.	Will, S.	1986
F31N10W16, F31N10W17	Level II - Reconnaissance Survey	BLM Steese/White Mountains Field Office Cultural Resource Inventories F-54166, 850941, Mamie Boese/Compass Mining (Hall) Mining Notice	BLM	1986
F28N12W23	Level II - Reconnaissance Survey	BLM Steese/White Mountains Field Office Cultural Resource Inventory, F-80662, 850964, Cannady/Magby Mining Notice	BLM	1986
F28N12W15	Level III - Intensive survey	NPS Archaeological Clearance Survey Form, An Administrative Site And Living Quarters Are Scheduled To Be Built On Two Newly Acquired Parcels Of Land In Coldfoot, 001-85-GAAR	NPS/Pittenger, M.D., Staley, D.P	1985
F28N12W15	Level II - Reconnaissance Survey	NPS Archaeological Clearance Survey Form, An Administrative Site And Living Quarters Are Scheduled To Be Built On Two Newly Acquired Parcels Of Land In Coldfoot, 001-85-GAAR.	Pittenger, M.D. and D.P. Staley	1985
F13S07W34, F14S07W03	Level II - Reconnaissance Survey	NPS Memorandum: H4217(ARO-PCR), Clearance No. 005-84-DENA, Archeological Clearance: Proposed Visitor Access Center, Denali National Park And Preserve.	NPS/Davis, C., Medlock, L., Sczawinski, T, Alfonsi, J.	1984
F021S010W30, F021S010W31, F021S011W25, F021S011W36, S018N003W24, S023N004W05, S023N004W06	Level II - Reconnaissance Survey	Cultural Resource Inventory Report, Five Native Allotments in Honolulu Creek, Montana Creek, and Houston, 1983 Field Season	BIA/Jesperson, Michele M	1983
F31N10W19, F31N10W30, F31N11W24, F31N11W25	Level II - Reconnaissance Survey	Cultural Resource Inventory of "Arctic John" Etalook's Native Allotment (FF-018270) Located on the Middle Fork of the Koyukuk River. BIA Juneau.	Hoff, R.	1982
F24N14W23, 25	Level II - Reconnaissance Survey, Level III - Intensive survey	BLM Cultural Resources Clearance. Name: R & PP Lease 2912, Case File F-78201. Written By Will, S.M. ADP File 3130-1R BLM.	BLM/Will, S.M.	1982

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

MTRS	Survey Type	Report Title	Report Author	Report Date
F013S006W15, F013S006W16, F013S006W32, F014S006W05, F014S006W06, F015S006W05, F015S006W19, F017S006W07, F017S007W12, F019S008W04, F019S008W09	Level II - Reconnaissance Survey	Anchorage-Fairbanks Transmission Intertie, Alaska Power Authority, a Preliminary Report of the 1981 Cultural Resource Survey	ALASKARCTIC/Bacon, G., C. Holmes, and C. Mobley	1982
Numerous	Level II - Reconnaissance Survey	Historic Resources in the Fairbanks North Star Borough. Fairbanks North Star Borough Planning Department.	Matheson, J., and F. Bruce Haldeman	1981
Numerous	Level II - Reconnaissance Survey	Historic Resources in the Fairbanks North Star Borough	Matheson, J., and F.B. Haldeman	1981
Numerous	Level IIC - Pedestrian	Report of Archaeological Field Survey in the Willow-Wasilla Area, 1978	Reger, Douglas R.	1980
F012S008W02, F012S008W10, F012S009W13	Level IIC - Pedestrian	Reconnaissance of Cultural Resources along the Stampede Road	AK DOT&PF/ Pittenger, M.D., and E.A. Thomas	1978
Numerous	Level II - Reconnaissance Survey	Archaeological Survey Projects, 1977, Miscellaneous History and Archaeology Series No. 18. Alaska Department of Natural Resources, Office of History and Archaeology, Anchorage.	Rabich, J.C., and Reger, D.R.	1978
F013S007W08	Level III - Intensive survey	The Nenana River Gorge Site: A Late Prehistoric Athapaskan Campsite In Central Alaska, MA Thesis	UAF/Plaskett, D.C.	1977
F017S005W33, F018S007W03	Level IIC - Pedestrian	New Archaeological Discoveries Near Cantwell	DPOR/Dixon, R.G.	1976
Numerous	Level II - Reconnaissance Survey	Final Report of the Archeological Survey and Excavations Along the Alyeska Pipeline Service Company Pipeline Route to Fulfill Requirements of Task Order 9	UNIV of ALASKA/Cook, J.P., et al.	1971

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

ATTACHMENT D: AHRS SITES WITHIN THE APE

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

ATTACHMENT E: AHRS SITE LOCATION MAPBOOK

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

ATTACHMENT F: ENVIRONMENTAL AND CULTURAL OVERVIEW

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

ENVIRONMENTAL CONTEXT

The aim of the environmental context is to provide a basis for understanding how people in the past might have used the land; understanding the potential for past land use helps to define survey areas and types. Due to the size of the Project area, the following environmental context has been divided into three regions: the Northern Region, the Interior Region, and the Southcentral Region. Wahrhaftig's (1965) physiographic classifications are used to discuss each region in detail. The Northern region, ASAP MP 0-262, includes the Arctic Coastal Plain and Brooks Range. The Interior Region, ASAP MP 262-561, includes the environment between the Brooks and Alaska Ranges. The Southern Region, ASAP MP 561-733 includes the environment from Broad Pass in the Alaska Range south to Big Lake.

Northern Region, ASAP MP 0-262

The Northern Region, ASAP MP 0-262, begins near the Beaufort Sea coast in the Prudhoe Bay oil field and extends to the South Fork of the Koyukon River, on the southern side of the Brooks Range. Within the Northern Region, the ASAP Project will pass through four physiographic regions; the Arctic Coastal Plain, the Arctic Foothills, the Central Brooks Range, and the Ambler-Chandalar Ridge and Lowlands (Wahrhaftig 1965).

The Arctic Coastal Plain on the North Slope of the Brooks Range is characterized by flat tundra, dotted with lakes, streams, and wetlands. Extensive permafrost has created frozen ground features including the ubiquitous "polygons" (multi-sided sections of flat wetland tundra), pingos (ice core hills), palsas (smaller circular hillocks with an ice-core), and rock formations of a linear or circular configuration. Approximately 60 miles from the Beaufort Sea coast, the foothills of the Brooks Range begin to rise from the coastal plain. The Arctic Foothills are characterized in the north by broad east-trending ridges and mesa-like mountains, and in the south by irregular buttes, knobs, mesas, east-trending ridges, and intervening gently undulating tundra plains. The foothills rise to the Central Brooks Range, which is characterized by rugged, glaciated, east-trending mountains that rise to 8,000 feet in the north and 6,000 feet in the south. On the southern flank of the Brooks Range is the Ambler-Chandalar Ridge and Lowland; a narrow strip of land comprising moraines and kames that mark the southernmost reaches of the Brooks Range (Wahrhaftig 1965).

The coastal plain was never glaciated; although some glacial outwash gravels and glacial erratics have been mapped to the west, closer to the Itkillik River (Carter 1986). The Brooks Range and the foothills on the northern and southern side of the range were once dominated by glaciers as evidenced by the terrain that includes large areas of gravelly outwash cover the area near the scarp, moraines, kames and kettle lakes (Pewe 1975). In the Brooks Range, mountainside slopes display the characteristic "cliff-and-bench" slopes of bedded geology eroded by glaciers (Pewe 1975), and certain moraines left high in the mountains by glaciers that retreated as recently as 300 years BP (Calkin et al. 1986).

Soils on the coastal plain are primarily composed of marine and terrestrial silts with aeolian sediments presenting in the southern reaches (Pewe 1975). Coastal plain vegetation consists of wetland grasses and sedges, dry tussock grass, dryas shrubs, lichen, and dwarf berry plants. Soils in the foothills are thin and acidic, supporting vegetation like cotton grass, dwarf birch, dryas shrubs, and dwarf berries like crowberry, bearberry and lingonberry. Sphagnum moss and lichen are also common (Walker et al. 1989). In the central

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Brooks Range, soils in the valley bottoms are poorly developed and are atop glacial moraines and weathered bedrock. Flat surfaces or depressions are blanketed by arctic tundra and muskegs growing on top of permafrost. Vegetation on the southern flank of the Brooks Range includes black spruce, tussock grasses, alder, and dwarf birch, which grow on gentler slopes and terraces overlooking the rivers. Open valley bottoms near the rivers (which disrupt permafrost) support a typical boreal forest vegetation of birch, aspen, and spruce. Soils in the Ambler-Chandalar Ridge and Lowland area include undifferentiated gravel, sand, and silt characteristic of the periglacial environment (Pewe 1975). Permafrost underlays the entire region, stunting the growth of trees and contributing to the tundra blanket of tussock grass, muskeg, dwarf shrubs, and black spruce.

Interior Region, ASAP MP 262-561

The Interior Region, ASAP MP 262-561, extends between the South Fork of the Koyukon River through to Broad Pass in the Alaska Range. Within the Interior Region, the ASAP Project will pass through six physiographic regions; the Kokrine-Hodzana Highlands, the Rampart Trough, the Tanana-Kuskokwim Lowland, the Yukon-Tanana Uplands, the Northern Foothills, and the Central Alaska Range (Wahrhaftig 1965).

The Kokrine-Hodzana Highlands are characterized by even-topped rounded ridges between 2,000-4,000 feet in elevation, with areas of rugged peaks that rise to 5,700 feet in elevation (Wahrhaftig 1965). Rivers flow down from the higher, more rugged mountains to the east. The Rampart Trough begins in the vicinity of Hess Creek; an unglaciated depression that follows a tectonic fault along its northeast-southwest axis (Wahrhaftig 1965). The terrain is varied, with many small and medium-sized creeks and rivers flowing through the bottom of steep valleys.

The Tanana-Kuskokwim Lowland is characterized by its broad, extensively flat topography, where surface water forms thousands of lakes, ponds and slow-moving waterways that wind their way across flat, brushy terrain. To the southeast is the Yukon-Tanana Uplands, a relatively even-crested mature upland area with ridges and hills averaging 2,000 to 3,000 feet high (Wahrhaftig 1965). Bedrock uplands rise in rounded domes over east-west trending creek valleys (Pewe and Reger 1983). South of the Tanana River flats is the Nenana River valley, part of the Northern Foothills physiographic region (Wahfhaftig 1965). This area is characterized by flat-topped ridgelines trend toward the east, standing 2,000—4,500 feet high and separated by rolling lowland. South of the Northern Foothills region is the Central Alaska Range, which consists of rugged, glaciated ridges that reach 6,000—9,000 feet.

In the northern part of the Interior Region, the footprint of ancient Illinoian and later Wisconsinin glaciers is limited to outwash since this region is several miles south of the Brooks Range glaciers' furthest extent. Soils include sandy and gravel outwash, as well as substantial loess deposits- fine silts blown up from dry glacial river valleys and accumulating over the millennia (Hamilton 1975; Pewe 1975). In areas farther south, the soils are composed of undifferentiated glacial alluvium and silt. In areas such as the Yukon Tanana Uplands, windblown silt, or loess, lays in a thick mantle on many of the lower hillside slopes, with thick accumulations of loess and stream silt in the valleys. The ancient loess deposits have been worked and re-worked over the millennia, creating an unusual soil profile of dry silt and sand, colluvium, and muck (Wahrhaftig 1965; Pewe 1952; Pewe and Reger 1983). Permafrost is extensive throughout the Interior Region.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Vegetation in the interior includes mesic tundra, fields of dwarf birch and herbaceous plants, intermixed with long stretches of boggy muskegs, black spruce boreal forests, stands of birch and cottonwood, and black spruce and scrub willow interspersed with grassy wetlands.

Southcentral Region, ASAP MP 561-733

The Southcentral Region, ASAP MP 561-733, extends from the Alaska Range to Point MacKenzie on Cook Inlet. Within the Southcentral Region, the ASAP Project will pass through two physiographic regions; the Broad Pass Depression, and Cook Inlet-Susitna Lowlands (Wahrhaftig 1965).

The Broad Pass Depression is essentially a trough, extending northeast to southwest across a landscape mantled with ground moraine and extensive flats of Alaska Range glacial outwash. Narrow drumlin-like hills on the floor lie parallel to its axis, with streams and lakes oriented lengthwise in the depressions between moraines. While the Cook Inlet-Susitna Lowlands physiographic region is a glaciated lowland terrain that is shaped by moraines, drumlin fields, eskers, outwash plains, and other features. The average elevation is 500 feet above sea level, with local relief of 50—200 feet. Rolling upland areas climb into the surrounding mountains which rise to about 3,000—4,000 feet in elevation. The northern part of the lowland is fed by several glacial streams which flow in the Chulitna and Susitna Rivers, and empty into Cook Inlet (Wahrhaftig 1965).

Soils and terrain throughout the Broad Pass Depression portion are undifferentiated glacial till, outwash, alluvial sand and silt, and moraine left by episodic glacial advances that span both the Pleistocene and more recent Holocene (Pewe 1975). Most of the area is underlain by permafrost. The valley floor is fairly treeless, with abundant dwarf shrubs, berries, lichen and moss, as well as extensive wetland vegetation in the wetter trough areas. Lower hillside slopes are vegetated with boreal forests of black spruce, pockets of muskeg and herbaceous shrubs. South of Hurricane, the Broad Pass Depression begins to transition into a broader valley and has a more developed and well-drained soil, creating a dramatic change in vegetation and topography as the corridor proceeds further south. Near Byers Lake extensive forests of birch, white spruce, and alder grow on the hillsides and terraces overlooking the Chulitna River.

At the southern end of the region, the topography and soils reflect the action of both Pleistocene-era glaciers, as well as other Holocene-era glaciers that pushed in from the Matanuska Valley to the east and Cook Inlet to the southeast (Pewe 1975; Pewe and Reger 1983; Krebs et al. 1978; Karlstrom 1953). The most immediate effects on topography and soil formation stem the Naptowne glaciation, which had several advances and retreats between 30,000 and 5,000 years BP (Pewe 1975). End moraines and other outwash deposits from the Naptowne glaciation form the hills and ridgelines on the margins of Nancy Lakes, Red Shirt Lake, Cow Lake, and Hock Lake (Pewe and Reger 1983; Schmoll and Yehle 1986). Many of these elevated moraine features are well drained, with canopy forests of birch, cottonwood and white spruce standing over understory thick with alder, willow, devil's club and high bush cranberry.

CULTURAL CONTEXT

Prehistoric Overview

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Alaska's prehistory is complex and numerous attempts have been made to create cultural chronologies that help explain Alaska's early peoples. The following prehistoric cultural context does not follow one single cultural chronology for the state or one single theory; rather, it has been divided into the Northern, Interior, and Southcentral Regions. However, it should be noted that separating the chronologies by region is an arbitrary designation done for the purpose of this report and that there is overlap between the regions. The chronology presented below uses a years before present (BP) format when discussing the age of prehistoric occurrences.

Northern Region

Paleoindian Period (circa 11,700-8,000 BP)

Paleoindian sites are known in a variety of locations throughout northern and interior Alaska. The earliest sites in the northern Brooks Range and North Slope regions date to the terminal Pleistocene, a time period in which human population coexisted with, and possibly subsisted upon, now-extinct megafauna. Some of the earliest sites in the Brooks Range include the Mesa Site, and sites of the Mesa Complex such as the Putu, Bedwell, and Lisburne sites (Bever 2001). The Mesa Site dates to between 11,700 to 9,700 BP and is the best documented site of this period with 30 small hearths and associated stone tools (Bever 2001). Mesa complex sites exhibit classical traits of Paleoindian complexes elsewhere in North America, such as large, finely crafted lanceolate projectile points, and distinctive gravers, end scrapers, blades, and debitage (Kunz et al. 2003). The Putu Site produced these artifacts as well as fluted projectile points (Bever2001).

American Paleoarctic Tradition (circa 10,000-7,000 BP)

The American Paleoarctic Tradition appears in northern Alaska approximately 10,000 BP making them contemporaneous with some Paleoindian sites but persisting some 1,000 years longer until approximately 7,000 years ago (Anderson 1970; Dixon 1975; Reanier 2001). Paleoarctic sites on the North Slope are known at Gallagher Flint Station in the foothills of the Brooks Range and the Lisburne site also located in the Brooks Range, approximately five miles north of the Mesa Site (Reanier and Kunz 2010). The American Paleoarctic Tradition consists of a lithic core and blade technology characterized by wedge- shaped microblade cores, microblades, blades, burins, and ellipsoidal bifaces (Anderson 1970). Lack of well-defined projectile points at American Paleoarctic sites indicate that projectile technology may have consisted of largely unpreserved bone or wood point styles (Schoenburg 1995). Caribou bone associated with an American Paleoarctic assemblage at the Onion Portage site was dated to 9,700 BP (Schoenberg 1995).

Northern Archaic Tradition (circa 6,500-4,000 BP)

The Northern Archaic Tradition appears in northern Alaska approximately 6,500 BP, and is indicated by the appearance of side-notched projectile points. Archaic sites on the North Slope include the Kuparkak Pingo site and Putuligayak site (Reanier and Kunz 2010). In the Brooks Range, Northern Archaic sites are known around the Kurupa Lake District and Tuktu Lake (Schoenberg 1995). Some sites, such as the Tuktu Site near Anaktuvuk Pass contain not only side-notched projectile points, but also have microblades and cores present, suggesting some level of continuity between the Paleoarctic and Northern Archaic (Anderson 2008; Schoenberg 1995;).

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Arctic Small Tool Tradition (circa 4,500-1,200 BP)

Evidence of the Arctic Small Tool Tradition (ASTt) appears in the archaeological record at approximately 4,500 BP. Sites of the ASTt are somewhat common throughout the North Slope and Brooks Range (Reanier and Kunz 2010). Artifacts of the ASTt consist of exceptionally well-made, tiny bifacial tools and projectile points. These artifacts are believed to represent the first material culture of the ancestral Iñupiat of northern and northwestern Alaska (Kunz et al. 2003). Additionally, such artifacts may indicate the introduction of bow and arrow technology to the arctic region (Reanier and Kunz 2010). Subphases of the ASTt include the Denbigh Flint Complex (4,500-2,500 BP), Choris (2,800-2,200 BP), Norton (2,400-1,800 BP), and Ipiutak (1,900-1,200 BP) phases (Kunz et al. 2003).

Prehistoric Eskimo/Thule (circa 1,500 to European Contact)

Thule, or Northern Maritime Tradition, represents the most immediate ancestors of modern Eskimo an Iñupiat peoples. The Thule Tradition is first seen in the archaeological record in North Alaska approximately 1,500 BP The earliest phases of this tradition, the Old Bering and Punik phases, have been identified in Bering Sea Islands, but later Birnirk phase sites are present across northern Alaska, and subsequent Thule sites exist across northern Canada and Greenland (NPS 2012a). Northern Maritime Tradition sites are distinguished from earlier Ipiutak (ASTt sites) by distinctive artifact styles, and a technology that emphasized the extraction of marine resources including whales (Kunz et al. 2003). Birnirk sites include pottery, ulus, kayaks, and sleds, as well as rectangular semi-subterranean houses (Yarborough 2001).

Interior Region

Approximately half of the known Paleoindian sites in Alaska are clustered in the Interior Region, particularly in the Nenana and Tanana River Valleys, with some of the oldest identified sites in the Tanana River Valley. The archaeology of these sites is complex; therefore several different chronologies have been proposed. West's (1981) "Beringian Tradition" was the basis for Holmes' (2001) cultural chronological overview of the prehistory of Interior Alaska; and it is Holmes' (2001, 2008) chronology that is presented here.

The Beringian Period (>11,500 BP)

The Beringian Period encompasses the Beringian Tradition (also referred to as the American Paleoarctic Tradition) and Denali Complex from 12,000 to 7,500 BP (West 1981), the Nenana Complex ranging from 11,800 to 11,000 BP (Powers and Hoeffecker 1989), and the Chindadn Complex from 11,000 to 9,000 BP (Cook 1996).

During the Beringian Period, North America and Asia were connected by a land bridge, allowing for the migration of animals and people between the two continents. Thus, the earliest sites found in Interior Alaska relate to migrations from Asia into North America and the occupation of Beringia. The climate at this time was relatively cool and dry, and the Beringian landscape consisted of large areas of grassland and

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

dwarf shrubs (Edwards et al. 2002). Western Beringian, or Dyuktai Culture, sites are found in Siberia, while in Alaska and the Canadian Yukon, these sites are referred to as being East Beringian Tradition. Holmes (2001) further divides the East Beringian Tradition into Phase I and Phase II, with Swan Point thus far the only Phase I site. Phase II sites include the Mead Site, Broken Mammoth, and Dry Creek. Early sites, such as Swan Point, contain burins and microblades (Holmes 2001), while the later Phase II sites ascribed to the Nenana and Chindadn Complexes had a blade core technology but lacked microblades (Powers and Hoffecker 1989; Pearson and Powers 2001; Goebel et al 2003; West 1981).

The Transitional Period (11,000-8,500 BP)

The Transitional Period coincides with the end of the Younger Dryas, and was a time of an abruptly warming climate, that saw the inundation of the landbridge between Asia and North America. It was during this time that regional variation manifested in Alaska (Holmes 2001). Between 11,000 and 8,500 BP, most interior Alaska sites contained all the artifact types represented in the older sites; however, many of these sites also represented new tool technology found only in North America (Holmes 2001). Transitional Period sites have been found in the Nenana Valley at Dry Creek, Walker Road, Panguingue Creek, Moose Creek, Houdini Creek and Carlo Creek. In the Tanana River Valley at this time, local variants developed in bifacial knife or point forms, and in distinctive microblade and burin technologies (Holmes 2001).

The Taiga Period (8,500 to European Contact)

The archaeology of the Middle to Late Holocene has been categorized several ways. Holmes' (2008) Taiga Period is divided into three periods: early, middle, and late. According to Holmes, the Denali Complex transitioned into Northern Archaic (Anderson 1968) or other alternative traditions such as American Paleoarctic during the Early Taiga Period (8,500—6,000 BP). Northern Archaic Tradition was originally believed to be adapted to boreal forested regions, but recent studies of Alaskan interior Holocene climate history and biogeography and the distribution of Northern Archaic sites show that Northern Archaic groups occupied diverse environments (Esdale 2008; Mason and Bigelow 2008; Potter 2008). Northern Archaic sites are attributed to two behavioral patterns: 1) seasonal or long-term settlements, or 2) temporary hunting camps (Esdale 2008; Wilson and Rasic 2008). Northern Archaic Tradition assemblages include notched projectile points, lanceolate points, scrapers, notched pebbles, burin technology, and microblade technology (Esdale 2008). The prevalence of scrapers found in some Northern Archaic sites has been interpreted as evidence for increased activities related to hide preparation, indicating settled households or sites related to seasonal processing of numerous kills. Sites lacking scrapers and other attributes are assumed to be temporary hunting camps (Esdale 2008).

During the Middle Taiga Period (6,000—3,000 BP), there was a continuing diversification of Northern Archaic lithic technologies, including the appearance of notched projectile points. Also seen in the archaeological record from this time are notched pebbles, whetstones, abraders, burins, gravers, and polishing stones. Esdale (2008) suggests that during this time hunting strategies changed to include waterfowl, both small and large game, and possibly fish. Also to emerge at this time was the Arctic Small Tool Tradition (Irving 1964), which had a specialized technology that included finely flaked end and side blades, and spread widely throughout Alaska and the Yukon Territory.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

In the Late Taiga Period (ca. 3,000—250 BP), a shift occurred toward the use of bone, antler, or copper. The shift away from lithic materials has been ascribed to changes in bow and arrow hunting technologies (Holmes 2008). The Athabaskan tradition emerged during the end of the late Taiga period.

Southcentral Region

The Early Period (circa 10,000-6,000 BP)

Prior to 12,000 BP, glaciers blocked high altitude passes over the Alaska Range, and the waters of Cook Inlet encroached into the Susitna lowlands (Reger 2003). No evidence exists for Paleoindian or late Pleistocene occupation of the Susitna Valley and Broad Pass regions. However, recent research at the Trapper Creek Overlook and Susitna River Overlook Sites, in the vicinity of Talkeetna, may indicate use of the area as early as 10,000 BP (Wygal and Goebel 2012). These deposits located stratigraphically beneath the earliest dated components contain blade and core technology similar to the Denali Complex of interior Alaska, possibly indicating use of the area from 10,000 to 8,000 BP. Lithic artifacts recovered from these sites include wedge-shaped cores, microblades, knives, and burins. Conversely, Potter (2008) states that early Holocene sites in the area do not conclusively predate 8,000 BP.

The Middle Period (circa 6,000-3,000 BP)

The oldest known sites in Upper Cook Inlet indicate early use of the area by coastal Eskimo populations (Schneider 2013). At the Beluga Point site, approximately 13 miles southeast of Anchorage, the earliest C14 date at this site is 4155 ± 160 BP (Reger 1981). Artifacts from this early date resemble the Ocean Bay/Takli sites on Kodiak Island (Higgs and Proue 2010). The Hewitt Lake Site, located inland near the confluence of the Yenta and Skwenta Rivers, contains cultural deposits dated to 4410 ± 90 BP. These artifacts resemble the Kachemak Culture.

The Late Period (circa 3,000 BP to European Contact)

The sites with connections to Kodiak Island support the long held theory that Upper Cook Inlet and the Susitna Lowlands were inhabited by coastal or riverine Eskimo populations prior to the arrival of Athabaskan groups (Higgs and Proue 2010). However, early Dena'ina, archaeological sites in the Cook Inlet region date as early as 1,500 BP (Reger 2003). These sites typically contain large, multi-room, semi-subterranean houses, with earthen embankments and central hearths. Tools constructed out of wood and bone are common. Copper artifacts indicate trade with Ahtna groups along the Copper River as early as 1,000 years ago (Reger 2003).

Historic Overview

The historic period in Alaska is generally considered to have begun with Russian exploration of Alaska's Bering Strait and other coastal regions to the south and east in the early eighteenth century. These initial forays into Alaskan waters precipitated a fur rush and the subsequent Russian colonization of Alaska. On the heels of the fur rush, other economic pursuits such as whaling, mining, trapping, and oil and gas extraction saw continued exploration of Alaska by Euroamericans over the next two centuries.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

The following historic context is organized by major themes in Alaskan history. Not all themes are relevant to the entire ASAP corridor; for instance, commercial whaling occurred in the Arctic but did not occur in Cook Inlet. Some themes, such as mining, are relevant to all areas of the ASAP corridor; such themes have been divided into their geographical locations (e.g., Northern, Interior, and Southcentral Regions) to facilitate their discussion.

Euroamerican Exploration

Russian maps from as early as 1667 depicted the Siberian coast bounded by the sea, and by 1710, Alaska was depicted on Russian manuscript charts (Black 2004). Russian explorers, following a 1728 order of Tsar Peter I to located a northern passage, ventured north along the western Alaskan coast, sighting the Diomede Islands and then the north Alaskan coast at Cape Prince of Wales (Black 2004). On behalf of Russia, Captain Vitus Bering sailed into the strait that now bears his name, but it was not until Bering and Chirikov's voyages in 1741—1742 that the Russians discovered plentiful sea otter in the Aleutian Islands. This discovery ushered in a fur rush during the second half of the eighteenth century, and independent Russian fur traders gradually expanding their trade networks from the western Aleutians to Kodiak, Cook Inlet, Prince William Sound, and southeast Alaska, with devastating consequences for Native Alaskans.

In the late eighteenth century, French, Spanish, and British explorers also visited Alaska. In 1778, British explorer Captain James Cook sailed through the Bering Strait and reached a point he named Icy Cape, approximately 120 miles west of Barrow. French explorers visited Alaska's southeast coasts and Spanish explorers sailed up the southeast coastline to Prince William Sound and eventually sailed to the Aleutians.

The nineteenth century saw continued exploration of North Alaska. A Russian expedition led by Otto von Kotzebue resulted in the naming of the Kotzebue Sound in 1816, and British expeditions through central Canada reached portions of the eastern Brooks Range and the arctic coast of Canada in the 1820s. By the 1830s, Russian fur traders were pushing into the interior along the Yukon, Kuskokwim, and Koyokuk Rivers, and in 1850, British explorer John Simpson travelled up the Kobuk River and travelled through portions of the Brooks Range in 1850 (Allan 2013).

Following the purchase of Alaska in 1867 by the United States, expeditions to the new territory by American prospectors, trappers, and government sponsored military and scientific explorers began. U.S. government sponsored expeditions were largely done to identify the resources of Alaska, and then to determine access routes to those resources.

Fur Trade

Following the initial fur rush in the Aleutians, Russian fur traders began moving into Cook Inlet for trade with the Dena'ina. Early Russian settlements established on the Kenai Peninsula included Aleksandrovsk, Kasilof, and Fort St. Nicholas (Kenai) in the 1780s and 1790s. Shelikov also established a post on the Kenai Peninsula on English Bay, and a fort was established by the Lebedev Lastochkin Company on the Kenai at the Kasilof River (Simeone 1985). Competing Russian interests in Alaska in the 18 century saw the eventual creation of the Russian American Company (RAC), which maintained a monopoly on the Alaskan fur trade from its formation in 1799 until the sale of Alaska in 1867.

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Despite early contact in Cook Inlet between the Russians and the Dena'ina, the Russians did not explore areas further up the Susitna Valley. It was not until 1818 that Vasili Malakov explored the Susitna River, and in 1834 his son, Peter Malakov travelled up river, reporting the name, "Sushitna" (ADFG 1988).

Early Russian exploration of the interior of Alaska was somewhat limited by their focus on the lucrative fur trade in southcentral Alaska and the use of Alaska Native intermediaries to obtain furs. In the 1830s Russian interest in establishing a presence along the Yukon increased partly as a result of British competition, and a decline in coastal furs. Starting in 1833, Russian expeditions up the Yukon occurred, and by 1838 the Yukon trading outposts Nulato, Ikogmiut, Andreevskaia, and Unalakleet were established (Black 2004). In 1847, the Hudson Bay Company (HBC) established Fort Yukon in Russian territory, at the confluence of the Porcupine and Yukon Rivers (Murray 1910).

Following the purchase of Alaska by the United States, American trading operations took over the former Russian trading posts and the British trading post at Fort Yukon. In 1869, the Alaska Commercial Company's (ACC; the successor of the RAC) steamship Yukon travelled from St. Michael at the mouth of the Yukon, to Fort Yukon, establishing the use of steamships in trading activities. This activity continued through the 1870s and 1880s, and steamship activity increased dramatically following the major gold discoveries of the 1890s (see e.g., Shimkin 1951).

From 1875 to 1882, the ACC operated a post at Knik (Kari and Fall 2003) which may have previously been operated by the RAC (Matanuska-Susitna Borough 1995). Knik originally operated canneries and served as a hub for the fur trade, but by the 1890s gold discoveries in the Yentna-Cache Creek and Willow Creek districts turned the town into a regional center (Higgs and Proue 2010).

Whaling

Far more impactful to the North Slope region than early exploration by British explorers was the establishment of the American whaling industry in the arctic. In 1848, Captain Thomas Roys ventured into arctic waters with the intent of finding new whaling grounds, as areas of the European and eastern arctic had been severely depleted. In the subsequent two decades, over 10,000 whales were taken from the Bering and Chukchi Seas surrounding Alaska and Siberia, nearly exterminating the Bowhead population. Declining whale populations eventually led whalers east into the Beaufort Sea, where whaling was more difficult (Fraker 1984). Whaling stations were established along Alaska's northern and northwest coast, beginning in 1884 at Point Barrow and within a few years there were 15 shore-based whaling stations between Cape Thompson and Point Barrow.

Establishment of the whaling industry on Alaska's north coast profoundly affected the Iñupiat way of life. From the 1880s onward, Native Alaskans were often employed on whaling boats or operated independently as whalers or trappers to procure cash or trade items. Western whaling crews exposed Eskimos to disease, alcohol, and missionization, and as a result, their traditional territorial boundaries and subsistence strategies were altered (Spencer 1984).

A series of whaling accidents and decline in the price of whale oil occurred from 1865 to 1900, events that placed the industry in decline. During the Civil War, confederate ships attacked whaling ships, as the whaling fleet was from the north. In 1865, the Confederate raiding ship Shenandoah, unaware that the Civil

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

War had already ended, destroyed 20 ships from the arctic whaling fleet in Alaskan waters. Then, in 1871 and 1876, large numbers of ships were lost after being trapped in sea ice. This was followed by the development of the petroleum industry, which undercut sales of whale oil. Simultaneously, the population of Bowhead whales continued to wither. Walrus oil became an additional commodity exploited by whalers to provide seasonal stimulus when migration patterns were not favorable, resulting in a harvest of over 100,000 walrus from coastal Alaska and Siberia by 1880. However, this did little to stop industrial decline. The whaling industry temporarily revived due to the use of baleen in the fashion industry, but this development did not survive the eventual development of plastics in the early twentieth century (Bockstoce 1978).

Mining

Northern Region

The southern Brooks Range has the distinction of being home to some of the northernmost and remote gold mining districts in the world, lacking road access until the early 1970s. The remote nature of the area likely contributed to a relative lack of production compared to gold mining regions further south in Interior Alaska (Kurtak et al. 2002). Gold mining districts in the Southern Brooks Range include the Chandalar and Koyukuk Districts. The Chandalar Gold District is located along the upper Chandalar River, east of the Koyukuk District, whereas the Koyukuk Gold District includes portions of the upper Koyokuk River basin and its tributaries.

Placer gold was discovered in the Chandalar district in 1906, with most mining occurring on Tobin, Big, Little SquawCreeks, and St Mary's Gulch (Cobb 1973). Gold was discovered in tributaries of the Koyokuk River between 1885 and 1890, but the area was not developed until the Klondike Gold Rush in Canada funneled prospectors west along the tributaries of the Yukon River (Kurtak et al. 2002). Prospecting along the Koyokuk resulted in the establishment of Coldfoot, a historic mining town, in 1900 (Maddren 1913). However, subsequent discoveries along the Hammond River and Nolan Creek, north of Coldfoot, led to the establishment of Wiseman, and Coldfoot was abandoned (Kurtak et al. 2002). Gold production in the district peaked in the early 1900s. Renewed interest in the area occurred in the 1940 due to the development of mechanized mining techniques and federal regulation of the gold standard, but the war effort deemed gold mining non-essential and therefore mines were closed in 1942 (Kurtak et al. 2002).

Interior Region

The first major gold discovery in interior Alaska was at Franklin Bar on the Forty-Mile River in 1886. A trading post was established at the mouth of the Forty Mile River soon thereafter (Yeend 1996). The Forty-Mile Gold Rush was followed by gold rushes at Circle in 1892, the Klondike River in 1897, and Nome in 1899 (NPS n.d.). Following the Nome gold rush, in 1902, prospector Felix Pedroni (Felix Pedro) discovered gold on a Tanana Valley stream just outside of present day Fairbanks. Shortly after Pedro's discovery, miners flooded the Tanana Valley. Lack of transportation infrastructure limited early mining in the region to panning and other small operations until 1910 (Neely 2001).

The development of Fairbanks and completion of the Tanana Mines Railroad in 1906 provided stimulus for the creation of larger mining cooperatives during the 1910s. These changes, along with diminishing

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

quantities of easily recoverable gold deposits began a trend towards larger scale mining effects, and following the completion of the Alaska Railroad in 1923, corporate mining interests became established in the Tanana Valley. Although the War Production Board halted mining in the area in halted 1942, corporate mining interests continued after the war in into the present day, with large mines such as Fort Knox and True North (Neely 2001).

The Rampart and Hot Springs mining districts are situated in the vicinity of the modern town of Rampart, 100 miles northwest of Fairbanks along tributaries of the Yukon River. Gold was first discovered in the Rampart District in 1882 by the Schieffelin brothers, and then again in 1893 by prospector John Minook. Three years later in 1896, Rampart saw organized placer mining and became a permanent settlement for miners (Mertie 1934). Prospecting in the region led to a stampede from Rampart to Eureka in 1899. Rampart was a supply center for area mining camps until 1906, when Frank Manley built a hotel at present day Hot Springs and a town developed around the hotel, at which time Hot Springs became the supply center for Eureka (Mertie 1934). Mining claims in this region developed rapidly after 1900, but production in Rampart peaked before 1910.

The last great historic gold rush in Interior Alaska occurred in the Livengood District, approximately 50 miles northwest of Fairbanks. Despite its location between Fairbanks and Rampart, gold was not discovered in Livengood until 1914 (Saunders 1958). The first discovery was made by Jay Livengood and N.R. Hudson along Livengood Creek. After these claims were made, hundreds of people moved into the area and the town of Livengood was established (Parker 2003). Ironically, the most productive claims in the area went to latecomers, as gravel bars along the rivers were found to be unproductive. Bench claims set back from the river were more productive, and were exploited through drift mining. In this practice, shafts are excavated to bedrock from the surface, where gravels are removed with hand tools. Most mines around Livengood were unproductive, and the number of operations in the area decreased throughout the historic era (Saunders 1958).

Following World War I (WWI), production continued to diminish. However, in the adjacent Manley District cooperative mining interests resulted in increased production leading up the cessation of mining in World War II (WWII). As in other areas, commercial mining continues to some degree through modern times (L'Ecuyer 1997).

Major coal operations developed south of Fairbanks in the vicinity of Healy following the establishment of the Alaska Railroad in the area. In 1922, the Healy River Coal Corporation, owned by Cap Lathrop, began production at the Suntrana Mine, near present day Healy. This mine found a market in residential and commercial customers in Fairbanks. Coal increased in production at Suntrana throughout the 1920s, and by the early 1930s, Suntrana produced over half of all coal mined in Alaska (Barnes 1967).

As WWII developed, demand for increasing quantities of coal from the U.S. Army resulted in availability of additional coal leases in the Healy area (Farmen 2008). One of these leases went to joint partners Emil Usibelli and T.E. Sanford. Amid skepticism from other mining operations, Sanford and Usibelli experimented with strip mining techniques and successfully began developing the practice (Usibelli Coal Mine Inc. 2013). Eventually Usibelli bought out Sanford and the adjacent Suntrana mine. Following the end of Mat-Su coal production, Usibelli Coal became the only large coal producer in Alaska (Farmen 2008).

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Southcentral Region

Early gold discoveries along the Kenai Peninsula in the 1880s precipitated a flood of mining activity that soon expanded into the Matanuska and Susitna Valleys. Within the Yentna-Chulitna District (lands bordered by the Susitna and Yentna Rivers and the southern flank of the Alaska Range), placer gold was discovered as early as 1898, and claims were made as early as 1906 along Peter's Creek (ADNR 1999). Early viable claims included those located along Cache and Twin Creeks, Lake Creek, and along the Kahiltna River (Capps 1911). Early prospectors worked placer mines by travelling up the Susitna and Yentna Rivers by boat in the summer, and by sled in the winter.

More productive lode deposits of gold were discovered in the Willow Creek District, along the southern boundary of the Talkeetna Mountains, in the vicinity of the Little Susitna River (the area usually referred to as Hatcher Pass). Robert Lee Hatcher discovered gold in 1906, although peak production of mines in the area occurred between 1931 and 1942 (Ray 1954). Markets for gold were not productive following WWII, and saw the closure of mines such as the Alaska Pacific Consolidated Mining Company, which closed after producing over 34,000 ounces (ADNR 1999).

Large deposits of bituminous coal were known at various locations along the north side of the Matanuska River through native informants as early as the 1890s, but early attempts at development were hampered by convoluted or prohibitive mineral extraction laws (Seager-Boss and Roberts 1991). Before 1906, coal production was not viable due to requirements for prior federal land survey (such surveys had not occurred in Alaska at the time) and by restrictions on the size of land claims (Sanders 1980). In 1906, President Roosevelt banned coal extraction in Alaska following reports of illegal practices, such as the use of "dummy men" to claim and then transfer land adjacent to larger interests (Seager-Boss and Roberts 1991). Nonetheless, by 1914, the prospect of Matanuska coal for the US Pacific naval fleet led to passage of the Alaska Coal Leasing Act, profoundly influencing development of the area by providing an impetus for construction of the Alaska Railroad by the U.S. government (Sanders 1980).

Coal mines along the Matanuska River produced significant quantities of coal following the start of WWI and during WWII. The most productive Matanuska coal mines included Eska, Chickaloon, and Evan Jones Mines. Eska operated primarily from 1917 until WWII, after which it was not reactivated, and eventually the adjacent townsite was abandoned. Development of Chickaloon mine did not prove productive, and it was abandoned in 1923. The Evan Jones Mine operated from 1920 through the early 1950s, with peak production between 1931 and 1942 (Seager-Boss and Roberts 1991).

Gold and coal were also discovered and developed in Broad Pass. From 1911 to 1915, gold prospectors in Broad Pass used local coal for smithing, but the isolation of the area prevented commercial development (Rutledge 1948). Attempts at developing the Golden Zone Mine were conducted by early prospectors in the 1920s and 1930s, and at a larger scale by the enterprising mining engineer Wesley Earl Dunkle from 1936 to 1941 (Hawley 2003). Ultimately WWII ended Dunkle's attempt to successfully operate the mine, though modern mining efforts in the area continued into the 1990s. Dunkle redirected wartime effort to coal extraction only a few miles from the Golden Zone, along the west fork of the Chulitna River. The coal mine operated from 1942 to 1943, aiding the war effort with the production of 5000 tons of coal used at military bases in Anchorage and Fairbanks (Hawley 2003).

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Transportation

A series of gold rushes in Alaska and Canada at the turn of the twentieth century saw thousands of gold seekers make their way to Alaska and the Yukon using various land and water routes. Transportation routes to interior Alaska via land were not well established until the late nineteenth and early twentieth centuries.

Exploratory expeditions into the Copper River Valley, such as those led by William R. Abercrombie in 1883, Henry T. Allen in 1885, and Edwin F. Glenn provided the framework for routes and constructed wagon roads to access mineral resources from the interior. These early explorers often followed, at least partly, established native trails. However, actual construction of formal trails into the interior did not begin until the gold rush was in full swing. The Klondike Gold Rush of 1897-98 prompted the United States to build an all-American route to the Yukon goldfields, and to build a telegraph line between Valdez and Eagle linking Alaska's interior with the continental United States. Captain Abercrombie and Lieutenant Richardson began surveying for the Valdez-Eagle trail in 1899. The trail was completed in 1901, and shortly thereafter it was upgraded to a wagon road. The upgrades were completed by 1904; however, Fairbanks displaced Eagle as the mining center of the interior and a new wagon road was constructed between Valdez and Fairbanks.

From Cook Inlet to gold fields in the interior and on the Seward Peninsula, the Iditarod Trail provided access north through Rainy Pass and on to Nome, and was especially important for winter travel. The historic Iditarod Trail travelled through the historic town of Knik and continued west through the Susitna Valley. During the winter road houses and dog barns were placed approximately 15 to 20 miles apart, roughly the distance travelled in a day. Use of the historic Iditarod Trail peaked from the 1890s to the 1910s, prior to the construction of the Alaska Railroad. During the 1920s airplanes supplanted dog sleds as the primary means of travel between interior villages and coastal regions (BLM 1986).

By the early twentieth century, Alaska was in need of greater transportation infrastructure. After Alaska gained territorial status in 1912, President Taft authorized surveys of possible Alaskan rail routes, and in 1914 Congress authorized the President (now Wilson) to construct an Alaskan Railroad. Additional surveys of potential routes were completed in 1914. What had become known as the Western, or Susitna route was chosen. This plan called for purchase of the existing Alaska Northern Railroad which started in Seward, and extending it north through Anchorage, the Matanuska-Susitna Valley, and then on to Fairbanks via Broad Pass. A spur line to the Matanuska Coal fields was also built (Seager-Boss and Roberts 1991).

By the end of 1915 track had been laid from Ship Creek in Anchorage to Eagle River, and by 1917, the route servicing the Matanuska coal mines was completed. Towns along the new railroad such as Talkeetna, Wasilla, Houston, and Willow became regular rail stops and gained a degree of permanency. Towns that were not on the new rail line such as Knik and Susitna Station, on the other hand, became irrelevant and depopulated (Matanuska-Susitna Borough 1990).

From the north end of the line, the Alaska Railroad incorporated the bankrupt Tanana Valley Railroad; 45 miles of track connecting the Chena and Chanitka mining areas to Fairbanks (FTVR n.d.). Construction of the Tanana Valley Railroad began in 1904, but profits from the railroad declined after 1909 and the line was bankrupt by 1917 (Brown 1975). The U.S. government purchased the route and incorporated it into the Alaska Railroad, primarily for use of its terminal stations in Fairbanks. Construction south towards

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

Nenana began shortly thereafter (ARRC 2011). The northern and southern sections of the railroad met at Nenana, were in 1923, President Harding drove the ceremonial golden spike, marking the completion of the Alaska Railroad.

Transportation in Southcentral Alaska saw needs and spending increased dramatically during and after WWII. The Glenn Highway was constructed during WWII with the aim of connecting Anchorage to the Richardson Highway. This had the effect of greatly improving access to the Matanuska Valley. However, a major highway in the Susitna Valley would not be completed until 1971. The Parks Highway, referred to as the Anchorage-Fairbanks Highway from 1958 to 1974, essentially follows the route of the Alaska Railroad. The highway was renamed after George Parks, territorial governor from 1925 to 1933. The Parks Highway would come to play a major role in expanding development of agriculture in the Susitna Valley (Mead and Hunt 2015, CRC 2014).

The North Slope was not accessible by any permanent road system prior to the late 1960s and early 1970s. Two historic roads traverse the Northern Region north of the Brooks Range, including the Dalton and Hickel Highways. The Hickel Highway, a short-lived precursor to the Dalton Highway, was constructed during the winter of 1968-69. Alaska governor Walter J. Hickel approved plans to construct the highway with Alaska Department of Highways bulldozers, following the realization that hiring private contractors would probably postpone road construction for another year (NPS 2012b). The route was constructed from Livengood to the Dalton Highway, and then south for approximately 5 miles to Sagwon. The Dalton Highway was constructed in the early 1970s to serve Alaska's North Slope Oil Fields and is considered to be an Alaska Historic Road. The 414-mile route begins north of Fairbanks, and terminates at Deadhorse.

Oil and Gas

Although industrial production of oil did not occur on Alaska's North Slope until the second half of the twentieth century, surface oil was harvested by Alaska Native groups and nineteenth century whalers for use as lamp and cooking fuel (ADNR 2004). In addition, explorers such as Alfred Brooks and Ernest de Koven Leffingwell noted oil in their explorations of the area. However, military and industrial interests North Slope oil did not occur until the 1920s. In 1923, President Harding allocated a large portion of the North Slope as Naval Petroleum Reserve #4, as naval vessels transitioned from coal, and oil increasingly became an item of national security interest (Banet 1991). Despite early mapping efforts, drilling by the U.S. Navy did not occur until 1944. By 1953, several fields had been tested, and during the mid to late 1960s, companies such as the Richfield, Humble, and British Petroleum began purchasing large oil and gas leases. Exploration expanded in the late 1960s, but production slowed due to legislative uncertainty regarding the Alaska Native Claims Settlement Act (ANCSA) (Banet 1991).

Following the passage of ANCSA, legislative gridlock again postponed the construction of the Trans-Alaska Pipieline System (TAPS). However, the oil embargo of the 1970s resulted in the Trans-Alaska Pipeline Authorization Act, which cleared legal obstacles to construction of the pipeline. Construction began in 1974and lasted three years. On July 22, 1977, the first barrel of oil reached Valdez (Coates 1991).

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

ATTACHMENT G: ANNUAL REPORT AND PROGRESS REPORT TEMPLATES

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

TEMPLATE FOR ANNUAL REPORT

1) Description of tasks accomplished during the preceding year

   A. Identification
      i. Summary of areas surveyed for cultural resources during the preceding year
      ii. Summary and listing of new cultural resources newly documented or updated during preceding year
   B. Evaluation
      -Summary and listing of cultural resources evaluated for NRHP eligibility during preceding year
   C. Assessment
      i. Summary of Regional Project Components and any specific project components for which findings of effects were completed, concurred on and for which construction has been authorized
      ii. Summary of Regional Project Components or any specific project components for which findings of effect or concurrence on finding of effect are in need of additional consultation or review
   D. Avoidance, Minimization and Mitigation
      i. Summary and results of avoidance and minimization measures undertaken during the previous year including
      ii. Summary of proposed mitigation measures undertaken during the previous year including site treatment plans and the status of other mitigation measures such as publications
   E. Construction Monitoring
      -Summary and results of construction monitoring undertaken during the previous year
   F. Cultural Resource Awareness Contractor Training
      -Summary of contractor trainings completed, including dates and locations of instruction and number of attendees
   G. Long-Term Site Monitoring Program

2) Description of anticipated efforts for the Coming Year

   A. Identification
      Proposed areas to be surveyed for cultural resources during the coming year
   B. Evaluation
      Proposed cultural resources to be evaluated for NRHP eligibility during coming year
   C. Assessment
      i. Proposed Regional Project Components and any specific project components for which findings of effects are anticipated to be completed, concurred on and authorized for construction in the coming year
      ii. Plans to resolve outstanding Regional Project Components or any specific project components for which findings of effect or concurrence on finding of effect are in dispute
   D. Avoidance, Minimization and Mitigation
      i. Summary of proposed avoidance and minimization measures to be undertaken for the coming year

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

ii. Summary of proposed mitigation measures to be undertaken for the coming year, including site treatment plans and the status of other mitigation measures such as publications, cultural resource internships, and cultural landscape documentation.

E. Construction Monitoring
-Proposed areas of construction monitoring to be considered for the coming year, if known

F. Cultural Resource Awareness Contractor Training
i. Proposed contractor training completion schedule for the coming year
ii. Any proposed changes to contractor training curriculum, based on feedback or concerns from previous year

3) Description of the progress of ASAP construction, including any known or expected changes to the ASAP project

4) Evaluation of the Effectiveness of the PA

5) Recommendations for amendments or changes to the PA or CRMP based on deficiencies or modifications to the project
-Updated contact information for CRMP Tables 1, 9, 10 and 11

6) Updated Avoidance, Minimization and Treatment Plan for coming year

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

TEMPLATE FOR PROGRESS REPORT

Date of Progress Report:
For Quarter Covering:

A. Historic Property Identification, Evaluation, Assessment, Avoidance, Minimization and Mitigation

1. Fieldwork activities initiated, underway, or completed during this quarter
2. Fieldwork activities planned for next quarter
3. Reporting activities initiated, underway, or completed during this quarter
4. Reporting activities planned for next quarter
5. Other cultural resource activities initiated, underway, or completed during this quarter
6. Other cultural resource activities planned for next quarter

B. Construction Progress

1. ASAP construction activities initiated, underway, or completed during this quarter
2. ASAP construction activities planned for next quarter

C. Photos of Fieldwork and/or Construction (no more than 5)

DRAFT

NOTICE – THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION AND SHALL NOT BE DUPLICATED, DISTRIBUTED, DISCLOSED, SHARED OR USED FOR ANY PURPOSE EXCEPT AS MAY BE AUTHORIZED BY AGDC IN WRITING.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED. THIS COPY VALID ONLY AT THE TIME OF PRINTING

- Page Intentionally Left Blank -

Appendix F

Department of the Army Permit Special Conditions

- Page Intentionally Left Blank -

Appendix F - Special Conditions

Special Conditions

1. COMPLIANCE. The Permittee understands and agrees that, in addition to other administrative, civil or criminal remedies; A) this permit may be either modified, suspended or revoked, in whole or in part, if the District Engineer determines that there has been noncompliance with any of the terms or conditions of this permit or that such action would otherwise be in the public interest, as set forth in 33 CFR §327.7, and B) that any modification, suspension, or revocation of this permit shall not be the basis for any claim for damages against the United States.
2. COMMENCEMENT NOTIFICATION: No less than 20 days prior to the date of initiating the work authorized by this permit for each construction spread, the Permittee must provide a written notification of the date of commencement to the Corps.
3. COMPENSATORY WETLAND MITIGATION: Prior to initiation of construction activities within WOTUS, the Permittee shall implement the "Wetlands Compensatory Mitigation Plan," dated September 13, 2018, which is incorporated herein by reference. The Permittee must implement the compensatory mitigation in accordance with the plan and any permit conditions. If conflicts occur between this mitigation plan and any permit conditions, the permit conditions shall prevail.
    a. Prior to initiating construction activities in waters of the U.S., including wetlands, (WOTUS) in the Northern Ecoregion, the Permittee must submit for Corps review and approval (listed in order of preference):
        i. A project-specific aquatic resource restoration mitigation plan(s) that would provide 146.2 credits on the North Slope, provided as either Permittee responsible or a 3rd Party mitigation provider (if available), and/or
        ii. A project specific aquatic resource preservation plan(s) that would provide 146.2 credits on the North Slope and demonstration that appropriate aquatic restoration opportunities are not available at the time of proposed implementation.
    b. Prior to initiating construction activities in WOTUS in the Interior or Southcentral Ecoregions, the Permittee must submit for Corps review and approval a plan to purchase available 3rd Party mitigation bank or ILF credits to appropriately offset 80.39 acres of wetlands in the interior and 54.43 acres in southcentral. All components of the plan must be approved by the Corps, including but not limited to debit/credit calculations, credit types (e.g., HGM or Cowardin type), etc. Receipt of credit purchase must be received by the Corps prior to commencement of debit generating construction activities. The Permittee must email the signed credit transaction to mitigationmanager@usace.army.mil and to the Regulatory Pagemaster at: regpagemaster@usace.army.mil upon completion of each credit transaction.
4. PERMIT POSTING: The Permittee must keep a copy of the permit and approved plans available for review at all times, electronically or in hard copy, until the project

is complete at all field offices and construction trailers. All Permittee personnel and contractors performing authorized work in WOTUS must be made aware of the permit and its conditions and appropriate managers and supervisors in charge of or working on construction or compliance must be provided with electronic or hard copies of the permit. The Permittee is responsible for ensuring that whomever performs, supervises, or oversees any portion of the authorized work in WOTUS associated with the construction of the project is familiar with, understands, and complies with the terms and conditions of this permit.

5. ENVIRONMENTAL INSPECTORS. Third Party Environmental Inspectors (EI), hired at the Permittee's expense, must conduct routine, onsite inspections of the work authorized by this permit to ensure that construction complies with this authorization. The EIs will immediately notify the Corps of any noncompliance with the terms and conditions of this authorization. All EI duties must be completed in accordance with a Corps approved EI scope of work. The EIs shall be:

    a. Adequate in number to ensure permit compliance, but no less than one EI per segment of open trench per work shift;

    b. Responsible for advising the Permittee, through direction of the Corps, on matters related to compliance with the terms and conditions of this authorization;

    c. Responsible for monitoring work and documenting compliance with all terms and conditions of this authorization for submission to the Corps;

    d. Responsible for monitoring and reporting non-compliance corrective actions to the Corps;

    e. In no case will the Permittee or its contractors modify or edit an EI compliance report prior to its submission to the Corps, or be provided the opportunity to do so.

    f. The contractor(s) must execute a disclosure statement prepared by the Corps to avoid any conflict of interest.

6. ENVIRONMENTAL CONSTRUCTION PLAN. At least 90 days prior to construction, the Permittee shall submit an Environmental Construction Plan for review and written approval by the Corps. To be approved, the plan must provide the following information with sufficient specificity.

    a. The final design for the Denali NPP Route variation (MP 535.8 – MP 543);

    b. Final design for use and reclamation of each material site located in WOTUS;

    c. Final design for each waterway crossing;

    d. The final Invasive Species Prevention and Management Plan;

    e. How the Permittee will implement the construction procedures in accordance with DA permit special conditions, other agency requirements, and the Permittee proposed mitigation measures described in the application, supplements, final plans, and identified in the FSEIS;

f. How the Permittee will incorporate these procedures and measures into construction drawings so that the mitigation measures necessary at each site is clear to onsite construction and inspection personnel;

g. How the Permittee will ensure that sufficient personnel are available to implement the environmental mitigation;

h. The Permittee personnel, including EIs and contractors, who will receive copies of the appropriate material;

i. The Permittee personnel (if known), and their position titles, having oversight responsibility for compliance;

j. The procedures the Permittee will follow if noncompliance occurs; and

k. The authorized work shall be performed in segments, identified as construction spreads, in such a manner as to limit the amount of area disturbed at any one time. Construction spread schedule and drawings must be provided in the Environmental Construction Plan. The Permittee is responsible for providing the Corps 10-day advance notice of any change in the construction schedule that deviates from the schedule provided.

7. TRAINING. Prior to construction work in WOTUS, the Permittee must ensure that its personnel and contractor personnel performing work associated with this permit are informed of the EI's authority, and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs before becoming involved with construction

8. LIMITS OF WORK. Prior to commencement of construction activities within WOTUS the Permittee must clearly identify the construction ROW limits of the authorized work with highly visible markers (e.g., construction fencing, flagging, silt barriers, etc.), which must be maintained until construction is complete and the soils have been stabilized. The Permittee must not stockpile dredged and/or fill material or stage construction equipment or materials on wetlands outside the construction ROW.

9. TRENCH RESTORATION. Wetland areas affected by trenching, including those areas used to temporarily stockpile side-cast dredged material, must be restored to approximate preconstruction contours and elevations, unless otherwise reflected in the attached construction plans.

   a. Wetland topsoils, including permafrost active layers, excavated from the trench must be stockpiled in separate windrows and used for trench restoration. This soil layer is the upper, outermost layer of soil, usually comprising the top 10 to 30 centimeters of the soil profile. When backfilling the trench, topsoil must be replaced as the uppermost layer to provide a seed bed for native species.

      i. In accordance with special condition 21, the Permittee may request a waiver for specific reaches of the Project where soil segregation as described above is not possible for reasons such as very thin depth of topsoil, presence of boulders, standing water, or similar limiting circumstances.

b. Excavated material temporarily side-cast onto wetlands must be underlain with geotextile, packed-snow, ice pads, or similar material, to allow for removal of the temporary material to the maximum extent practicable.

c. The Permittee must install trench breakers at regular intervals along the trench line, as necessary, to prevent erosion and undercutting of the soils beneath and around the pipeline, channelization of the trench, and/or a French drain effect.

d. The Permittee will crown the trench to allow for settlement to near original ground level to avoid having the filled trench slump or dike, resulting in retention or diversion of water. The design intent shall be to achieve a crown that, following thaw and settling, would leave a very slight mound just above grade.

e. The Permittee must remove all excess subsoil displaced by the pipe and bedding to an upland disposal site.

f. Each spread segment must not exceed 2.5 miles in length of open trench. The trailing end of each spread section must be restored, as described in a.- e. above, as the leading edge of the spread is opened.

10. REVEGETATION. Revegetation must begin as soon as site conditions allow and in the same growing season as the disturbance unless climatic conditions warrant additional time. Additional time must be approved by the Corps. The Permittee shall apply Certified seed mixtures (per the rates and methods specified on the seed tag) to exposed soil and fills. The seed varieties used shall be the mixtures listed, by milepost range, in Guideline Q of the Revegetation Plan. Alternate seed mixtures may be substituted with Corps approval pursuant to Special Condition 21.

11. EROSION. The Permittee shall prevent sediment-laden water from entering WOTUS in, and adjacent to, the construction area. Appropriate erosion and siltation controls shall be used and maintained in effective operating condition during construction, and all exposed soil and fills shall be permanently stabilized at the earliest practicable date. If weather and/or site conditions prohibit the implementation of permanent stabilization measures the Permittee shall utilize temporary/interim measures until such time as site conditions allow for the implementation of the permanent measures. Erosion control and stabilization measures shall be done in accordance with ADEC-approved published practices. The Permittee shall remove and properly dispose of non-biodegradable erosion controls, once the project site has been sufficiently stabilized to prevent erosion through re-establishment of vegetation.

12. WORK MATS. To minimize rutting, the Permittee must use mats to cross-inundated wetlands. Typical wetlands on the project that will be crossed using this technique include those from the palustrine system with classes of unconsolidated bottom, aquatic bed, unconsolidated shore, and emergent (non-persistent).

13. SURFACE HYDROLOGY. The Permittee shall ensure that the Project minimizes alterations to natural drainage patterns. If the Project negatively effects the hydrology within WOTUS, the Permittee must take additional measures (e.g., install depressed road beds, culvert(s), or a similar water conduit) beneath the road

to reestablish the hydrology of the area to that of preconstruction conditions. Excessive ponding and/or dewatering adjacent to fill areas shall indicate non-compliance.

14. INVASIVE SPECIES. To prevent the spread of non-native and invasive plant species, the Permittee shall prepare and comply with an Invasive Species Control Plan that is approved in writing by the Corps.

15. FEDERALLY NAVIGABLE WATERS. The following special conditions are part of all DA permits that provide authorization under Section 10 of the Rivers and Harbors Act. Federally navigable waters are defined in Part 33 CFR 329, and include: Beaufort Sea, Chatanika River, Little Susitna River, Nenana River, Susitna River, Tanana River, East Fork Tolovana River, Willow Creek, and the Yukon River.

    a. No attempt shall be made by the Permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the activity authorized by this permit.

    b. The Permittee understands and agrees that, if future operations by the U.S. require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the Permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the U.S. No claim shall be made against the U.S. on account of any such removal or alteration.

    c. The Permittee must install and maintain, at its expense, any safety lights and signals prescribed by the U.S. Coast Guard (USCG), through regulations or otherwise, on its authorized facilities. The USCG may be reached at the following address and telephone number: Commander (oan), 17th Coast Guard District, P.O. Box 25517, Juneau, Alaska 99802, (907) 463-2272.

16. LOCAL NOTICE TO MARINERS: Prior to initiating work in navigable waters, the Permittee must provide coordinates (latitude and longitude), dates of work, and other pertinent information to the USCG and request that a Local Notice to Mariners be issued. No authorized work may commence in navigable waters until the Local Notice to Mariners has been issued, identifying the location and schedule for commencement of the work. This written request can be submitted by email or letter to:

    Commander (DPW)
    Seventeenth Coast Guard District
    PO Box 25517
    Juneau, AK 99802-5517
    Telephone: (907) 463-2269
    Email: D17-PF-D17-LNM@uscg.mil

17. MARINE CHARTS. The National Oceanic and Atmospheric Administration, Office of Coast Survey, Marine Chart Division, National Ocean Service (NOS) has been notified of this authorization. The Permittee must notify NOS and this office in writing, at least two weeks before they begin work and upon completion of the modifications to DH 3 at West Dock authorized by this permit. Their notification of completion must include a drawing which certifies the location and configuration of the permanent modifications to the facility (a certified permit drawing may be used). Notifications to NOS will be sent to the following address: Nautical Data Branch, Attn: John Whiddon, N/CS261 Room 7220, 1315 East-West Highway, Silver Spring, Maryland 20910.

18. INADVERTENT RETURNS OF HDD DRILLING MUD: If an inadvertent return of drilling mud is detected in a water of the U.S. the Permittee must suspend all drilling operations at the return site immediately. Work must be undertaken immediately to contain and cleanup the drilling fluid and minimize further migration of the drilling mud/slurry in WOTUS. All inadvertent return sites located in WOTUS must be returned to pre-Project conditions. HDD drilling mud containment equipment and materials, such as silt booms, must be available on site prior to drilling below any waterway. Notification of inadvertent returns in WOTUS must be immediately provided to the Corps.

19. ENDANGERED SPECIES. This permit does not authorize the Permittee to take an endangered species. In order to legally take a listed species, the Permittee must have separate authorization under the ESA (e.g., an ESA Section 10 permit, or a Biological Opinion under ESA Section 7, with “incidental take” provisions with which they must comply).

    a. The USFWS Biological Opinion dated March 7, 2018, contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with “incidental take” that is also specified in the Biological Opinion. Authorization under this permit is conditional upon compliance with all of the mandatory terms and conditions associated with incidental take of the enclosed Biological Opinion, which terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the Biological Opinion, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute noncompliance with this permit. The USFWS is the appropriate authority to determine compliance with the terms and conditions of its Biological Opinion, and with the ESA.

    b. The enclosed NMFS Letter of Concurrence (Appendix C), dated September 5, 2018, contains mitigation measures that must be implemented. If the Permittee is unable to implement any of these measures, they must immediately notify the Corps and the NMFS so the latter two may consult as appropriate, prior to initiating the work, in accordance with Federal law. Failure to comply with the terms and conditions associated with incidental take of the Letter of Concurrence, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute noncompliance with this permit.

The NMFS is the appropriate authority to determine compliance with the terms and conditions of its Biological Opinion, and with the ESA.

20. HISTORIC PROPERTIES. This DA Permit is subject to all of the provisions and conditions of the enclosed Programmatic Agreement dated November 29, 2018, which is hereby incorporated by reference. The Permittee shall implement the PA in its entirety. The Corps has been designated the lead federal agency responsible for implementing and enforcing the PA, as signed. If the Permittee fails to comply with the implementation and associated enforcement of the PA, in its entirety, the Corps may determine that the Permittee is out of compliance with the conditions of the DA permit and will suspend the permit. Suspension may result in modification or revocation of the authorized work.

21. MODIFICATIONS. The Permittee may request a modification for a deviation from the work authorized, or for a waiver from a specific condition of the permit for specific circumstances. The Corps reserves the right to fully evaluate, amend, and approve or deny any request for modification of this permit. To request a permit modification, the Permittee must:

    a. Provide a written request of any permit modification to the Corps for consideration;

    b. Explain how and why the Permittee believes the resultant impacts would result in minimal individual and cumulative adverse environmental effects;

    c. Justify the request relative to site-specific conditions;

    d. Route the request through an EI to the Corps; and

    e. Receive approval in writing from the Corps before using that modification.

22. POST CONSTRUCTION MONITORING. On the ground monitoring must follow Section 4 of the ASAP Revegetation Plan (version Jan-2018). All representative monitoring evaluation sites must be selected in consultation with the Corps. Wetland and waterway crossings must be inspected during the growing season for years 1, 2, 3, 5 and 8, following completion of the work authorized by this permit or until demonstration of success of performance standards identified in special condition 23. Concise monitoring reports for years 1, 2, 3, 5 and 8 shall be submitted to the Corps office by September 30th of each of these years. Report content shall include information referenced in Section 4 of the plan, and:

    a. The composition and density of invasive or non-native plant species;

    b. The density (foliar cover), condition, and composition of vegetation in wetlands by wetland type;

    c. Any indications of soil subsidence over the pipelines, effects on wetland hydrology, soil erosion, and bank stabilization failures shall be noted; and

    d. Aerial photos, identified by mile post, of wetland and waterway crossings that do not successfully meet performance standards.

23. PERFORMANCE STANDARDS.

    a. Except for fills authorized to remain in place and material sites that will be reclaimed in accordance with Corps approved reclamation plans, all WOTUS shall be restored to their pre-project contours and elevations as soon as site conditions allow and in the same growing season as the disturbance. A slight crown will remain above the pipeline.

    b. The project will not result in draining, flooding, channelizing, or diverting WOTUS.

    c. Revegetation efforts will be considered successful when vegetation within the ROW supports plants that are similar in cover and/or density to those growing on adjacent undisturbed reference sites.

    d. By the end of the fifth growing season, not less than 70 percent pre-disturbance canopy cover of native/non-invasive live vegetation will be uniformly attained.

24. CORRECTIVE WORK. If the performance standards outlined in the Special Condition 23 are not met at any time during the monitoring period, the Permittee shall provide the Corps with a proposal detailing corrective actions and/or maintenance actions proposed (if any) and an implementation schedule for those actions. The Permittee shall implement the necessary corrective measures following review and approval/modification of those measures by the Corps. Upon completion of corrective measures, the Permittee shall provide a written summary of the work to the Corps. Additional remedial actions may be required if the corrective measures do not result in satisfaction of the performance standards during the next growing season.

    a. The Permittee shall assume all liability for accomplishing corrective work should the District Engineer determine that the construction site restoration has not been completed satisfactorily. This responsibility shall extend for a period of 10 years from completion of the Project.

25. SEDIMENT TESTING. Backfill and dredge material must be free of contaminants above State and Federal exceedance levels. Prior to any dredging at the West Dock Causeway, the Permittee must adequately sample and test the potential dredge prism in accordance with current laws and practices, in coordination with the Corps, EPA and ADEC, and obtain any necessary prior approvals.

Appendix G

Compensatory Mitigation Plan

- Page Intentionally Left Blank -

Alaska's In-State Gas Pipeline

ALASKA STAND ALONE PIPELINE/*ASAP* PROJECT

Wetlands Compensatory Mitigation Plan

ASAP-22-PLN-REG-DOC-00003
September 13, 2018

REVISION HISTORY

Revision	Date	Comment	Approval	
			Preparer	AGDC
A	11/10/2016	Draft 1 – For Agency Review	JC / MH / KS	KS
B	04/30/2018	Draft 2 – For Agency Review	JC / RS / KS	KS
0	07/27/2018	Draft 3 - Preliminary Final Mitigation Plan	JC / RS / KS / LH	FR / DH
1	8/15/2018	Final Plan	JC / KS / LH	FR / DH
2	9/13/2018	Updated plan	KS/LH	FR/DH

This page intentionally left blank.

TABLE OF CONTENTS

1. Introduction 5

1.1 Purpose 5
1.2 Project Description 5
1.3 Regulatory Guidance for Avoidance, Minimization, and Compensatory Mitigation of Wetlands Impacts 8
1.4 Applicant-Proposed Avoidance Measures 10
1.4.1 Ice Roads and Access Roads 10
1.4.2 Ice Pads and Snow Packing 10
1.4.3 Preferential Use of Uplands or Previously Disturbed Areas 10
1.4.4 Open Water Avoidance 11
1.4.5 Material Sites (Borrow) 11
1.4.6 Collocation of Facilities 12
1.5 Minimization Measures 12
1.5.1 Temporary Facilities 13
1.5.2 Revegetation 13
1.5.3 Water Crossings and Water Management 13
1.6 Determination of Substantive Watershed Impacts Requiring Compensatory Mitigation 16
1.6.1 Applicant's Initial Analysis and Determination 16
1.6.2 USACE Revised Analysis and Determination 17
1.6.3 Innovative Approaches to Additional Project Impact Avoidance Measures 20

2. Objectives 20

2.1 North Slope 21
2.2 Interior and Southcentral Alaska 24

3. Site Selection for North Slope PRM 25

3.1 Watershed Needs 26
3.2 Onsite Alternatives 29
3.3 Practicability of Results being Ecologically Self-Sustaining 29
3.4 ASAP Baseline Information 30
3.4.1 Northern Ecoregion 30
3.4.2 Interior Ecoregion 31
3.4.3 Southcentral Ecoregion 32

4. Determination of Credits 33

4.1 Permittee Responsible Mitigation (PRM) 33
4.1.1 PRM Site Baseline Information 33

5. Mitigation Work Plan 33

6. Maintenance Plan 34

7. Performance Standards 35

8. Monitoring Plan 35

9. Long-Term Management 36

10. Adaptive Management 36

11. Financial Assurance 36

12. References 37

Appendix A HUC12 Mapping 40

Appendix B Wetland Assessments 41

LIST OF TABLES

Table 1. Reduction in Length and Number of Access Roads from v6.0 to v6.1 10

Table 2. Examples of Fish and Wildlife Avoidance and Minimization Measures 14

Table 3. USACE Analysis of Substantive Wetlands Impacts (Acres) for Degraded Watersheds (HUC-12) 17

Table 4. USACE Analysis of Substantive Wetlands Impacts (Acres) within 500 feet of Anadromous Waterbody Crossings Outside, Degraded Watersheds by HUC-12 Watershed 18

Table 5. Permittee Responsible Mitigation Opportunities Norther Ecoregion Identified by ADNR 21

Table 6. Permittee Responsible Mitigation Opportunities in the Interior and Southcentral Ecoregions 25

Table 7. North Slope Debit Analysis 31

LIST OF FIGURES

Figure 1. Alaska Stand Alone Pipeline Route 6

Figure 2. Fairbanks Lateral Route 7

ACRONYMS AND 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
AGDC	Alaska Gasline Development Corporation
ASAP	Alaska Stand Alone Pipeline
ASRC	Arctic Slope Regional Corporation
ATV	all-terrain vehicle
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CMP	Wetland Compensatory Mitigation Plan
EPA	U.S. Environmental Protection Agency
FCI	Functional Capacity Index
GCF	Gas Conditioning Facility
GMT1	Greater Mooses Tooth 1
HDD	horizontal directional drilling
HGM	Hydrogeomorphic
HPOI	Hydrologic Points of Interest
HUC	Hydrologic Unit Code
ILF	in-lieu fee
LEDPA	Least Environmentally Damaging Practicable Alternative
MOA	Memorandum of Agreement
MP	milepost
PJD	Preliminary Jurisdictional Determination
PRM	permittee-responsible mitigation
RSA	Revocable Service Agreement
SEIS	Supplemental Environmental Impact Statement
U.S.	United States
USACE	United States Army Corps of Engineers
VSW	Village Safe Water
WAA	Wetland Assessment Area

WOUS Waters of the United States

1. INTRODUCTION

Compensatory mitigation is a critical tool in helping the federal government meet legal requirements for activities associated with work in navigable waters and wetlands (33 Code of Federal Regulations [CFR] Parts 325 and 322; 40 CFR Part 230). Compensatory mitigation is considered only after appropriate and practicable steps have been taken to first avoid and then minimize adverse impacts to the aquatic ecosystem, pursuant to 40 CFR Part 230 (*i.e.*, Clean Water Act Section 404(b)(1) Guidelines). Compensatory mitigation can be carried out through four methods: 1) restoration of an existing wetland or aquatic site, 2) enhancement of an aquatic site's function, 3) establishment of a new aquatic site, or 4) preservation of an aquatic site (33 CFR Parts 325 and 332; 40 CFR Part 230).

The 2008 Mitigation Rule, developed by the United States (U.S.) Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (EPA), addresses compensatory mitigation for unavoidable losses of aquatic resources and functions at a project site (33 CFR Parts 325 and 332; 40 CFR Part 230). The rule establishes performance standards, sets timeframes for decision-making, and establishes equivalent requirements and standards for the three types of compensatory mitigation: mitigation banks, in-lieu fee (ILF) programs, and permittee-responsible mitigation (PRM) projects.

On June 15, 2018, the USACE and EPA signed a Memorandum of Agreement (MOA) concerning mitigation for wetland impacts in Alaska under Section 404 of the Clean Water Act (USACE/EPA 2018). The 2018 MOA recognized flexibilities that exist in the mitigation requirements for Clean Water Act Section 404 permits, and described how those flexibilities can be applied in Alaska given the abundance of wetlands and unique circumstances involved with Section 404 permitting in the state. The 2018 MOA also clarified how existing national policies regarding practicability determinations and regulatory flexibility can be implemented in Alaska while ensuring sound environmental stewardship of the state's ecologically important wetland resources.

1.1 PURPOSE

This Wetland Compensatory Mitigation Plan (CMP) describes the procedures by which the Alaska Gasline Development Corporation (AGDC) will compensate for the unavoidable losses of Waters of the U.S. (WOUS), including jurisdictional wetlands, within the project area impacted by the Alaska Stand Alone Pipeline (ASAP).

1.2 PROJECT DESCRIPTION

The ASAP Project is AGDC's in-state natural gas pipeline project designed to provide an affordable, long-term energy solution to Fairbanks, the Southcentral region, and to as many other Alaskan communities as possible. The buried 733-mile, 36-inch pipeline is proposed to deliver natural gas from Prudhoe Bay to

Southcentral Alaska, where it will tie in to the existing ENSTAR Natural Gas Company system (Figure 1). A proposed 30-mile, 12-inch lateral pipeline will connect the Mainline to Fairbanks (Figure 2). The Project will cross three ecoregions: Northern, Interior, and Southcentral.

Figure 1. Alaska Stand Alone Pipeline Route

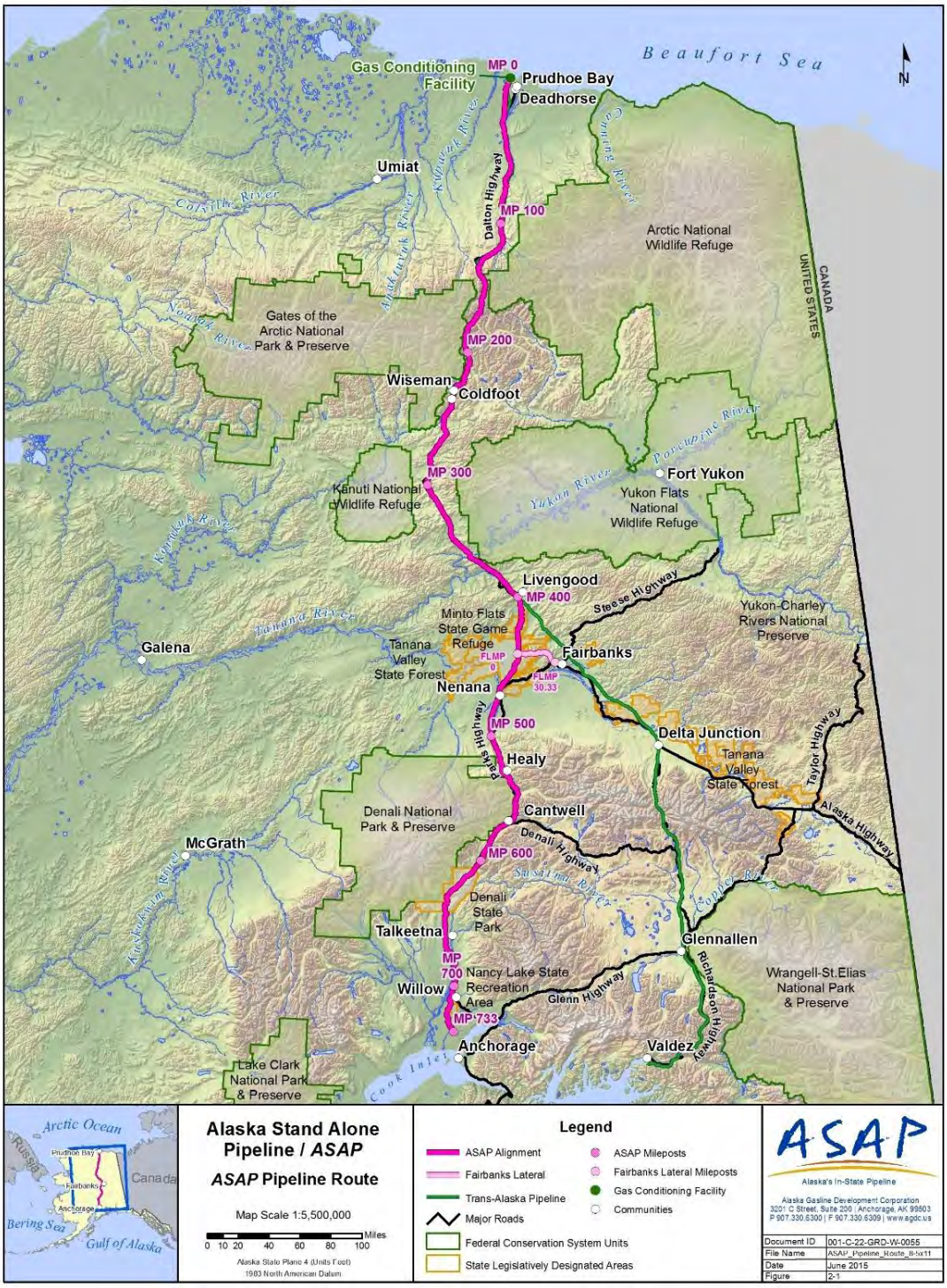
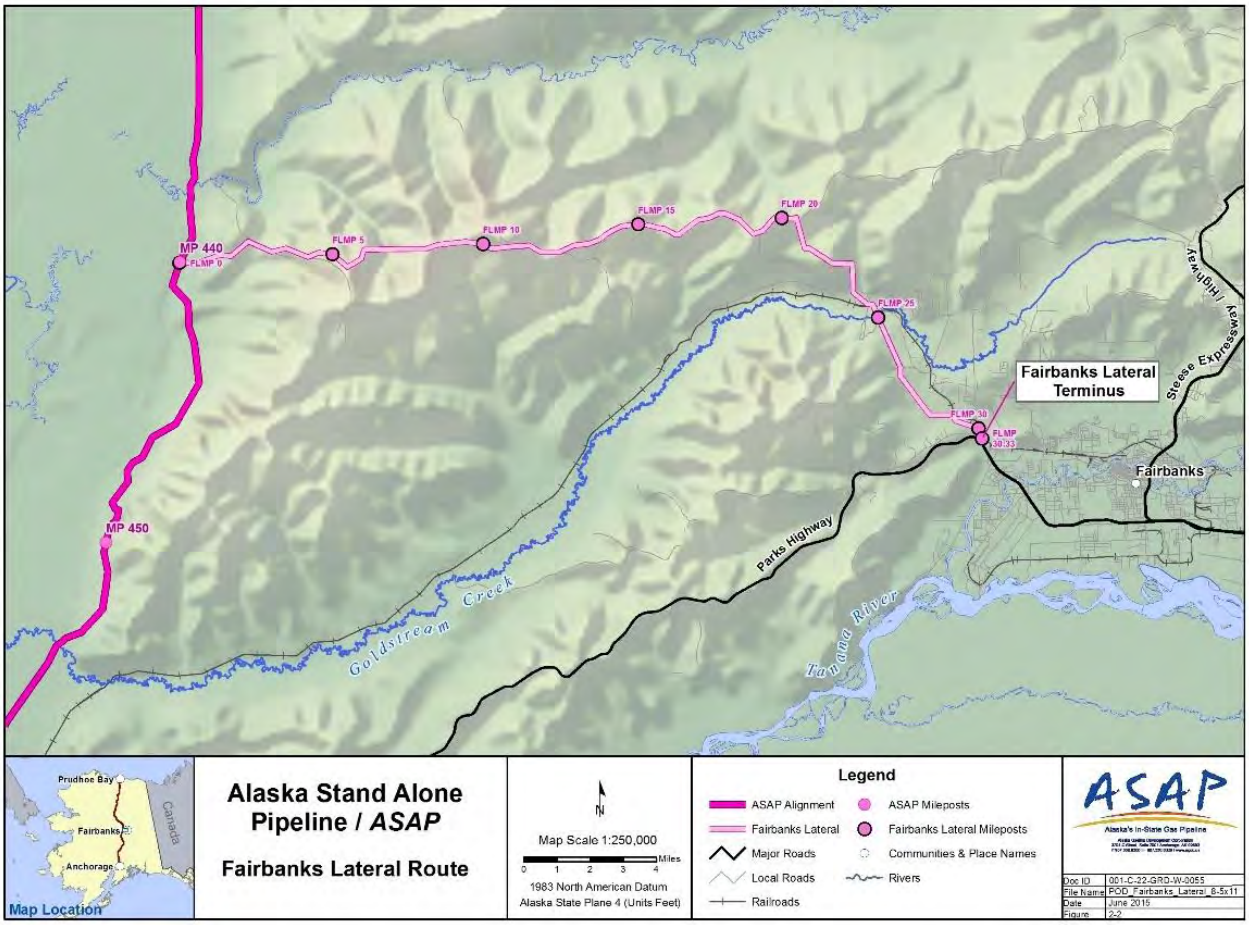


Figure 2. Fairbanks Lateral Route



The ASAP pipeline alignment will avoid and minimize impacts to wetlands, where practicable. If impacts cannot be avoided or minimized, then any required compensatory mitigation for impacted wetlands will follow 40 CFR Part 230 Section 404(b)(1) 'Guidelines for Specification of Disposal Sites for Dredged or Fill Material'. AGDC designed the ASAP Project with a commitment to take appropriate and practicable steps to avoid and minimize impacts to aquatic sites where practicable, prior to the consideration of compensatory mitigation options.

AGDC will adhere to several traditional wetland protection measures, which include:

- Scheduling pipeline construction across wetlands during the winter to the maximum extent practicable.
- Avoiding and minimizing ground-disturbing activity in wetland habitats
- Maintaining existing hydrologic systems
- Re-establishing vegetation that is typical of the general area
- Minimizing the number of stream crossings

- Using existing bridges or horizontal directional drilling (HDD) or other trenchless technology
- Surrounding fuel and lubricant stations in wetland areas by a berm of sufficient height to prevent discharge outside the berm
- Containing fuel and lubricant spills during construction
- Implementing procedures to limit spread of non-native invasive plants
- Keeping temporary impact areas disturbed during construction activities as small as reasonably possible
- Situating facilities so permanently impacted areas occupy as much upland habitat as can be used
- Implementing dust abatement measures during construction to minimize dust deposition in wetlands
- Developing and implementing a stormwater pollution prevention plan and an erosion and sediment control plan to prevent sediment deposition into adjacent wetlands

1.3 REGULATORY GUIDANCE FOR AVOIDANCE, MINIMIZATION, AND COMPENSATORY MITIGATION OF WETLANDS IMPACTS

Regulatory requirements for discharges of dredge and fill materials to WOUS are detailed in 40 CFR Part 230. The feasibility and appropriateness of compensatory mitigation for a particular aquatic resource type is to be addressed through the permitting process by district engineers (33 CFR Parts 325 and 332; 40 CFR Part 230). The Council on Environmental Quality (CEQ) has defined mitigation to include: avoiding impacts, minimizing impacts, rectifying impacts, reducing impacts over time, and compensating for impacts (40 CFR 1508.20). The types of mitigation enumerated by the CEQ are compatible with the requirements of the CEQ Guidelines. As a practical matter, they are combined by EPA to form three general types: avoidance, minimization, and compensatory mitigation.

1. Avoidance.

   Section 40 CFR Part 230.10(a) requires that no discharge be permitted if there is a practicable alternative to the proposed discharge that will have less adverse impact to the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. In addition, Section 230.10(a)(3) sets forth rebuttable presumptions that 1) alternatives for non-water dependent activities that do not involve special aquatic sites are available, and 2) alternatives that do not involve special aquatic sites have a less adverse impact on the aquatic environment. Compensatory mitigation may not be used as a method to reduce environmental impacts in the evaluation of the Least Environmentally Damaging Practicable Alternatives (LEDPAs) as it pertains to the requirements of Section 230.10(a).

2. Minimization.

   40 CFR Part 230.10(d) states that appropriate and practicable steps to minimize adverse impacts will be required through project modifications and permit conditions. Subpart H of the regulations (40 CFR 230.70-230.77) describe potential actions to minimize adverse effects of an activity.

3. Compensatory Mitigation.

   Subpart J of the regulations (40 CFR Parts 230.91 – 230.98) defines standards and criteria for compensatory mitigation to offset unavoidable impacts to WOUS. Using permitting authority in conjunction with the regulations in Subpart J, compensation options for on-site and off-site permittee-responsible mitigation, mitigation banks, and ILF mitigation can be evaluated as options when impacts to WOUS are unavoidable. Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts that remain after all appropriate and practicable minimization measures are instituted. Compensatory actions (*e.g.*, restoration of existing degraded wetlands or creation of man-made wetlands) should be undertaken when practicable, in areas adjacent or continuous to the discharge site (on-site compensatory mitigation). If on-site compensatory mitigation is not practicable, off-site compensatory mitigation should be undertaken in the same geographic area, if appropriate and practicable (*i.e.*, in close proximity and, to the extent possible, the same watershed). In determining compensatory mitigation, the functional values lost by the resource to be impacted must be considered. Generally, in-kind compensatory mitigation is preferable to out-of-kind. There is continued uncertainty regarding the success of wetland creation or other habitat development. Therefore, in determining the nature and extent of habitat development of this type, careful consideration should be given to its likelihood of success. Because the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, restoration should be the first option considered.

The June 18, 2018 MOA (USACE/EPA 2018) set out additional guidance for evaluating mitigation for wetland impacts in Alaska associated with deposit of dredged or fill materials by recognizing:

a) Avoiding wetlands may not be practicable where there is a high proportion of land in a watershed or region which is jurisdictional wetlands;

b) Restoring, enhancing, or establishing wetlands for compensatory mitigation may not be practicable due to limited availability of sites and/or technical or logistical limitations;

c) Compensatory mitigation options over a larger watershed scale may be appropriate given that compensation options are frequently limited at a smaller watershed scale;

d) Where a large proportion of land is under public ownership, compensatory mitigation opportunities may be available on public land;

e) Out-of-kind compensatory mitigation may be appropriate when it better serves the aquatic resource needs of the watershed; and

f) Applying a less rigorous permit review for small projects with minor environmental impacts is consistent with the Section 404 program regulations.

AGDC has taken the regulations and the new MOA into account in developing the ASAP Project plan, focusing first on avoidance and then on compensatory mitigation.

1.4 APPLICANT-PROPOSED AVOIDANCE MEASURES

1.4.1 Ice Roads and Access Roads

Ice roads will be used in the Northern Ecoregion to avoid impacts associated with disturbing or filling wetlands. Approximately 23 miles of ice roads are planned to avoid wetlands impacts (Table 1).

Table 1 shows the reduction in roadway length and number from an earlier version of the Project considered (v6, December 2013) and the current version of the Project (v6.1, revised November 2017). Access roads have been designed to avoid WOUS, where possible (see Table 1, above). The access roads will be located based on several factors, including access road slopes, existing roads, and delineated and wetlands.

The access road grades to the material sites and pipeline cannot exceed 6 percent for any sustained period. After accounting for grade, the roadway design team used the ArcReader system to avoid high-value wetlands, where possible. Then, through the wetlands-viewing platform, field studies, and numerous revisions, access roads were refined to reduce the number, widths, and fill depths of access roads. Access roads were eliminated by identifying and removing duplicate roads, using only those access roads required, changing access road spacing along the mainline from 5 to 10 miles, reviewing each access road for need, and reviewing width and locations of existing roads in the corridor.

Table 1. Reduction in Length and Number of Access Roads from v6.0 to v6.1

Category	Total Mileage			Number of Roads		
	V6.0	V6.1	Change	V6.0	V6.1	Change
New Roads	301.8	169.9	-131.9	397	293	-104
Temporary Ice Roads	22.6	23.2	+0.6	24	24	0

1.4.2 Ice Pads and Snow Packing

Ice pads and snow packing will be used during the process of trenching and burying the pipe in the Northern Ecoregion to avoid impacts associated with disturbing or filling wetlands. The ice or snow surface will allow heavy equipment to drive over the tundra to perform construction while only generating a narrow impact where the pipeline will be buried.

1.4.3 Preferential Use of Uplands or Previously Disturbed Areas

AGDC has preferentially sited larger facilities, such as camps, pipe storage yards, and operations and maintenance facilities in previously disturbed areas, as noted in detail in the ASAP Environmental Evaluation Document (AGDC 2016a). AGDC has also opted to use existing access roads and material sites

wherever practicable (AGDC 2016a) to minimize disturbance to new wetlands. The Project intends to use disturbed areas to the extent practicable. Material sites preferentially targeted disturbed areas for use or expansion. AGDC may also improve stabilization of disturbed areas and use those areas, including placement of gravel on existing permafrost thaw to cover relic "tractor tracks". By placing gravel in these types of disturbed areas to construct the Gas Conditioning Facility (GCF) and ancillary features, the anthropogenically derived water that currently exists will be covered, and the pad prism will serve to insulate the underlying permafrost, thus avoiding future thaw potential. AGDC will also use uplands preferentially to wetlands. For example, the pipeline and block valves will be located in non-WOUS locations where practicable to avoid impacts from these facilities.

Limits of clearing, grubbing, and grading will be adjusted, where feasible, to avoid affecting WOUS habitats. Where clearing in WOUS could be avoided, limits to avoid impacts will be shown in the construction drawings and marked in the field. Excavated soils will be temporarily sidecast into the temporary construction easement. Upland locations will be used when available to avoid temporary impacts to WOUS. The number of miles of pipeline and lateral that will be suitable for upland sidecasting will be determined during later design stages. Excess spoil material, including vegetation, trees, and roots from clearings will be removed and placed in upland areas for permanent disposal. New material sites also preferentially targeted upland areas.

1.4.4 Open Water Avoidance

Where appropriate, waterbody crossings will avoid WOUS impacts by using trenchless technology such as HDD and aerial-crossing structures (USACE 2017a, AGDC 2018a). Impacts on WOUS will additionally be avoided at several new or existing bridges, including access roads (USACE 2017a, AGDC 2018a). The pipeline will be attached to bridges at the Putuligayuk River near Milepost (MP) 3.1, the Nenana River near MP 530.9, Lynx Creek at MP 536.7, the Nenana River near MP 558.6, the Susitna River at MP 673.5, and Montana Creek at MP 680.7.

Where ponds are crossed in winter (*e.g.*, the North Slope), construction will occur using an isolated open-cut method and will be treated similar to trenching through a winter stream. The Project will have an approximately 5-foot-wide temporary impact to ponds, if crossed. For certain ponds crossed in summer, the Project may bore under them, similar to planned crossings of the Trans-Alaska Pipeline System. This type of boring is shorter, shallower, and simpler than HDD crossings and does not require the same sort of HDD entry or exit pads.

1.4.5 Material Sites (Borrow)

Materials sites (borrow) investigations avoided impacts significantly throughout the design process. Pipeline and ancillary facility and access road refinements have reduced the amount of fill material required and, in turn, the number of related material sites and access roads needed. Along with reduced fill requirements, desktop data analysis and field studies further reduced the impacts of material site development on wetlands. Further refinements were made to the numbers of sites needed, siting to limit haul distances, avoiding impacts on wetlands and established waterbodies, avoiding groundwater where possible, and reducing the overall number of quarry sites versus borrow sites. Available wetlands

delineation data were used to adjust the boundaries of planned material sites to avoid wetland impacts, reflect the true size of development footprints, and reduce the footprints to what is needed. A critical part of this process was a series of meetings and work sessions in 2014 to review potential material sites and provide the design and environmental teams an opportunity to discuss and understand ways to improve the material locations.

The number of material sites required has been reduced significantly throughout the planning process. The design team initially identified 168 potential source sites, and has since reduced the number to 89 potential material source sites. Refinements are ongoing, and further reductions are possible. Material sites will occupy approximately 5,252 acres (1,763 acres of wetlands and 3,489 acres of uplands).

Using existing material source sites, expanding existing sites over developing new ones, and using existing roads for access are preferred. New sites will avoid wetlands where practicable, and access roads associated with these sites will be routed to avoid hauling material over difficult wetland or riverine terrains. Proximity to alignment also will reduce access road length.

1.4.6 Collocation of Facilities

Several facilities will be collocated to further avoid impacts to wetlands. For instance, camps and pipe storage yards will be collocated at times to reduce the number of access roads required and associated disturbance.

1.5 MINIMIZATION MEASURES

In some areas, project impacts to wetlands will be temporary, minimizing impacts to wetlands. Temporary impacts will not require compensatory mitigation as there will be no long-term impacts to wetlands in these areas. Clearing or trenching may be considered temporary impact if the degraded wetland plant community is able to revegetate promptly after construction and hydrologic function is not impacted, or if it returns. For instance, impacts to streams will be temporary in nature.

AGDC has proposed restoration of the trenched area through crowning of the ditch, re-contouring of the soils, and implementing its Revegetation Plan. The installation of the 36” pipeline, over bedding and padding where required, will fill a large portion of the total trench volume, providing enough remaining sediment for crowning of the ditch to a proper height, including in permafrost areas. Where required, samples of ditch spoils will be collected to determine the ice content and derive an estimate of the portion of the spoils that would be water. This will assist AGDC in determining the level of settlement expected the first summer and in subsequent summers and will ultimately help to derive the appropriate crown height and re-contouring efforts needed along the filled trench.

A crown that settles to a level that is slightly convex or near to flat after three years would be ideal for the purposes of revegetation and for maintaining original hydrology and drainage. AGDC will err on the side of a having convex surface, as a concave surface would collect water and may not support the desired revegetation of the trench. The goal of trench restoration is to blend the revegetated trench with the surrounding area in a manner that will meet basal vegetation cover standards and allow for approximate

original land contours and hydrology. Robust monitoring and revegetation programs will be implemented during the first 5 years to confirm compliance requirements are met. Wetland crossings with soft sub-soils completed during the summer may be constructed using a push-pull technique, which requires excavation of the ditch from temporary mats (typically wood mats with approximate dimensions of 20 feet x 4 feet by 12 inches). Heavy equipment working on mats may use low ground-bearing equipment to reduce the wetland vegetation and soil disturbance. Ditch spoil can be placed on either side of the ditch on the mats because the pipeline will be strung and welded outside the wetland, and the pipe string will be pushed and pulled into place. Backfill of the pipeline is accomplished in a similar manner using excavators on mats. Placement of clean mats for construction access through a wetland is a protective measure that may be used in some areas and will not result in wetland degradation. In some areas, excavated material temporarily sidecast into wetlands will be underlain with geotextile, ice pads, or similar material to allow removal to the maximum extent practicable with the least damage to the underlying wetland vegetation.

1.5.1 Temporary Facilities

Temporary workspaces and false rights-of-way may be used in some locations during construction to minimize impacts to wetlands. These temporary work spaces will accommodate activities such as walking, laying down materials, clearing vegetation above the root, and use of vehicles with low-pressure tires or tracks to minimize permanent impacts on wetlands through only a temporary (short-term) impact without the need for fill.

1.5.2 Revegetation

The ASAP Project design will incorporate revegetation procedures to be implemented after construction to stabilize areas and prevent erosion, as well as to help regain partial hydrologic functions. The Alaska Department of Natural Resources (ADNR) - Plant Materials Center has worked with AGDC to produce a revegetation plan based on the different ecoregions of the Project. Specific procedures and recommended seed types and seed mixes are provided in this plan, which has been attached to the ASAP EED (AGDC 2016a) and ASAP Draft Supplemental Environmental Impact Statement (SEIS) (USACE 2017a).

Revegetation of impacted sites will begin when on-site conditions allow, and in the same growing season as the disturbance unless conditions warrant additional time. Right-of-way agreements will generally describe acceptable methods of revegetation and restoration upon Project completion.

1.5.3 Water Crossings and Water Management

Identifying crossing modes for streams and waterbodies intercepted by the ASAP Mainline and access roads has been a critical component of minimizing impacts. A major hydrologic design process was conducted to avoid and minimize crossing impacts, and it consisted of field surveys, stream classification/ characterization, a fish and wildlife habitat sensitivity analysis, and design of crossing techniques to minimize impacts.

Based on the current Project design, the ASAP Project will directly impact waterbodies at 495 locations. These locations are differentiated as pipeline and access road stream crossing impacts (310), pipeline and

access road hydrologic points of interest (HPOI) impacts (181), and in-river material extraction impacts (4) (AGDC 2018a). The HPOI features do not meet the criteria relative to possessing an ordinary high water mark, as defined in USACE Regulatory Guidance Letter 05-05, but are jurisdictional areas for which engineers may need to give special design consideration.

The Mainline and Fairbanks Lateral will require waterbody crossings at 430 locations (Stream and HPOI combined), of which 62 are anadromous (AGDC 2018a). Access roads will temporarily or permanently impact 61 waterbodies, of which 17 are anadromous (AGDC 2018a). In-river material extraction sites will temporarily impact one anadromous waterbody at four different locations (AGDC 2018a). In all, the Project will impact anadromous waterbodies at 83 distinct locations (AGDC 2018a).

Work pads normally will be placed at least 50 feet from WOUS and waterbodies and within the temporary construction easement. Drilling materials normally will not be sidecast into a WOUS. Streambank revegetation techniques will be defined for the stream crossing cuts to help reduce erosion and to provide for restoration success. Revegetation techniques for streambanks are included in *Streambank Revegetation and Protection: A Guide for Alaska* (Alaska Department of Fish and Game [ADF&G] 2005). Natural drainage patterns will be maintained using appropriate ditching, culverts, and other measures to prevent ponding or drying. Pipeline installation in wetlands will include measures to limit the potential for water flow within the trench (*e.g.*, ditch plugs). All culverts in fish-bearing waters will be installed in accordance with a valid ADF&G Fish Habitat permit. Culverts will be designed, as appropriate for surface flow.

Fish and wildlife habitat sensitivity analysis was conducted following 2014 data collection. Field data were spatially analyzed in GIS and overlain upon various spatial data sets, including National Wetlands Inventory, Anadromous Waters Catalog, Alaska Freshwater Fish Inventory, National Hydrography Database, and aerial imagery. This effort generated detailed recommendations identifying the LEDPAs to current engineering plans. Where feasible, alignment route alternatives were identified where certain waterway crossings could be avoided entirely. In situations where complete avoidance was not possible or feasible, proximal crossing locations were identified where environmental impacts associated with in-stream construction efforts will be minimized. Where the alignment could not be adjusted, optimal construction seasons and modes to minimize impacts were identified. Table 2 lists some examples of the efforts associated with fish and aquatic habitat impact avoidance and minimization.

Table 2. Examples of Fish and Wildlife Avoidance and Minimization Measures

Date	Action	Document	Action Focus	Participants
Access Roads				
6/23/2014 – 8/17/2014; 7/20/15 – 8/4/15	Field work	N/A	Collect data and analyze opportunities for avoidance and minimization	Biologist/ Engineer
8/17/2014 – 10/01/2014; 8/4/15 – 10/1/2015	Data Analysis	N/A	Analyze field data using GIS to identify additional opportunities for avoidance and minimization	Biologist

Date	Action	Document	Action Focus	Participants
10/1/2014; 10/1/2015	Study report submitted to engineers	Access Roads Fish Habitat Study Report	Provide avoidance and minimization recommendations to engineers for review	Biologist/ Engineer
10/07/2014 – 10/15/2014; 10/07/15 – 10/15/2015	Avoidance and minimization discussion	N/A	Collaboratively identify locations where recommended adjustments to alignments and construction plans were feasible	Biologist/ Engineer
Pipeline Crossings				
7/15/2014 – 8/17/2014; 7/12/2015 – 7/27/2015	Fieldwork	N/A	Collect data and analyze opportunities for avoidance and minimization	Biologist/ Engineer
8/17/2014 – 12/01/2014; 7/27/2015 – 12/01/15	Data Analysis	N/A	Analyze field data using GIS to identify additional opportunities for avoidance and minimization	Biologist
12/8/2014; 12/8/15	Study report submitted to engineers	Pipeline Crossings Fish Habitat Study Report	Provide avoidance and minimization recommendations to engineers for review	Biologist/ Engineer
12/08/2014 – 12/22/2014; 12/08/15 – 12/22/15	Alignment Discussion	N/A	Collaboratively identify locations where recommended alignment adjustments were feasible	Biologist/ Engineer
01/10/2015 – 1/30/2015; 01/10/2016 – 1/30/2015	Mode Determination Table creation	Mode Determination Table	Provide mode and timing recommendations and assess feasibility	Biologist/ Engineer

A procedural method was developed in support of preliminary stream crossing mode determinations and is documented in a Pipeline Stream Crossing Construction Mode Determination Manual (ADGC 2015d). The manual determines procedures to identify the design and construction complexity and potential for environmental or pipeline integrity impacts. The manual also identifies the environmentally preferred crossing mode for each stream classification and crossing modes that avoid and minimize impacts on aquatic resources. A pipeline crossing mode matrix (ASAP Pipeline Stream Crossing Mode Determination Decision Tree) was developed to aid in the selection of modes avoiding or minimizing impacts at stream crossings. A Streambank Restoration Manual was developed by the Project to minimize the long-term impacts on waterbodies and their adjacent riparian zones crossed by the ASAP Mainline (AGDC 2015c). In addition site-specific stream crossing analyses and reports were developed to provide guidance for the design, construction, installation, maintenance, inspection, and performance evaluation of bank armoring and river training structures proposed for select stream crossings associated with the ASAP Mainline

(AGDC 2015a,b). The manual proposes bank armoring protection methods intended to protect the existing streambanks and minimize impacts on their associated waters.

For pipeline stream crossings, AGDC will continue its systematic and comprehensive permit program to avoid and minimize fill and armor below ordinary high water. The final streambank restoration plan for each stream will be contingent on the streambed and stream bank composition, stream velocity, stream depth, and the crossing mode for each site. AGDC will investigate the use of bioengineered bank restoration and stabilization to include tree revetments, root wads, coir rolls, and coir mat lifts, as appropriate and practicable.

1.6 DETERMINATION OF SUBSTANTIVE WATERSHED IMPACTS REQUIRING COMPENSATORY MITIGATION

1.6.1 Applicant's Initial Analysis and Determination

Urbanization and development are known to have a substantive impact on aquatic resources and functions once approximately 10 percent of land in a watershed is urbanized, disturbed, or converted to impervious surfaces (Baker and King 2010; Hilderbrand *et al.* 2010; Utz *et al.* 2009; Hicks and Larson 1997; May *et al.* 1997; see also AGDC 2016b). Urbanization can begin to influence some biological parameters in watersheds when approaching this threshold. Below this threshold, impacts generally do not have a significant impact to overall water quality or aquatic biodiversity of the watershed (Hilderbrand *et al.* 2010; Schueler *et al.* 2009; Booth and Jackson 1997; Booth *et al.* 1996; Luchetti and Fuersteburg 1993; MWCOG 1992; Booth 1991; Weaver 1991; Limburg and Schmidt 1990; Steedmen 1988; Jones and Clark 1987; Klein 1979). Following guidance from the USACE, per the 2008 Mitigation Rule and thru personal communications with the Alaska District leading up to the initial Draft ASAP CMP, AGDC used a watershed-level approach to provide an initial determination of where compensatory mitigation might be required due to significant aggregate impacts to watersheds.

As noted in a previous iteration of this plan, AGDC initially selected 7.5 percent as a conservative threshold for determining which watersheds will be classified as degraded (AGDC 2016b). The National Land Cover Database and the ASAP Project footprint were used to calculate an aggregate value of expected watershed disturbance following ASAP construction by summing the acreages of existing disturbance and new disturbance within each 10-digit Hydrologic Unit Code (HUC) watershed traversed by the Project. AGDC provided the specific results of this initial watershed impact analysis, by ecoregion, to the USACE in an initial Draft Compensatory Mitigation Plan on November 10, 2016 (AGDC 2016b).

The findings from that initial analysis indicated that there were no substantive watershed impacts to wetland resources or functions in any of the 10-digit HUC watersheds in the Northern Ecoregion due to the avoidance and minimization measures implemented by the Project and due to the relative lack of urbanization in the area. Substantive impacts to wetlands occurred within 10-digit HUC watersheds in the Interior Ecoregion (34.12 acres) and the Southcentral Ecoregion (70.85 acres) (AGDC 2016b, 2018b). A more detailed summary of the substantive impacts identified in that preliminary analysis is provided in the Draft Compensatory Mitigation Plan ('Draft 1') (AGDC 2016b). Drafts 1 and 2 of this plan contain additional information and details on the plan's rationale, methodology, and steps in the analysis.

1.6.2 USACE Revised Analysis and Determination

The USACE reviewed the initial AGDC analysis in the Initial ('Draft 1') Plan and noticed it to the public with the ASAP Draft SEIS on June 30, 2017 (USACE 2017a). Following receipt of comments on the Draft SEIS and the 'Draft 1' Wetlands CMP by agencies and the public, the USACE Alaska District performed an independent watershed-level analysis of ASAP's wetlands impacts to identify where compensatory mitigation will be required by the USACE. The USACE's analysis included the following:

- Use the current ASAP Project footprint and the Preliminary Jurisdictional Determination (PJD) wetlands geodatabase layer in the analysis.
- Refine the analysis to 12-digit HUC watersheds.
- Reduce the threshold for defining a degraded watershed and requiring compensatory mitigation from AGDC's proposed 7.5 percent, down to an even more conservative 5 percent.
- Establish requirements for compensatory mitigation to include areas in which permanent impacts to Project wetlands will exist within 500 feet of any anadromous waterbody crossing, regardless of watershed.
- Remove winter disposal of dredge material over bottomfast sea ice and gravel excavation areas around the Sagavanirktok River from the analysis.

AGDC incorporated the USACE's analysis into ('Draft 2') (AGDC 2018b) and this Final Wetlands CMP.

The USACE analysis, which identified wetlands compensatory mitigation requirements for the ASAP Project at the 12-digit HUC watershed level, is displayed in tabular format in Tables 4 and 5, below, and graphically in a series of maps, by ecoregion, in Appendix A. Table 3 reports the results of the revised analysis for degraded watersheds, by ecoregion. Table 4 reports the acreage of permanently impacted wetlands occurring within 500 feet of anadromous waterbody crossings.

AGDC was also directed by the USACE to include in the 'Draft 2' Plan (AGDC 2018b), a list of third party mitigation providers that have service areas within the watersheds where compensatory mitigation will be required. Both Tables 4 and 5 indicate the preferred third party provider(s) that have service areas in the respective 12-digit HUC watersheds. The letters "PRM" are used for areas where AGDC has selected to provide PRM because no other option for purchasing credits is available.

Table 3. USACE Analysis of Substantive Wetlands Impacts (Acres) for Degraded Watersheds (HUC-12)

ECOREGION	HUC12	HUC12 NAME	SERVICE AREA	CORPS HGM	IMPACT ACRES
Northern	190604010104[1]	Prudhoe Bay-Frontal Beaufort Sea	PRM	DEPRESSIONAL	33.38
				FLAT	136.01
				RIVERINE	0.07
				LACUSTRINE FRINGE	0.02
Interior	190803060906	Cripple Creek	Tanana Bank	DEPRESSIONAL	0.03

ECOREGION	HUC12	HUC12 NAME	SERVICE AREA	CORPS HGM	IMPACT ACRES
				FLAT	32.45
				RIVERINE	0.38
	190803060907	Chena River	Tanana Bank	DEPRESSIONAL	3.82
	190803090703	O'Connor Creek	Tanana Bank	DEPRESSIONAL	0.42
				FLAT	6.24
				SLOPE	8.24
Southcentral	190204010503	Big Lake	SuKnik	FLAT	0.07
	190205050105	Little Montana Creek-Montana Creek	SuKnik	DEPRESSIONAL	0.85
				RIVERINE	0.32
	190205050605	Outlet Willow Creek	SuKnik	DEPRESSIONAL	3.09
				RIVERINE	3.45
Grand Total					**228.85**

[1] Includes additional acreage outside of HUC 190604010104 associated with the GCF project impact

HGM - hydrogeomorphic

PRM - Permittee Responsible Mitigation

Table 4. USACE Analysis of Substantive Wetlands Impacts (Acres) within 500 feet of Anadromous Waterbody Crossings Outside, Degraded Watersheds by HUC-12 Watershed

ECOREGION	HUC12	HUC12 NAME	SERVICE AREA	CORPS HGM	ANADROMOUS (ACRES)
Northern	190604010103	Putuligayuk River	PRM	FLAT	0.22
				RIVERINE	<0.01
Interior	190803080903	Panguingue Creek	Tanana Bank	FLAT	0.53
				RIVERINE	0.40
	190803080907	Bear Creek	Tanana Bank	FLAT	2.91
				RIVERINE	0.04
				SLOPE	0.02
	190803080908	Nenana River	Tanana Bank	FLAT	0.72
	190803081307	Seventeenmile Slough-Nenana River	Tanana Bank	DEPRESSIONAL	1.16
				FLAT	1.13
				RIVERINE	2.44
	190803090108	West Fork Tolovana River	Tanana Bank	FLAT	1.42
	190803090903	Hard Luck Creek-Chatanika River	Tanana Bank	DEPRESSIONAL	0.01
				RIVERINE	0.05
	190804040504	Smoothface Mountain-Yukon River	No Service Area	DEPRESSIONAL	0.11
				FLAT	1.52
	190901010503	Nugget Creek-Middle Fork Koyukuk River	No Service Area	DEPRESSIONAL	0.46
				FLAT	0.83
				RIVERINE	2.41
				SLOPE	0.12

ECOREGION	HUC12	HUC12 NAME	SERVICE AREA	CORPS HGM	ANADROMOUS (ACRES)
	190901010602	Marion Creek	No Service Area	RIVERINE	0.10
	190901010604	Slate Creek	No Service Area	FLAT	0.00
				RIVERINE	0.03
				SLOPE	0.09
	190901020302	Eagle Creek-South Fork Koyukuk River	No Service Area	FLAT	0.42
				FLAT	2.07
				RIVERINE	0.93
				SLOPE	1.16
	190901020403	Outlet Prospect Creek	No Service Area	FLAT	0.95
				RIVERINE	1.42
				SLOPE	0.38
	190901020505	Douglas Creek	No Service Area	FLAT	0.17
				RIVERINE	2.35
				SLOPE	0.54
	190901020507	Grayling Creek-Jim River	No Service Area	DEPRESSIONAL	0.00
				FLAT	1.01
				RIVERINE	0.91
Southcentral	190205020103	Outlet Middle Fork Chulitna River	SuKnik	FLAT	0.98
				RIVERINE	1.89
				SLOPE	0.07
	190205020204	Outlet East Fork Chulitna River	SuKnik	RIVERINE	0.22
	190205020403	Outlet Honolulu Creek	SuKnik	RIVERINE	0.89
	190205020414	Granite Creek-Chulitna River	SuKnik	RIVERINE	0.16
	190205020603	Byers Creek	SuKnik	RIVERINE	0.03
	190205021003	Cygnet Lake-Chulitna River	SuKnik	DEPRESSIONAL	0.12
				FLAT	1.20
				RIVERINE	1.22
				SLOPE	0.90
	190205050301	Trapper Creek	SuKnik	RIVERINE	0.78
	190205050304	Rabideux Creek	SuKnik	DEPRESSIONAL	0.38
				FLAT	1.60
				RIVERINE	3.46
				SLOPE	1.86
	190205050305	Twister Creek-Susitna River	SuKnik	DEPRESSIONAL	1.18
				FLAT	0.20
				RIVERINE	0.66
				SLOPE	0.27
	190205050306	Goose Creek	SuKnik	RIVERINE	0.03
	190205050307	Caswell Creek	SuKnik	FLAT	0.45

ECOREGION	HUC12	HUC12 NAME	SERVICE AREA	CORPS HGM	ANADROMOUS (ACRES)
				RIVERINE	2.24
	190205050308	Sheep Creek Slough-Susitna River	SuKnik	DEPRESSIONAL	0.19
				FLAT	0.28
				RIVERINE	1.49
	190205050505	Lower Little Willow Creek	SuKnik	DEPRESSIONAL	1.65
				RIVERINE	4.94
	190205051001	196 Mile Creek	SuKnik	RIVERINE	2.72
	190205051002	Delta Islands-Susitna River	SuKnik	DEPRESSIONAL	2.71
				RIVERINE	1.07
	190205051206	Butterfly Lake-Little Susitna River	SuKnik	DEPRESSIONAL	0.97
				FLAT	8.53
				RIVERINE	0.05
	190205051207	Diamond Lake-Little Susitna River	SuKnik	DEPRESSIONAL	0.47
				RIVERINE	0.10
	190205051302	Cow Lake-Fish Creek	SuKnik	RIVERINE	0.69
Grand Total					**75.68**

1.6.3 Innovative Approaches to Additional Project Impact Avoidance Measures

AGDC will avoid additional impacts to the Prudhoe Bay watershed by modifying the engineering design of a material site that was partially located in a degraded North Slope watershed (HUC 190604010104). The engineering design will be modified to allow a deeper cut on the adjacent un-impacted watershed that will allow AGDC to obtain suitable material to construct the North Slope components of the ASAP Project. However, AGDC will not alter the material site's boundary in the Project footprint in case future needs require the additional gravel (and associated mitigation).

AGDC designed the GCF pad to align over a large area of relic "tractor tracks" that have severely degraded the permafrost and resulted in altering surface water hydrology along a linear path. By placing gravel over this degraded habitat, the gravel fill will insulate the underlying permafrost and reduce, if not eliminate, additional thaw in the area. AGDC considers this an avoidance measure by impacting lower quality habitat, thus reducing the overall debit and functional loss in the Arctic Coastal Plain (ACP).

2. OBJECTIVES

AGDC's objective is to provide appropriate and practicable compensatory mitigation for project impacts as identified by the USACE (Tables 3 and 4). AGDC will utilize third party mitigation providers, where

available and applicable, and PRM (preservation) or ILF for projects in areas requiring mitigation outside of third party provider service areas. The means for providing compensatory mitigation and the process for identifying wetland credits and debits are discussed in later sections. North Slope debit calculations are discussed below, whereas debit calculations for other regions will be provided prior securing the third party credits for the ASAP Project.

2.1 NORTH SLOPE

For North Slope wetlands mitigation, AGDC evaluated options to compensate for the 169.7 acres (146.2 debits) of unavoidable, substantive impacts to predominately palustrine wetlands identified in the ACP of Alaska's Northern Ecoregion within two 12-digit HUCs (Tables 3 and 4).

The ACP comprises several watersheds that are connected by a ubiquitous, complex landscape of nearly contiguous palustrine, lacustrine, and estuarine wetlands. Vegetative species diversity, composition, and function is consistent along the entire ACP. The ACP is generally flat terrain with minimal topographic relief, underlain by continuous permafrost that is impermeable to water. Due to the limited precipitation on the North Slope, the active zone of the permafrost provides the hydrology necessary for wetlands to develop and thrive. The minimal topographic relief results in the wetlands along the ACP working together to provided connected hydrologic functions across the entire ACP. This complex of wetlands and other WOUS are integral, interfacing components of the water cycle in the arctic and provide a direct connection to the Beaufort and Chukchi seas. The key functions of ACP wetlands include: nutrient cycling, waterfowl habitat, avian nesting and foraging, terrestrial mammal foraging, carbon sequestration, and human subsistence and cultural activities that are crucial to survival in this ecoregion.

To evaluate options to address unavoidable impacts to wetlands on the North Slope, AGDC contracted with the ADNR through a Revocable Service Agreement (RSA) to perform an investigation of potential restoration opportunities on the North Slope that do not currently have a responsible party identified. Table 5, shows the five opportunities identified by the ADNR investigation.

Table 5. Permittee Responsible Mitigation Opportunities Norther Ecoregion Identified by ADNR

Site Name	General Location	Coordinates	HUC8	Service Area Provider	Project Description	Remarks
Abandoned Drum Removal	Various unidentified locations	NA	Various	None	Survey North Slope and document old drum locations	Non Traditional. No way to value the ecological uplift or credit
Survey Old Drill Site Reserve Pits	Various unidentified locations	NA	Various	None	Survey North Slope and document old drum locations	Non Traditional. No way to value the ecological uplift or credit

Site Name	General Location	Coordinates	HUC8	Service Area Provider	Project Description	Remarks
Last Chance Wayside	Haul Road-Foothills	69.42209, -148.691141	19060401	None	Upgrade facility for public use	Can't value ecological uplift. Upgrades will be to uplands
Amoco Aufeis Pad	North Slope	69.149934, -149.571909	19180309	None	Gravel pad removal and return to wetland habitat	Time lag and risk result in minimal credit. Unable to place protection instrument
Ivishak Unit 1	North Slope	69.385403, -148.356096	19060402	None	Gravel pad removal and return to wetland habitat	Time lag and risk result in minimal credit. Unable to place protection instrument

The five potential restoration opportunities identified by ADNR are considered to be impracticable as a result of:

- Concerns about high risks of successful restoration and time lag for achieving success; or
- Lack of ability to demonstrate ecological uplift.

Since no practicable wetlands restoration opportunities could be identified on the North Slope, AGDC sought opportunities for preservation of wetlands under threat from development. AGDC identified and evaluated PRM opportunities associated with preservation of various wetland parcels. Quotes for parcels were obtained and potential protection instruments were considered.

The location of the ASAP Project within the Prudhoe Bay region positions the Project within a concentrated area of industrial development. Westward expansion of oil and gas development to the National Petroleum Reserve-Alaska has resulted in cumulative impacts to the functions that ubiquitous wetlands provide across the ACP. Protecting western ACP wetlands through preservation is, therefore, intended as PRM for offsetting impacts to wetlands within the degraded ACP watershed traversed by the ASAP Project. While there is a lack of available land for preservation in the Prudhoe Bay watershed, protecting central and western ACP wetlands would prevent foreseeable degradation thereby maintaining ecosystem benefits across the ACP. The preservation of such lands under threat will benefit ACP wetlands, which possess connectivity through the movement of water and through shared habitat. Protecting ACP wetlands will serve to mitigate effects experienced in the eastern oil and gas development region of Prudhoe Bay.

AGDC sought to preserve western ACP lands containing predominately palustrine wetlands on private or borough-owned lands. Specific parcels identified were within one of three locations in order to offset ASAP's North Slope wetlands impacts:

1. Cape Halkett, owned by Arctic Slope Regional Corporation (ASRC);

2. A parcel near the Naval Arctic Research Laboratory owned by Ukpeagvik Inupiat Corporation in Utqiagvik, or
3. Land within the Meltwater East region, which abuts the Kuparuk Oil and Gas Development Unit owned by the North Slope Borough.

Site location maps for these parcels are located in 'Draft' 2 in Appendix A. All three locations are within the ACP and have ample high quality wetlands habitats. Protecting wetlands within Cape Halkett has been demonstrated to be ecologically significant and a site of preferable mitigation, as evidenced by the recent ConocoPhillips Alaska Greater Mooses Tooth a (GMT1) compensatory mitigation project. As discussed below in the Site Selection section, Cape Halkett meets the site preservation criteria of 33 CFR 332.3(h). Therefore, land preservation within Cape Halkett appears to be appropriate and practicable mitigation for North Slope ACP, with the UIC parcel a potential backup option that would also be acceptable for preservation.

While preservation of land within Cape Halkett is the proposed compensatory mitigation that can be executed at the current time, AGDC acknowledges the USACE's renewed focus on efforts that could provide restoration or enhancement to wetlands, waters, and water quality. Therefore, AGDC intends to work with the USACE to identify alternative approaches to preservation that would provide a more direct benefit to water, wetlands or water quality. AGDC will work towards the establishment of a North Slope Wetlands Mitigation Fund ("Fund") that would be used to restore or enhance wetlands and waters around the North Slope that may be identified at a later date.

The Fund would be administered through a USACE-approved third party provider (mitigation bank or ILF provider). The fund administrator would coordinate and participate with USACE in the administration of the Fund, including issuance of requests for proposals, selection of restoration and enhancement projects, and reporting requirements. The ASAP Project's unavoidable substantive impacts to North Slope wetlands would then be offset through funded future projects.

Options for third party providers to administer the Fund include use of an existing third party provider that would expand its service area to the North Slope, or use of a new third party provider that would come online later once its proposed instrument received USACE-approval. A state agency, such as the ADNR or the Alaska Department of Environmental Conservation (ADEC), may in the future work towards requesting USACE authorization to operate as a third party provider of mitigation credits and/or administrator of the Fund.

Examples of projects that could be supported by the Fund and that would be beneficial to wetlands, waters, or water quality on the North Slope include, but are not limited to, restoration and recovery of areas with vehicle tracks through wetlands in villages, addressing streambank / shoreline erosion protection and restoration needs, or advancing village water quality improvements through drinking water / wastewater system installation or upgrades.

AGDC would acquire a range of per credit costs associated with the northern ecoregion from the ILF, at a rate determined by the third party provider, or use a dollar amount equivalent to the purchase amount for

the preservation parcel. AGDC would then deposit that amount of money into the Fund to support proposed projects and cover overhead costs associated with administration of the Fund.

Entities with standing, presence, or activity within in the ACP (*e.g.*, villages, village corporations, Arctic Slope Regional Corporation, the Alaska Eskimo Whalers Commission, the NSB, state agencies, etc.) could petition the ILF provider and the USACE through a proposal for funding through the North Slope Wetlands Mitigation Fund to restore or enhance wetlands. USACE and the ILF would work together to develop and issue requests for proposal, rank / score proposals, and issue funds for restoration and enhancement projects on the ACP. This innovative approach to wetlands compensatory mitigation in Alaska is consistent with the framework established under the Joint USACE-EPA MOA (USACE/EPA 2018) described above and follows other innovative approaches to wetlands mitigation plans approved by the USACE, including the Port of Anchorage Expansion Project and a mitigation fund established by the USACE New England District (i.e., New Hampshire Aquatic Resource Mitigation Fund Final In-Lieu Fee Program).

Alternatively, AGDC may choose to explore and evaluate future PRM projects that come available which may be beneficial to wetlands, waters, or water quality on the North Slope or in other areas of Alaska. For example, ADEC's Village Safe Water (VSW) program provides funding to small Alaska communities for water and sewer studies and construction projects. AGDC may later opt to initiate work with ADEC and the USACE to evaluate potential VSW restoration projects as alternative PRM to what is proposed above.

In summary, for North Slope PRM, AGDC proposes preservation of lands at Cape Halkett (UIC lands as backup option for preservation) as practicable mitigation that can be confirmed available today; however, AGDC intends to continue coordinating with USACE towards a goal of having an approved third party holder establish a North Slope service area and enabling it to serve as a co-administrator with USACE of a North Slope Wetlands Mitigation Fund for restoration and enhancement of ACP wetlands and waters. AGDC also may later opt to initiate exploration of whether future restoration projects coming online could provide suitable opportunities for PRM, including the potential to evaluate projects within ADEC's VSW program.

2.2 INTERIOR AND SOUTHCENTRAL ALASKA

The use of PRM is not proposed for the Interior and Southcentral Ecoregions. Instead AGDC proposes the use of approved third party mitigation providers that have available credits. Compensation for the 62.41 acres of unavoidable impacts in the Interior Ecoregion shown in Tables 3 and 4 will occur through the purchase of mitigation credits from the Tanana Watershed Umbrella Stream and Wetland Mitigation Bank (Tanana Bank). At this time, AGDC anticipates purchasing credits, as shown on Table 3 and 4, from SuKnik Wetlands Mitigation Bank for the 54.43 acres of unavoidable impacts to wetlands in the Southcentral Ecoregion. The service area boundaries for Tanana Bank and SuKnik are shown on the maps provided in Appendix A. Debits for these impacts will be calculated according to the appropriate method used by each party provider prior to final credit purchase and initiating ASAP impacts requiring compensatory mitigation. At that time, AGDC will also confirm availability of credits from Tanana Bank and SuKnik and may seek credits from other parties, including, but not limited to, Great Land Trust, if additional options are available at that time.

A total of 17.98 acres of wetlands in the Interior Ecoregion (Table 4) are not located in third party provider service areas. Specifically, these impacts are related to areas of the ASAP Project occurring within 500 feet of anadromous waterbody crossings in areas not considered to have substantive watershed impacts (*e.g.*, outside degraded watersheds), as determined by the USACE. Similar to the process used for offsetting Northern Ecoregion impacts, AGDC contracted with ADNR through an RSA to identify potential opportunities for compensatory mitigation of these Interior Ecoregion impacts through restoration or preservation. ADNR identified three potential opportunities in the Interior for restoration mitigation (Table 6). However, these potential opportunities are not located in impacted HUCs of the 17.98 acres. These projects identified by ADNR are located within HUCs already serviced by the Tanana Bank, from whom AGDC is purchasing credits for the 62.41 acres of impact. ADNR did not identify any preservation opportunities. No PRM opportunities were identified in the Southcentral Ecoregion; however, third party providers are available that can provide credits for all the southcentral debits; therefore, PRM is not considered ecologically preferable in the Southcentral Ecoregion.

Table 6. Permittee Responsible Mitigation Opportunities in the Interior and Southcentral Ecoregions

Site Name	General Location	Coordinates	HUC8	Service Area Provider	Project Description	Remarks
Bev Loop Trail	Interior, Chatanika River	65.0214, -148.4148	19080309	Tanana Bank	Upgrade portions of major trail	Project not located in HUC requiring uplift from impacts
Lower Landing, Chatanika River	Interior, Chatanika River	64.9779, -148.6828	19080309	Tanana Bank	Upgrade river access road situated in wetlands	Project not located in HUC requiring uplift from impacts
Mount Ryan	Interior, Mount Ryan	65.3043, -146.1206	19080309	Tanana Bank	Upgrade trail-<1/2 mile	Project not located in HUC requiring uplift from impacts

Due to the Project avoidance and minimization mitigation mentioned previously, the lack of third party providers and practicable PRM projects to compensate for the 17.98 acres of impact, AGDC is proposing to purchase additional credits from Tanana mitigation bank as compensation for these impacts.

3. SITE SELECTION FOR NORTH SLOPE PRM

The North Slope PRM site that AGDC will utilize to compensate for ACP impacts was selected based on overall watershed needs, a lack of practicable on-site alternatives, the practicability of the compensatory mitigation project being ecologically self-sustaining, and the likelihood of meeting the success criteria. The

criteria evaluated and applied in the selection of mitigation sites was based on the requirements of 33 CFR Parts 332.3(h) and 332.4 and are discussed in detail, below. This section does not discuss site selection criteria when using third party providers, as that is not required for a mitigation plan as defined in 33 CFR 332.4.

3.1 WATERSHED NEEDS

Because no third party providers exist on the North Slope, AGDC investigated PRM opportunities within the local 12-digit HUCs identified by the USACE as requiring compensatory mitigation (Tables 3 and 4). USACE directed AGDC to first explore PRM within local 12-digit HUCs where impacts were located, and if no opportunities were identified, to expand the research out to the 10-digit and then 8-digit HUCs for watersheds in which compensatory mitigation will be required (Tables 3 and 4). For the ACP watersheds requiring mitigation, if still no PRM opportunities were found to exist, AGDC expanded research outward to the broader ACP because of the ubiquitous nature of ACP wetlands and their inherent connection to the Beaufort and Chukchi seas. This approach is consistent with USACE/EPA joint guidance (USACE/EPA 2018) that allows flexibility in wetlands mitigation because of Alaska's unique wetland coverage and the potential for limited availability of mitigation options. As noted above, continuous permafrost limits drainage, resulting in widespread, ponded, slow-flowing water northward along the gravitational gradient towards the Beaufort and Chukchi Seas. As evidenced in the ASAP Functional Assessment (Appendix C), the ACP wetlands impacted by the ASAP Project provide limited functions to their individual local watersheds due to the currently degraded nature of the wetlands from surrounding development and other anthropogenic impacts.

As shown in Table 5, above, ADNR did identify a number of practicable out-of-kind non-traditional projects. Examples of these non-traditional projects include: abandoned drum mapping studies, and survey of wildcat drill sites to develop a comprehensive list of features and issues. However, these projects do not have the ability to generate a credit given the current credit methodology. A further discussion with the USACE confirmed that these non-traditional projects are unlikely to be ecologically preferable. Additionally, the ADNR confirmed that removing state-owned lands zoned for oil and gas development from the public domain is not an option for the North Slope.

AGDC and ASRC discussed potential trail hardening restoration projects in local Native Alaskan communities. The projects that appeared to bring the most credit and uplift would have resulted in additional gravel being placed in wetlands. The general project description would be to lay limited gravel paths down, and direct off road vehicle use to those confined areas. Then, access to areas that were experiencing wide spread damage due to off road traffic would be blocked. This non-traditional idea was discussed with the USACE. The USACE indicated this idea will be met with resistance and will be challenging to put forward as mitigation. Additionally, based on cost and long-term risk associated with maintenance and adaptive management, the credit gained would be limited.

Due to the lack of appropriate and practicable PRM restoration opportunities, AGDC identified Cape Halkett (Figure 3) as the ecologically preferable site for PRM preservation. Please note that AGDC is currently working with ASRC to determine the exact location within the Cape Halkett Parent Parcel that preservation will occur; therefore, Figure 3 shows the entire parent parcel owned by ASRC. While Cape

Halkett falls outside the 12-, 10-, and 8-digit HUCs of ASAP impacts, it falls within the ubiquitous North Slope wetlands complex and is available for preservation, and meets the objectives of preserving western ACP wetlands functions that are under threat from development. This approach is consistent with USACE/EPA joint guidance (USACE/EPA 2018) regarding mitigation for impacts to wetland areas in Alaska. The UIC parcel, described in Section 2, above, is a backup parcel that could alternatively be used for preservation.

Figure 3. Cape Halkett Parent Parcel



The Cape Halkett wetlands have no anthropogenic impacts and represent the ubiquitous palustrine wetlands present on the ACP; therefore, they provide important chemical and biological functions to the ACP that are being degraded by oil and gas development. Their high level of chemical and biological function and contribution to the ecological sustainability of the ACP are evidenced by their functional capacity index (FCI) score of 1.0. Similar Cape Halkett wetlands were recently preserved as compensatory mitigation for the GMT1 project, which indicates their preservation is appropriate and practicable to the District Engineer. The Cape Halkett wetlands are privately-owned and are available for resource development by ASRC to either support offshore oil or gas projects or to develop the land as ASRC determines necessary. In addition, a recent ADNR program, termed "ASTAR", could potentially lead to a permanent road that could be aligned through, or very near Cape Halkett. This program is currently in the planning phase and has the strong support of the Governor. Cape Halkett is situated adjacent to Teshekpuk Lake, which has been recognized as a special management area requiring protections. Preserving land in Cape Halkett will further the protections of Teshekpuk Lake by limiting development in the area. Finally, the Cape Halkett wetlands will be preserved in perpetuity through an acceptable protection instrument, and has been used by the USACE. Therefore, protecting these valuable wetlands will result in preventing foreseeable degradation and maintaining ecosystem benefits across the ACP, and will be considered appropriate and practicable according to 33 CFR 332.3(h).

While this mitigation is available to offer in this final plan, AGDC intends to continue coordinating with USACE in the expectation that an approved third party provider would be able to modify its service area to support future restoration or enhancement projects in lieu of preservation. Presumably, these future projects would be proposed by stakeholders who would best be able to describe and demonstrate the need of these specific projects. The USACE and the administrator of the Fund would evaluate the expected efficacy of each proposed project in restoring or enhancing wetlands, as well as community need and support for the project, during the proposal review and scoring process.

In the event significant changes occur prior to commencement of construction (for example, the preservation parcels and protection instrument are no longer available, or new mitigation options, such as approved third party providers, become available, etc.), AGDC will provide an option for equivalent alternative mitigation.

3.2 ONSITE ALTERNATIVES

No on-site alternatives for compensatory mitigation are available. AGDC requires the project features constructed for ASAP for the design life (30 years) of the Project. Restoring these features after that timeframe will not generate practicable credit.

3.3 PRACTICABILITY OF RESULTS BEING ECOLOGICALLY SELF-SUSTAINING

Beyond the lack of appropriate and practicable opportunities, the difficulty and risk associated with wetlands restoration on the ACP that will provide the required functional uplift and necessary credits to offset debits makes this option impracticable. This is especially true, given the likelihood of long-term continual maintenance and adaptive management strategies currently required for restoration. However, the preservation of lands under threat of development in Cape Halkett, will have the appropriate protection

instruments and oversight by the current landowners to ensure the wetlands functions being preserved are ecologically self-sustaining.

AGDC proposes to protect Cape Halkett through a protection instrument acceptable to the Corps, similar to the instrument developed and approved for the GMT1 project. Generally, allowed uses in the protection instrument will relate to subsistence use and traditional use activities that do not result in altering the surface hydrology or wetlands function. Restricted uses will include, but are not limited to, construction of permanent structures, gravel fill for resource exploration pads and the like, and all-terrain vehicle (ATV) use that significantly disturbs the surface (*i.e.*, ATVs and non-approved summer tundra travel). Winter snowmachine traveling will be allowed if ground conditions could support that mode of travel. AGDC will work with ASRC to develop instrument stipulations to meet the intent of wetlands preservation commitments and ASRC will then manage access accordingly.

A copy of the final protection instrument will be provided to the USACE when the credits are secured. AGDC will provide an example of the protection instrument acceptable to the Corps in the Final Mitigation Plan.

The establishment and operation of a North Slope Wetlands Mitigation Fund to offset unavoidable substantive impacts in the Northern Ecoregion would be preferable if a third party provider with a North Slope service area existed. AGDC will continue to coordinate with the USACE to determine if this can be achieved by an approved third party modifying its service area and serving as a holder of funds for future wetlands restoration projects. If this can be achieved prior to construction, money would be deposited into the fund rather than used for the preservation of lands. If it cannot be achieved, AGDC would execute the current plan for preservation of lands within the Cape Halkett parent parcel or the backup UIC parcel.

For southcentral and interior Alaska, the use of approved mitigation banks are proposed where debits / credits exist within established service areas.

3.4 ASAP BASELINE INFORMATION

3.4.1 Northern Ecoregion

ASAP Project impacts occurring in the Northern Ecoregion requiring mitigation are restricted to the ACP and the degraded watersheds of Prudhoe Bay, and palustrine wetlands within 500 feet of the Putuligayuk River (see Tables 3 and 4). Based on multiple years of wetlands mapping and a March 30, 2018 PJD from the USACE, AGDC determined that ASAP construction will result in 169.41 acres of palustrine wetlands impacts, and 0.07 acres of riverine impacts, for a total of 169.48 acres of jurisdictional wetlands. The palustrine wetland impacts include 33.38 acres of depressional hydrogeomorphic (HGM) class wetlands, 0.02 acres lacustrine fringe HGM class wetlands, and 136.01 acres of flat HGM class wetlands. An additional 0.22 acres of flat wetlands and <0.01 acres of Riverine wetlands that are located within 500 feet of the anadromous Putuligayuk River will be impacted.

Palustrine wetlands in the ACP are composed of emergent sedges and grasses, such as cotton grass and water sedge, as well as dwarf shrubs, including dwarf birch and various willows. Widespread coverage of

mosses and lichens also exists. The area is underlain by continuous permafrost with an active layer approximately 3 feet below ground surface. Soils are primarily histosols and histic epipedons, with some hydric mineral soils located in dryer areas. Wetland hydrology is dominated by saturated soils conditions with seasonally and permanently inundated inclusions.

AGDC utilized the recent USACE *Operational Draft Regional Guidebook for the Rapid Assessment of Wetlands in the North Slope Region of Alaska* (USACE 2017b) and the Alaska District's Credit-Debit Methodology (USACE 2016) to determine the ASAP Project debits. A copy of the assessment worksheets is located in Appendix B. Table 7, below, summarizes the pre- and post-Project FCI and debits incurred by the ASAP Project utilizing the USACE methodologies. Table 8 summarizes the impacts and debits by Wetland Assessment Area (WAA) and wetlands HGM Class per the USACE methodology. The functional assessment performed for the ACP wetlands impacts (Appendix B) indicates the wetlands have experienced significant anthropogenic impacts from local industrial development.

Table 7. North Slope Debit Analysis

WAA	Average FCI Score Pre Project	Average FCI Score Post Project	Acres Of Impact	Debit
WAA1	0.92	0.00	29.39	27.04
WAA2	0.88	0.00	128.36	112.96
WAA3	1.00	0.00	0.07	0.07
WAA4	0.53	0.00	3.99	2.11
WAA5	0.51	0.00	7.87	4.01
WAA6	0.54	0.00	0.02	0.01
		Totals	**169.70**	**146.20**

3.4.2 Interior Ecoregion

The Interior Ecoregion extends from Atigun Pass, southward to Broad Pass near Cantwell, Alaska. Major ecological and land features in this region include the Yukon River and Denali National Park. The ASAP Fairbanks Lateral also extends to the City of Fairbanks from a Mainline intersection point just east of the Minto Flats.

Based on multiple years of wetlands mapping and a March 30, 2018 PJD, ASAP impacts requiring compensatory mitigation in the Interior Ecoregion (Tables 3 and 4) includes: 51.2 acres of palustrine wetlands and 0.38 riverine wetlands exists in the degraded watersheds. An additional 28.8 acres of palustrine and riverine wetlands will be impacted within 500 feet of anadromous rivers, of which 17.98 acres are not located in an area with area covered by a third-party mitigation provider or areas with practicable PRM opportunities; therefore, the total wetlands acreage AGDC is proposing compensatory mitigation in the Interior Ecoregion is 62.41 acres.

The Interior Ecoregion's palustrine wetlands in the degraded watersheds are made up primarily of flat HGM class wetlands, along with slope and depressional HGM class wetlands. Riverine systems are made up of upper and lower perennial rivers and intermittent streams.

Interior wetlands are composed of predominately palustrine scrub shrub wetlands that consist of willows, dwarf birch and stunted black spruce. Forested wetlands are made up primarily of taller black spruce. The Interior has wide spread palustrine emergent wetlands and forested wetlands composed of sedge, forbes and grasses.

Soil in the Interior Ecoregion are primarily composed of histic epipedons and hydric mineral soils. Histosols are abundant in muskeg wetlands in low lying areas of Minto Flats and the Nenana River Basin. Many Slope wetlands are located along the south side of the Brooks Range leading to the Yukon River, the major drainage feature dominating the Interior Ecoregion.

AGDC will perform the required debit calculation and submit to the Corps of Engineers for review and approval prior to final credit purchase and before project impacts requiring compensatory mitigation occur in the Interior Ecoregion.

3.4.3 Southcentral Ecoregion

The Southcentral Ecoregion extends from Broad Pass near Cantwell, Alaska to the ASAP terminus near Big Lake, Alaska. The major ecological and land features in the Southcentral Ecoregion include: the anadromous Chulitna and Susitna Rivers, as well as numerous anadromous creeks and streams feeding these major rivers.

Based on multiple years of wetlands mapping and a March 30, 2018 PJD, ASAP impacts requiring compensatory mitigation in the Southcentral Ecoregion (Tables 4 and 5) include: 4.01 acres of palustrine wetlands and 3.77 acres of riverine wetlands in degraded watersheds. An additional 46.6 acres of palustrine and riverine wetlands will be impacted within 500 feet of anadromous rivers. The palustrine wetlands are made up primarily of flat HGM class wetlands, followed by depressional and slope HGM class wetlands. Riverine systems are made up of upper and lower perennial rivers and intermittent streams. Southcentral wetlands are comprised of palustrine scrub shrub wetlands made up of willows, dwarf birch and stunted black spruce. Forested wetlands are made up primarily of taller black spruce. The Southcentral Ecoregion has wide spread palustrine emergent wetlands and forested wetlands composed of sedge, forbes and grasses.

Wetlands soil in the Southcentral Ecoregion are primarily composed of histic epipedons and hydric mineral soils. Histosols are abundant in muskeg wetlands in low lying areas of the Susitna River and Talkeetna, Alaska. Some slope wetlands are located near Talkeetna and south of Broad Pass, leading to the Susitna River, the major drainage feature dominating the Southcentral Ecoregion.

AGDC will perform the required debit calculation and submit to the Corps of Engineers for review and approval prior to final credit purchase and before project impacts requiring compensatory mitigation occur in the Southcentral Ecoregion.

4. DETERMINATION OF CREDITS

4.1 PERMITTEE RESPONSIBLE MITIGATION (PRM)

4.1.1 PRM Site Baseline Information

The PRM site is located in the ACP and made up pristine palustrine emergent wetlands with saturated- to permanently-flooded hydrologic conditions. The underlying soils are histosols and histic epipedons within the active zone of continuous permafrost. The Cape Halkett wetlands have an HGM class of flat and depression that are similar, and of a greater FCI, than the ASAP wetlands being impacted.

The formal functional assessment and credit determination for Cape Halkett will be completed once a site is selected and included in the Final Mitigation Plan. AGDC will utilize the USACE North Slope Rapid Assessment method used for the ASAP impacts. As mentioned above, the Cape Halkett wetlands are not impacted by anthropogenic development of any kind; therefore, their FCI score will be 1.0. The preservation mitigation will effectively offset the 146.20 ASAP debits (Table 7).

AGDC will utilize approved third party providers for the Interior and Southcentral Ecoregions. AGDC will utilize each third party's methodology that was used to define their credits to determine the number of debits produced by the ASAP impacts requiring compensation (Table 3 and 4); therefore, a credit determination is not necessary. The debit determination for ASAP will suffice for requesting the appropriate credits from the third party providers. That debit determination will be completed and submitted to the Corps of Engineers for review and approval prior to purchasing the credits from the third party.

5. MITIGATION WORK PLAN

AGDC will use a phased compensatory mitigation approach in which PRM and funds that will be directed to a third party holder will be dispersed on an annual basis in accordance with expected wetland impacts that year. Under this approach, AGDC will secure the protection instrument acceptable to the Corps on the Cape Halkett parcel, and distribute the necessary funds to Tanana bank and to Su Knik for offsetting Interior, and Southcentral region impacts consistent with the schedule for disturbing wetlands in those regions requiring mitigation. Similarly, funds to the ILF will be distributed on annual basis in accordance with the construction schedule if that approach is finalized.

AGDC has identified wetlands that will be impacted during different construction seasons, including those occurring preliminarily up through Year 1 of pipeline construction (pre-construction and S0.5 – W1), during Year 2 of pipeline construction (S1.5 – W2), and from Year 3 of pipeline construction until completion

(S2.5 to completion). Based on the need for compensatory mitigation by HUC-12 watershed identified above (Tables 3 and 4), and the preliminary Project schedule, wetland compensatory mitigation will need to be applied for the southcentral impacts in Summer 1.5 and Winter 2, and in the Fairbanks area in Summer 1.5 and Summer 2.5. Preliminarily, North Slope ACP impacts will be secured prior to winter 2 for impacts spanning MP 0 to 62 and summer 1.5 for impacts south of MP 62. An updated early works schedule may be issued in the future, however, and this may alter the timing of phased mitigation.

Prior to Project impacts, as described above and approved in the 404 Permit, AGDC will provide the USACE a copy of the executed restriction with ASRC and copies of contracts with third party providers indicating AGDC and the third party providers' commitment to providing and securing the appropriate credits necessary to offset ASAP compensatory mitigation requirements. At that time, AGDC will also provide an updated early works and Project construction schedule indicating when final credit sales are expected to occur based on the timing of construction in each particular phase. The schedule will be updated if the annual construction plan changes significantly. AGDC will provide the USACE with a copy of the sales receipt for the credits prior to placing dredged or fill material related to each phase of construction. In the event significant changes occur prior to commencement of construction (*e.g.*, if the ASRC parcel and protection instrument are no longer available, or new approved third party mitigation options become available, etc.), AGDC will provide an option for equivalent alternative mitigation.

If the aforementioned North Slope Wetlands Mitigation Fund can be established and approved in lieu of preservation, the approved third party provider would likely require a mitigation work plan for each funded project to be specified by the Project proponent and managed through Fund processes.

6. MAINTENANCE PLAN

Due to its remote nature, maintenance is not expected for the Cape Halkett parcel. Any maintenance will be part of adaptive management, if necessary. Tanana Bank and SuKnik maintenance plans have already been approved in their respective third party instruments.

If the aforementioned North Slope Wetlands Mitigation Fund can be established and approved in lieu of preservation, the approved third party provider would likely require a maintenance plan for each funded project to be specified by the project proponent and managed through Fund processes.

7. PERFORMANCE STANDARDS

The performance standards for the Cape Halkett parcel will be considered achieved when monitoring confirms the FCI for the parcel is stable and reflects the same or better overall FCI, determined from the desktop analysis. In addition, the performance standards related to the permanent protection instrument will be considered achieved once it is determined through monitoring that only allowed uses under the instrument are occurring at the parcel. The schedule for meeting the performance standards is based on the decision points defined in the monitoring plan, below. Performance standards to the third party provider credits are approved as part of their operating instrument.

If the aforementioned North Slope Wetlands Mitigation Fund can be established and approved in lieu of preservation, the approved third party provider would likely require performance standards for each funded project to be specified by the project proponent and managed through Fund processes.

8. MONITORING PLAN

AGDC will work with the USACE to develop a final approved monitoring plan prior to final parcel preservation and execution of the protection instrument acceptable to the Corps (e.g., signing of a deed restriction or other instrument). It is anticipated the plan will involve ground-truthed investigations on a periodic basis that will investigate specific pre-selected data points for wetlands composition and functional capacity. Functional capacity will be determined using the current USACE methodology.

Monitoring will be conducted in the first year after the executed protection instrument, and will include additional monitoring events at Years 5, 10, and 20. The monitoring plan will include decision points at Years 5 and 10 that determine if further monitoring is necessary and whether or not the performance standards have been achieved. With USACE concurrence on the AGDC determination, monitoring will either cease, or will continue at the next scheduled event, unless adaptive management becomes necessary. Monitoring will occur in the summer of each monitoring year and a report of findings will be provided to the USACE by December 31st of each monitoring year.

AGDC is not responsible for monitoring on third party provider parcels that have an approved operating instrument.

If the aforementioned North Slope Wetlands Mitigation Fund can be established and approved in lieu of preservation, the approved third party provider would likely require monitoring plans for each funded project to be specified by the project proponent and managed through Fund processes.

9. LONG-TERM MANAGEMENT

ASRC is the landowner of the parcels proposed for preservation. Long-term management of the parcel and adherence to requirements in the approved protection instrument will be the responsibility of the landowner. However, AGDC will enter into an agreement with the landowner to verify the management objectives are being achieved.

Long-term management of third party parcels is included in their approved operating instrument and not the responsibility of AGDC.

If the aforementioned North Slope Wetlands Mitigation Fund can be established and approved in lieu of preservation, the approved third party provider would likely require long-term management plans for each funded project to be specified by the project proponent and managed through Fund processes.

10. ADAPTIVE MANAGEMENT

Adaptive management will be required for the Cape Halkett parcel if the performance standards are not being achieved by Year 5 of monitoring, or if anything other than allowed uses are found to occur on the parcel. A specific adaptive management plan will be developed, if necessary. Adaptive management could include, but is not limited to, placing protective fencing, more frequent monitoring, seeding, or restoring damaged tundra. In the event adaptive management is needed, AGDC will develop the adaptive management plan in coordination with the landowner.

Adaptive management is not the responsibility of AGDC on third party provider parcels.

If the aforementioned North Slope Wetlands Mitigation Fund can be established and approved in lieu of preservation, the approved third party provider would likely require adaptive management plans for each funded project to be specified by the project proponent and managed through Fund processes.

11. FINANCIAL ASSURANCE

AGDC will secure the approved protection instrument for the North Slope Credits and secure third party credits for the Interior and Southcentral Ecoregion credits prior to initiating construction of project features

requiring compensatory mitigation under conditions noted in this plan. AGDC is an independent public corporation of the State of Alaska, but has a legal existence independent of and separate from the state. Under AS 31.25.080(a), AGDC may enter into agreements. A pledge that AGDC makes of its corporate assets or revenue to the payment of an obligation is valid and binding on AGDC (AS 31.25.180), and expenses that it incurs are paid from its own revenues and assets (AS 31.25.240).

12. REFERENCES

AGDC. 2015a. Joint Application for Permit (404 / 10). December 29, 2015. Submitted to the USACE in January 2016. 001-C-22-PER-D-0001

AGDC. 2015b. Design Basis – Pipeline. Alaska Stand Alone Pipeline Project. Sept 17, 2015. 002-C-27-BDC-YYY-0001.

AGDC. 2015c. Streambank Restoration Manual. February 6, 2015. ASAP-27-MTM-CCC-DOC-00001.

AGDC. 2015d. Pipeline Stream Crossing Construction Mode Determination. January, 2015

AGDC. 2016a. ASAP Environmental Evaluation Document. July 15, 2016. Revised. June 28, 2017. 001-C-22-GRD-W-0055.

AGDC. 2016b. Wetlands Compensatory Mitigation Plan. Draft 1. Agency Review Draft. ASAP-22-PLN-REG-DOC-00003. November 10, 2016.

AGDC. 2018a. Joint Application for Permit (404 / 10). Revised. April 23, 2018. 001-C-22-PER-D-0001.

AGDC. 2018b. Wetlands Compensatory Mitigation Plan. Draft 2. Agency Review Draft. ASAP-22-PLN-REG-DOC-00003. April 30, 2018.

Alaska Department of Fish and Game. 2005. Streambank Revegetation and Protection: A Guide for Alaska. http://www.adfg.alaska.gov/index.cfm?adfg=streambankprotection.main. Accessed on April 30th, 2018.

Baker, M. E., and King, R. S. 2010. A new method for detecting and interpreting biodiversity and ecological community thresholds. Methods in Ecology and Evolution 1:25-37.

Booth, D. 1991. Urbanization and the natural drainage system-impacts, solutions and prognoses. Northwest Environmental Journal. 7(1): 93-118.

Booth, D.B. and Jackson C.R. 1997. Urbanization of Aquatic Systems: Degradation Thresholds, Stormwater Detection, and the Limits of Mitigation. Paper No. 96163 of the Journal of the American Water Resources Association. https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1752-1688.1997.tb04126.x. Accessed on April 30th, 2018.

Booth, D.B, Montgomery, D. R., and Bethel, J. 1996. Large Woody Debris in Urban Streams of the Pacific Northwest. In: Effects of Watershed Development and Management on Aquatic Ecosystems, L.A.

Roesner (Editor). Engineering Foundation Conference Proceedings, Snowbird, Utah, August 4-9, 1996. Pp. 178-197.

Hicks, A.L. and J.S. Larson. 1997. The Impact of Urban Stormwater Runoff on Freshwater Wetlands and the Role of Aquatic Invertebrate Bioassessment. The Environment Institute, University of Massachusetts. Amherst, MA.

Hilderbrand, R.H., R.M. Utz, S.A. Stranko, and R.L. Raesly. 2010. Applying thresholds to forecast potential biodiversity loss from human development. Journal of the North American Benthological Society 29(3):1009-1016.

Jones, R. and C. Clark. 1987. Impact of Watershed Urbanization on Stream Insect Communities. American Water Resources Association. Water Resources Bulletin. 15(4).

Klein, R. 1979. Urbanization and Stream Quality Impairment. Water Resources Bulletin 15:948-963.

Limburg, K and R. Schmidt. 1990. Patterns of fish spawning in Hudson river tributaries- response to an urban gradient?. Ecology 71(4): 1231-1245.

Luchetti, G and R. Fuersteburg, 1993. Relative fish use in urban and non-urban streams. Proceedings. Conference on Wild Salmon. Vancouver, British Columbia.

May, C. R. Horner, J. Karr, B. Mar, and E. Welch. 1997. Effects of Urbanization on Small Streams In the Puget Sound Lowland Ecoregion. *Watershed Protection Techniques*, 2(4): 483-494.

Metropolitan Washington Council of Governments (MWCOG), 1992. Watershed Restoration Sourcebook. Department of Environmental Programs, MWCOG, Washington, DC.

Schueler, T. R., Fraley-McNeal, L., and Cappiella, K. 2009. Is impervious cover still important? Review of recent research. Journal of Hydrologic Engineering 14:309-315.

Steedman, R. J. 1988. Modification and assessment of an index of biotic integrity to quantify stream quality in Southern Ontario. Canadian Journal of Fisheries and Aquatic Sciences. 45:492-501.

USACE. 2016. Alaska District: Credit Debit Methodology. Version 1.0. Available online at: http://www.poa.usace.army.mil/Portals/34/docs/regulatory/specialpns/2016/_Alaska%20District%20Credit%20Debit%20Methodology%20Version%201.pdf?ver=2016-09-21-132006-233

USACE. 2017a. Alaska Stand Alone Pipeline Draft Supplemental Environmental Impact Statement. June 30, 2017.

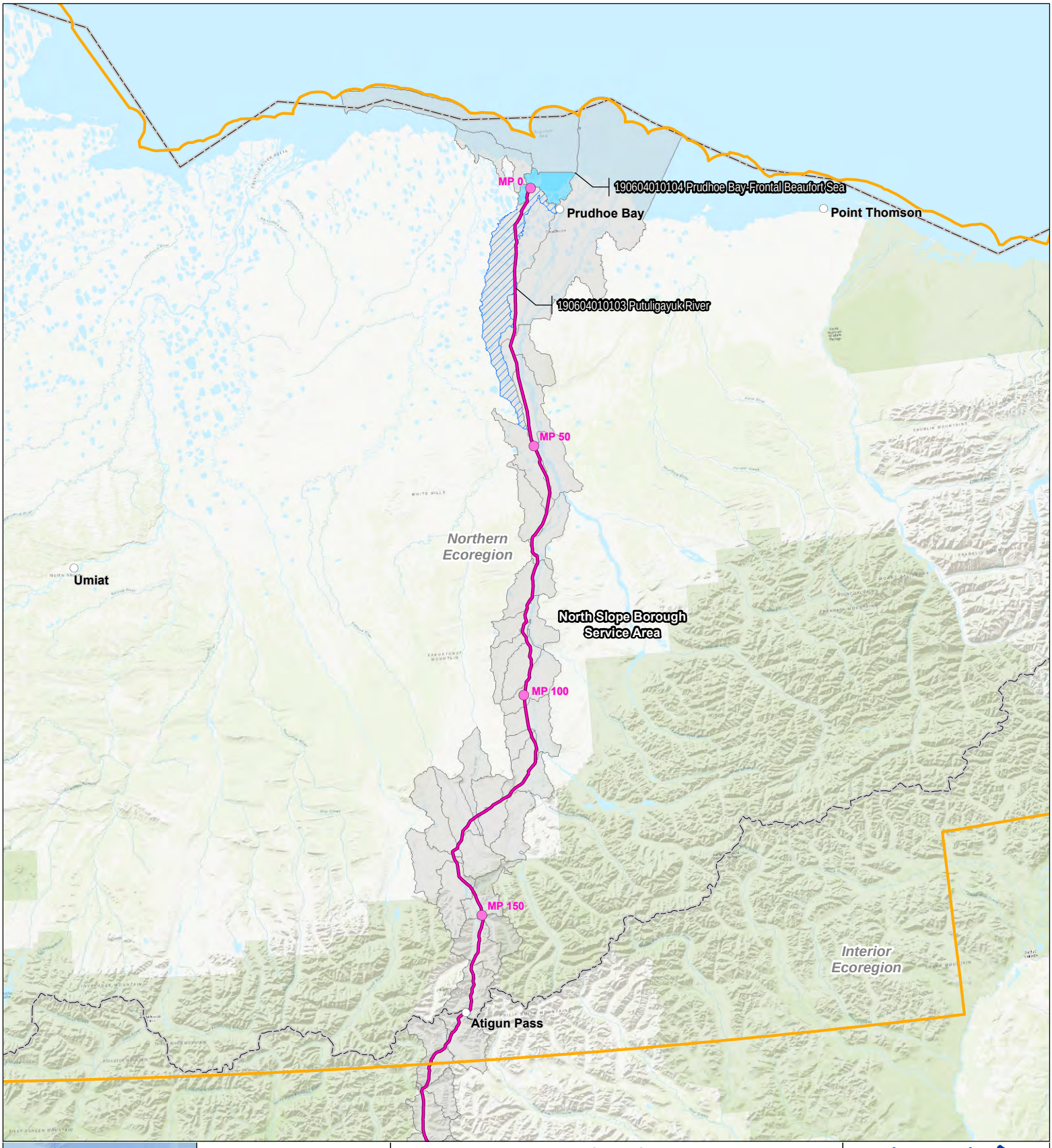
USACE. 2017b. Operational Draft Regional Guidebook for the Rapid Assessment of Wetlands in the North Slope Region of Alaska. http://www.poa.usace.army.mil/Portals/34/docs/regulatory/specialpns/SPN-2017-484_SPN_.pdf?ver=2017-10-02-161948-843. Accessed on April 30th, 2018.

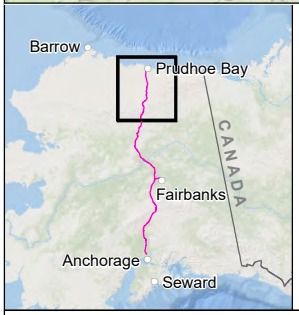
USACE/EPA. 2018. Memorandum of Agreement between the Department of the Army and the Environmental Protection Agency Concerning Mitigation Sequence for Wetlands in Alaska under Section 404 of the Clean Water Act.

Utz, R. M., Hilderbrand, R. H., and Boward, D. M. 2009. Identifying regional differences in threshold responses of aquatic invertebrates to land cover gradients. Ecological Indicators 9:556-567.

Weaver, L.A. 1991. Low-Intensity Watershed Alteration Effects on Fish Assemblage Structure and Function in a Virginia Piedmont Stream. Unpublished Masters Thesis. Virginia Commonwealth University. 77 pp.

APPENDIX A HUC12 MAPPING





Alaska Stand Alone Pipeline / *ASAP*

Wetland Mitigation Service Areas and HUC12 Watershed Condition

Map Scale 1:1,500,000

0 10 20 Miles

N

Legend

- ASAP Mainline Alignment Rev. 6.1
- Fairbanks Lateral Alignment Rev. 4.1

HUC12 Boundary

- USACE Degraded (>=5% Disturbed)
- USACE Undegraded (<5% Disturbed)

Perm. Impact within 500' of anad. waters

- Yes
- No

- Ecoregion Boundary

Wetland Mitigation Service Area

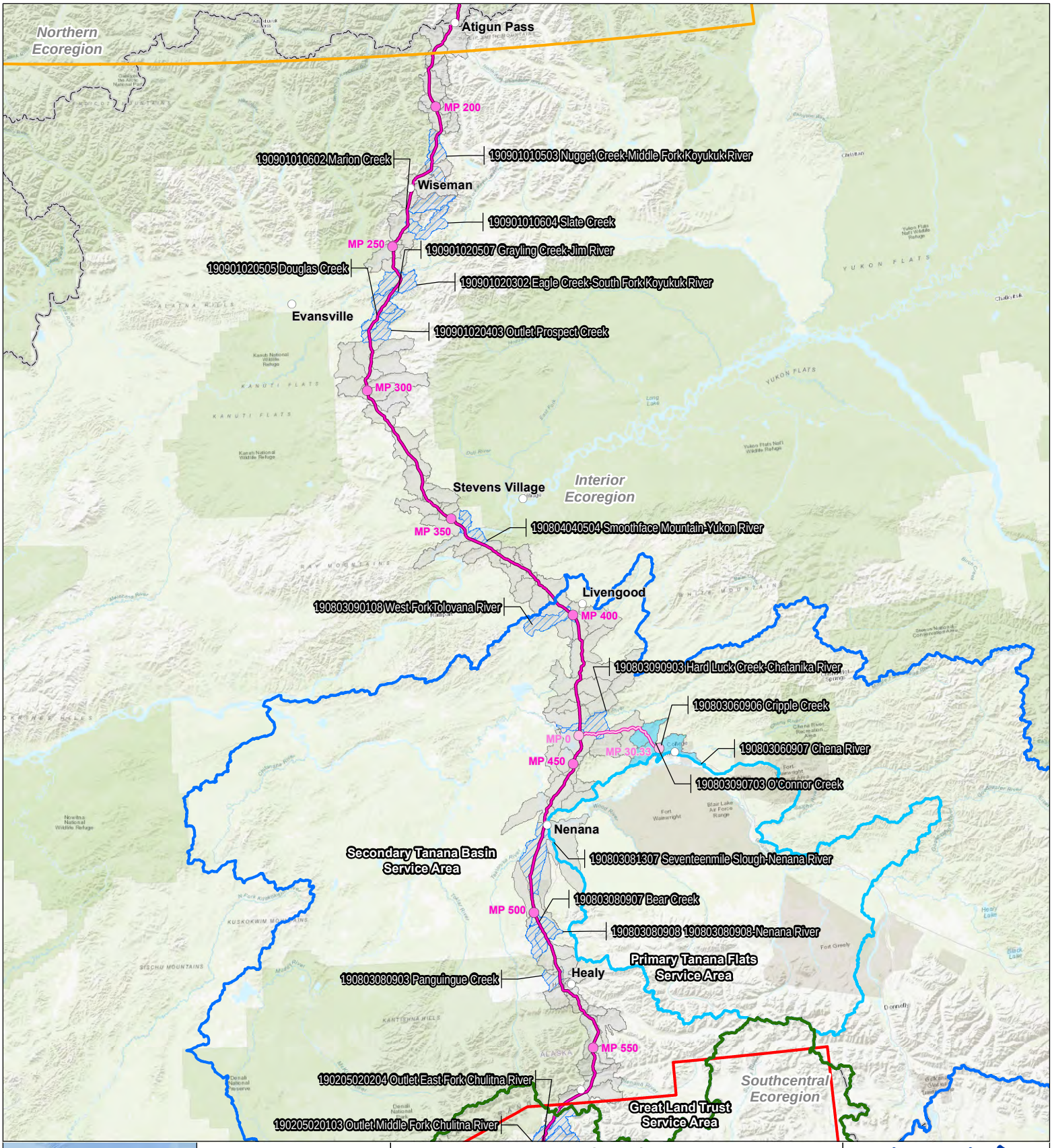
- North Slope Borough
- Su-Knik HUC8 Watershed
- Su-Knik HUC6 Watershed
- Primary Tanana Flats
- Secondary Tanana Basin
- Great Land Trust

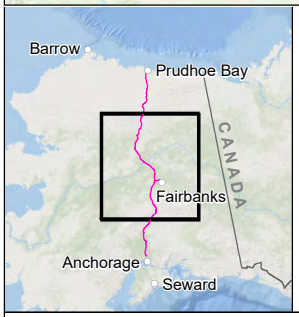
ASAP

Alaska's In-State Gas Pipeline

Alaska Gasline Development Corporation
3201 C Street, Suite 200 | Anchorage, AK 99503
P 907.330.6300 | F 907.330.6309 | www.agdc.us

	Appendix A
File Name	ASAP HUC12 Mapping
Date	September 11, 2018
Sheet	1 of 3





Alaska Stand Alone Pipeline / *ASAP*

Wetland Mitigation Service Areas and HUC12 Watershed Condition

Map Scale 1:2,500,000

0 10 20 Miles

N

Legend

- ASAP Mainline Alignment Rev. 6.1
- Fairbanks Lateral Alignment Rev. 4.1

HUC12 Boundary

- USACE Degraded (>=5% Disturbed)
- USACE Undegraded (<5% Disturbed)

Perm. Impact within 500' of anad. waters

- Yes
- No

- Ecoregion Boundary

Wetland Mitigation Service Area

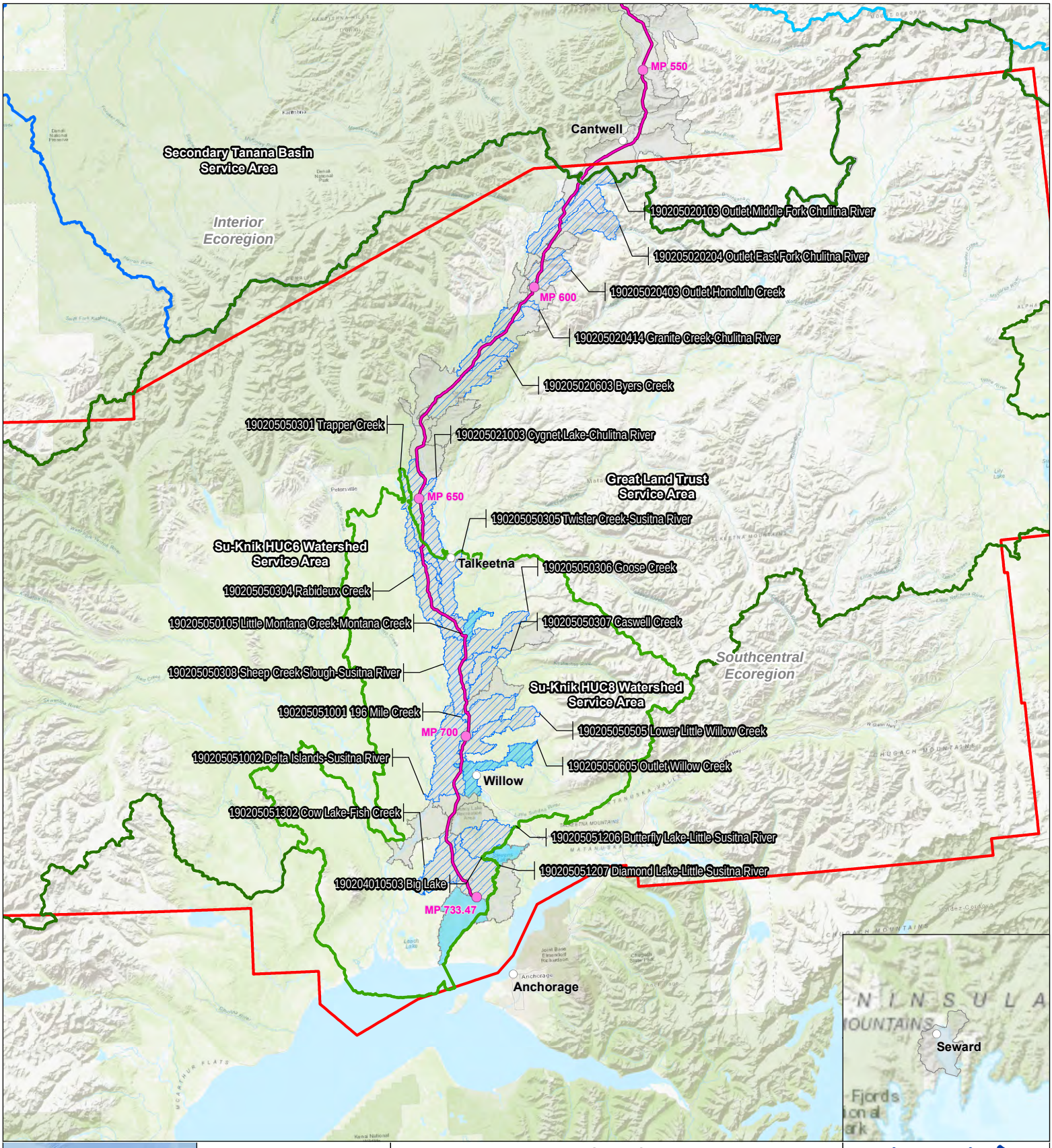
- North Slope Borough
- Su-Knik HUC8 Watershed
- Su-Knik HUC6 Watershed
- Primary Tanana Flats
- Secondary Tanana Basin
- Great Land Trust

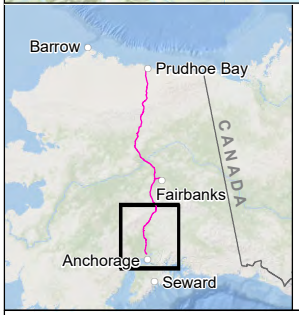
ASAP

Alaska's In-State Gas Pipeline

Alaska Gasline Development Corporation
3201 C Street, Suite 200 | Anchorage, AK 99503
P 907.330.6300 | F 907.330.6309 | www.agdc.us

	Appendix A
File Name	ASAP HUC12 Mapping
Date	September 11, 2018
Sheet	2 of 3





Alaska Stand Alone Pipeline / *ASAP*

Wetland Mitigation Service Areas and HUC12 Watershed Condition

Map Scale 1:1,500,000

0 10 20 Miles

N

Legend

- ASAP Mainline Alignment Rev. 6.1
- Fairbanks Lateral Alignment Rev. 4.1

HUC12 Boundary

- USACE Degraded (>=5% Disturbed)
- USACE Undegraded (<5% Disturbed)

Perm. Impact within 500' of anad. waters

- Yes
- No

- Ecoregion Boundary

Wetland Mitigation Service Area

- North Slope Borough
- Su-Knik HUC8 Watershed
- Su-Knik HUC6 Watershed
- Primary Tanana Flats
- Secondary Tanana Basin
- Great Land Trust

ASAP

Alaska's In-State Gas Pipeline

Alaska Gasline Development Corporation
3201 C Street, Suite 200 | Anchorage, AK 99503
P 907.330.6300 | F 907.330.6309 | www.agdc.us

	Appendix A
File Name	ASAP HUC12 Mapping
Date	September 11, 2018
Sheet	3 of 3

APPENDIX B WETLAND ASSESSMENTS

Rapid Assessment Score Summary						
Assessment Area	**Acres**	**Habitat**	**Hydrology**	**Biogeochemical Cycling**	**On-site Modifier**	**Average**
WAA1	29.39	0.75	1.00	1.00		0.92
WAA2	128.36	0.73	0.98	0.93		0.88
WAA3	0.07	1.00	1.00	1.00		1.00
WAA4	3.99	0.70	0.64	0.25		0.53
WAA5	7.87	0.56	0.70	0.28		0.51
WAA6	0.02	0.39	0.69	0.53		0.54

ALASKA NORTH SLOPE REGION RAPID WETLAND ASSESSMENT

Section A: Desk Top (Offsite) Data

Site Name/Location:	WAA1	Latitude/UTM Northing:	70.3186542
Date:	4/24/2018	Longitude/UTM Easting:	-148.5680423
Impact/Mitigation:	Impact	Pre/Post:	Pre-Project
Region:	Arctic Coastal Plain	Coordinate System:	NAD83
HGM Class:		Imagery Source (Year):	AGDC 2013-2015
Investigator(s):	AGDC		

Determine values for variables 1-5 using an 80 meter radius plot.

1	V_{LLD}	Local Landscape Disturbance - percent of the plot (0 - 100) occupied by anthropogenic disturbance and/or man-made features.	0
		V_{LLD} Subindex Score	***1.00***
2	V_{SW}	Anthropogenically Derived Surface Water - percent of the plot (0 - 100) occupied by surface water derived from human activities, including thermokarst if directly associated, and conspicuously linked.	0
		V_{SW} Subindex Score	***1.00***
3	V_{IH}	Impediment to Hydrology - number of quarter segments (0 - 4) assignable in any direction that have hydrologic impediments.	0
		V_{IH} Subindex Score	***1.00***
4	V_{DD}	Evidence of Dust - accumulation of sediment on vegetation, appearing as areas of discoloration.	No
5	V_{TK}	Evidence of Thermokarst	No

Determine values for variables 6-8 using an 800 meter radius plot.

6	V_{LD}	Landscape Disturbance - percent of the plot (0 - 100) occupied by anthropogenic disturbance and/or man-made features.	4
		V_{LD} Subindex Score	***1.00***
7	V_{IW}	Impediment to Wildlife - number of quarter segments (0 - 4) assignable in any direction with impediments to the free movement of wildlife.	2
		V_{IW} Subindex Score	***0.50***
8	V_{DR}	Distance to Roadway - minimum distance in meters (0 - 800) to a roadway of any size, class, or condition.	684
		V_{DR} Subindex Score	***1.00***
		Habitat Assessment Score	***0.75***
		Hydrology Assessment Score	***1.00***
		Biogeochemical Cycling Assessment Score	***1.00***

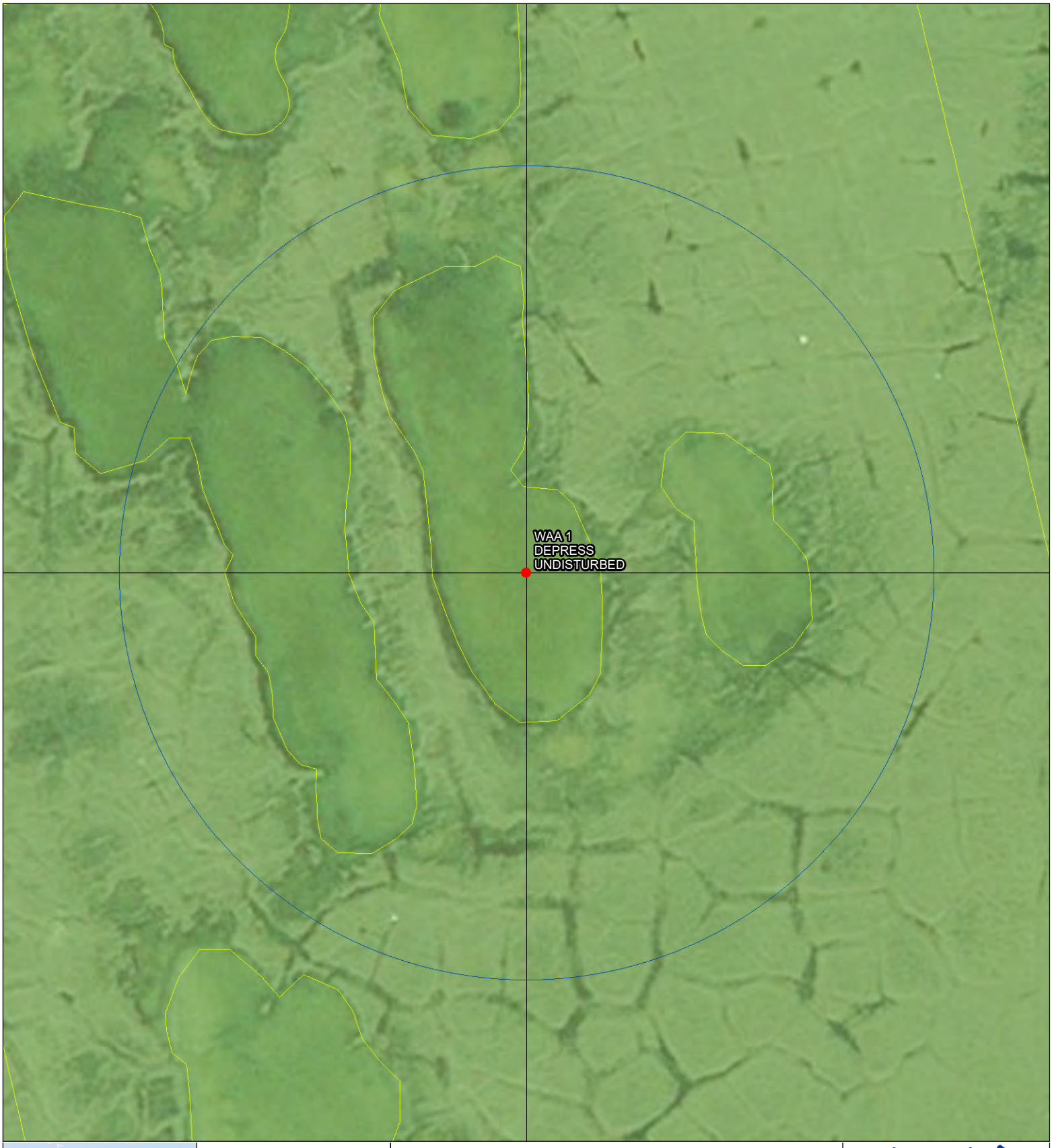
Remarks

ALASKA NORTH SLOPE REGION RAPID WETLAND ASSESSMENT

Section B: Onsite Data Collection

Site Name/Location:	WAA1	Latitude/UTM Northing:	
Sampling Date:		Longitude/UTM Easting:	
Region:		Coordinate System:	

ALASKA NORTH SLOPE REGION RAPID WETLAND ASSESSMENT			
Section C: Summary of Assessment Scores			
On-Site Variable Subindex Scores			
V_{MT}	Microtopography		
V_{SR}	Average species richness		
V_{BG}	Average percent bare ground		
V_{LDD}	Local evidence of dust deposition		
V_{LTK}	Local evidence of thermokarst		
Off-Site Variable Subindex Scores			
V_{LLD}	Local landscape disturbance	1.00	
V_{SW}	Anthropogenically derived surface water	1.00	
V_{IH}	Impediment to hydrology	1.00	
V_{DD}	Evidence of dust	No	
V_{LD}	Landscape disturbance	1.00	
V_{IW}	Impediment to wildlife	0.50	
V_{DR}	Distance to roadway	1.00	
V_{TK}	Evidence of thermokarst	No	
Assessment Scores			
	Habitat	***0.75***	
	Hydrology	***1.00***	
	Biogeochemical	***1.00***	
	On-site Modifer		
	AVERAGE SCORE	***0.92***	





Alaska Stand Alone Pipeline / *ASAP*

Functional Assessment
WAA 1
80m

Map Scale 1:1,000

0 10 20 Meters

N

Legend

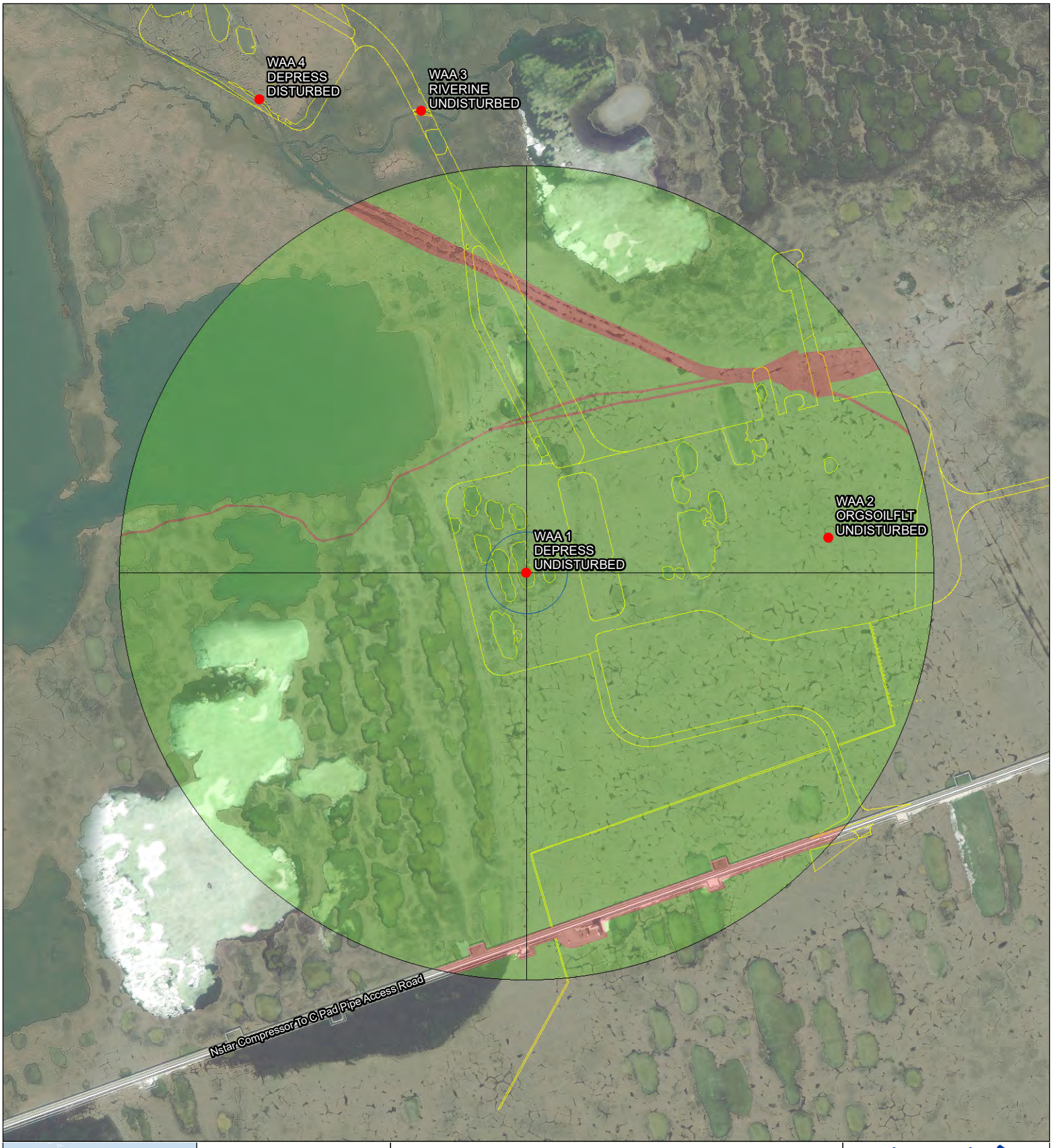
ASAP Project Footprint Mitigation Area
- Permanent Impact
- Target
- Target Quadrants (80m/800m)

Target Disturbance (800m)
- Disturbed
- Undisturbed

Anthropogenic Water (80m)
- Water Present
- No Water Present

ASAP
Alaska's In-State Gas Pipeline
Alaska Gasline Development Corporation
3201 C Street, Suite 200 | Anchorage, AK 99503
P 907.330.6300 | F 907.330.6309 | www.agdc.us

	Appendix C
File Name	ASAP Mitigation Mapping
Date	April 30, 2018





Alaska Stand Alone Pipeline / *ASAP*

Functional Assessment
WAA 1
800m

Map Scale 1:10,000

0 100 200 Meters

N

Legend

ASAP Project Footprint Mitigation Area
- Permanent Impact
- Target
- Target Quadrants (80m/800m)

Target Disturbance (800m)
- Disturbed
- Undisturbed

Anthropogenic Water (80m)
- Water Present
- No Water Present

ASAP

Alaska's In-State Gas Pipeline

Alaska Gasline Development Corporation
3201 C Street, Suite 200 | Anchorage, AK 99503
P 907.330.6300 | F 907.330.6309 | www.agdc.us

	Appendix C
File Name	ASAP Mitigation Mapping
Date	April 30, 2018

ALASKA NORTH SLOPE REGION RAPID WETLAND ASSESSMENT

Section A: Desk Top (Offsite) Data

Site Name/Location:	WAA2	Latitude/UTM Northing:	70.31913997
Date:	4/24/2018	Longitude/UTM Easting:	-148.5522097
Impact/Mitigation:	Impact	Pre/Post:	Pre-Project
Region:	Arctic Coastal Plain	Coordinate System:	NAD83
HGM Class:		Imagery Source (Year):	AGDC 2013-2015
Investigator(s):	AGDC		

Determine values for variables 1-5 using an 80 meter radius plot.

1	V_{LLD}	Local Landscape Disturbance - percent of the plot (0 - 100) occupied by anthropogenic disturbance and/or man-made features.	0
		V_{LLD} Subindex Score	***1.00***
2	V_{SW}	Anthropogenically Derived Surface Water - percent of the plot (0 - 100) occupied by surface water derived from human activities, including thermokarst if directly associated, and conspicuously linked.	0
		V_{SW} Subindex Score	***1.00***
3	V_{IH}	Impediment to Hydrology - number of quarter segments (0 - 4) assignable in any direction that have hydrologic impediments.	0
		V_{IH} Subindex Score	***1.00***
4	V_{DD}	Evidence of Dust - accumulation of sediment on vegetation, appearing as areas of discoloration.	No
5	V_{TK}	Evidence of Thermokarst	No

Determine values for variables 6-8 using an 800 meter radius plot.

6	V_{LD}	Landscape Disturbance - percent of the plot (0 - 100) occupied by anthropogenic disturbance and/or man-made features.	8
		V_{LD} Subindex Score	***0.93***
7	V_{IW}	Impediment to Wildlife - number of quarter segments (0 - 4) assignable in any direction with impediments to the free movement of wildlife.	2
		V_{IW} Subindex Score	***0.50***
8	V_{DR}	Distance to Roadway - minimum distance in meters (0 - 800) to a roadway of any size, class, or condition.	551
		V_{DR} Subindex Score	***1.00***
		Habitat Assessment Score	***0.73***
		Hydrology Assessment Score	***0.98***
		Biogeochemical Cycling Assessment Score	***0.93***

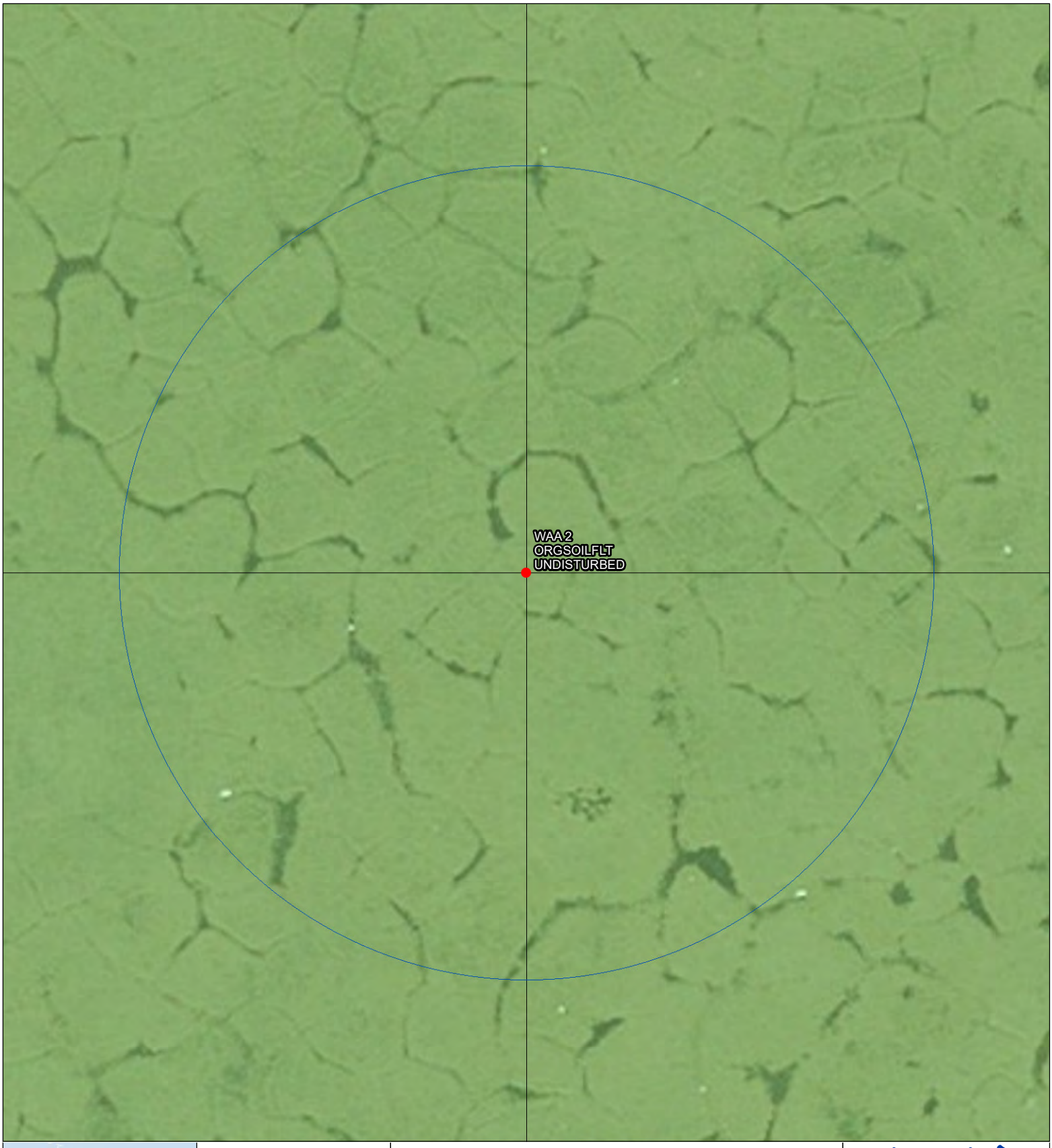
Remarks

ALASKA NORTH SLOPE REGION RAPID WETLAND ASSESSMENT

Section B: Onsite Data Collection

Site Name/Location:	WAA2	Latitude/UTM Northing:	
Sampling Date:		Longitude/UTM Easting:	
Region:		Coordinate System:	

ALASKA NORTH SLOPE REGION RAPID WETLAND ASSESSMENT			
Section C: Summary of Assessment Scores			
On-Site Variable Subindex Scores			
V_{MT}	Microtopography		
V_{SR}	Average species richness		
V_{BG}	Average percent bare ground		
V_{LDD}	Local evidence of dust deposition		
V_{LTK}	Local evidence of thermokarst		
Off-Site Variable Subindex Scores			
V_{LLD}	Local landscape disturbance	1.00	
V_{SW}	Anthropogenically derived surface water	1.00	
V_{IH}	Impediment to hydrology	1.00	
V_{DD}	Evidence of dust	No	
V_{LD}	Landscape disturbance	0.93	
V_{IW}	Impediment to wildlife	0.50	
V_{DR}	Distance to roadway	1.00	
V_{TK}	Evidence of thermokarst	No	
Assessment Scores			
	Habitat	***0.73***	
	Hydrology	***0.98***	
	Biogeochemical	***0.93***	
	On-site Modifer		
	AVERAGE SCORE	***0.88***	





Alaska Stand Alone Pipeline / *ASAP*

Functional Assessment
WAA 2
80m

Map Scale 1:1,000

0 10 20 Meters

N

Legend

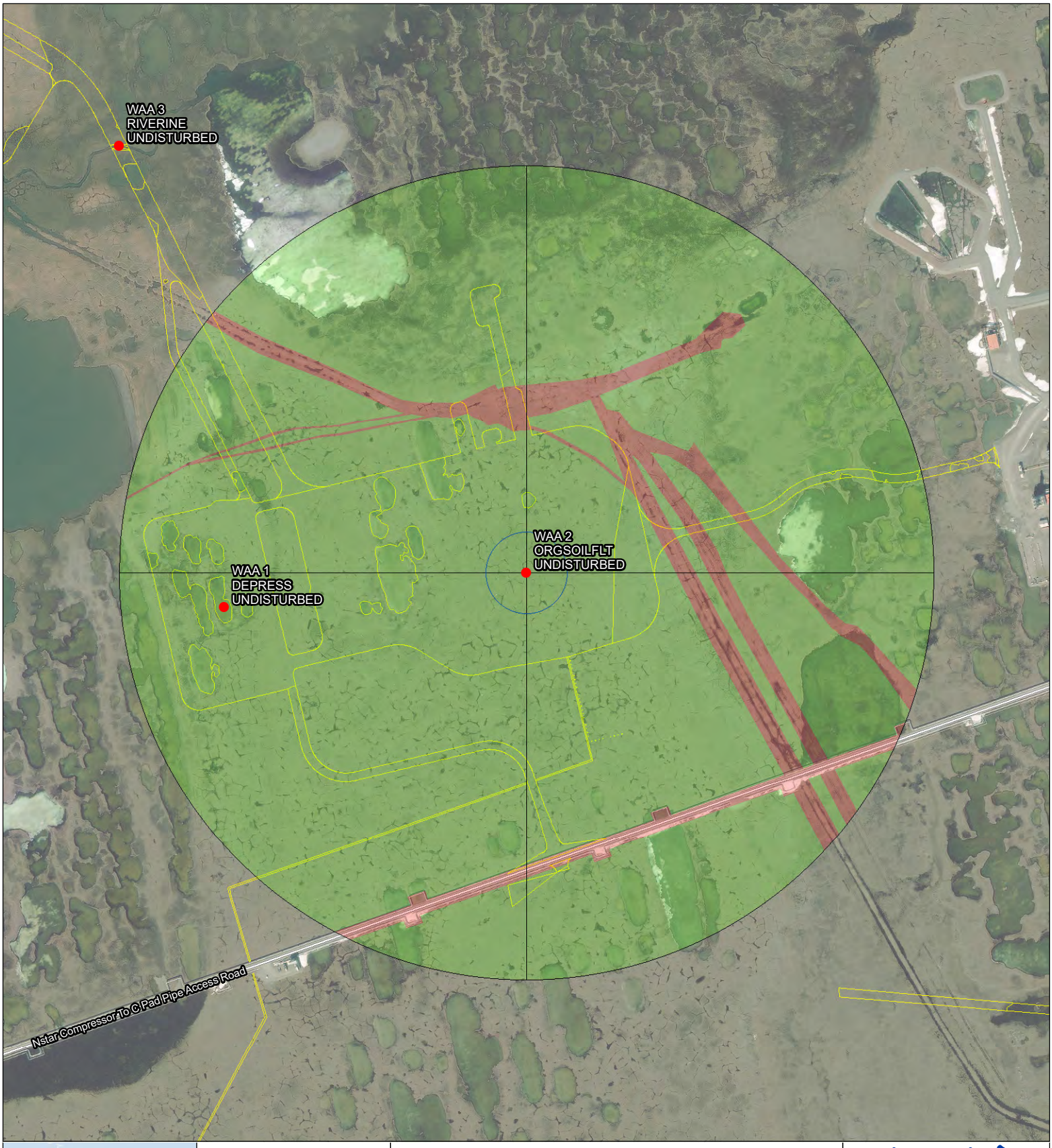
ASAP Project Footprint Mitigation Area
- Permanent Impact
- Target
- Target Quadrants (80m/800m)

Target Disturbance (800m)
- Disturbed
- Undisturbed

Anthropogenic Water (80m)
- Water Present
- No Water Present

ASAP
Alaska's In-State Gas Pipeline
Alaska Gasline Development Corporation
3201 C Street, Suite 200 | Anchorage, AK 99503
P 907.330.6300 | F 907.330.6309 | www.agdc.us

	Appendix C
File Name	ASAP Mitigation Mapping
Date	April 30, 2018





Alaska Stand Alone Pipeline / *ASAP*

Functional Assessment
WAA 2
800m

Map Scale 1:10,000

0 100 200 Meters

N

Legend

ASAP Project Footprint Mitigation Area
- Permanent Impact
- Target
- Target Quadrants (80m/800m)

Target Disturbance (800m)
- Disturbed
- Undisturbed

Anthropogenic Water (80m)
- Water Present
- No Water Present

ASAP

Alaska's In-State Gas Pipeline

Alaska Gasline Development Corporation
3201 C Street, Suite 200 | Anchorage, AK 99503
P 907.330.6300 | F 907.330.6309 | www.agdc.us

	Appendix C
File Name	ASAP Mitigation Mapping
Date	April 30, 2018

ALASKA NORTH SLOPE REGION RAPID WETLAND ASSESSMENT

Section A: Desk Top (Offsite) Data

Site Name/Location:	WAA3	Latitude/UTM Northing:	70.32682324
Date:	4/24/2018	Longitude/UTM Easting:	-148.5729669
Impact/Mitigation:	Impact	Pre/Post:	Pre-Project
Region:	Arctic Coastal Plain	Coordinate System:	NAD83
HGM Class:		Imagery Source (Year):	AGDC 2013-2015
Investigator(s):	AGDC		

Determine values for variables 1-5 using an 80 meter radius plot.

1	V_{LLD}	Local Landscape Disturbance - percent of the plot (0 - 100) occupied by anthropogenic disturbance and/or man-made features.	0
		V_{LLD} Subindex Score	***1.00***
2	V_{SW}	Anthropogenically Derived Surface Water - percent of the plot (0 - 100) occupied by surface water derived from human activities, including thermokarst if directly associated, and conspicuously linked.	0
		V_{SW} Subindex Score	***1.00***
3	V_{IH}	Impediment to Hydrology - number of quarter segments (0 - 4) assignable in any direction that have hydrologic impediments.	0
		V_{IH} Subindex Score	***1.00***
4	V_{DD}	Evidence of Dust - accumulation of sediment on vegetation, appearing as areas of discoloration.	No
5	V_{TK}	Evidence of Thermokarst	No

Determine values for variables 6-8 using an 800 meter radius plot.

6	V_{LD}	Landscape Disturbance - percent of the plot (0 - 100) occupied by anthropogenic disturbance and/or man-made features.	3
		V_{LD} Subindex Score	***1.00***
7	V_{IW}	Impediment to Wildlife - number of quarter segments (0 - 4) assignable in any direction with impediments to the free movement of wildlife.	0
		V_{IW} Subindex Score	***1.00***
8	V_{DR}	Distance to Roadway - minimum distance in meters (0 - 800) to a roadway of any size, class, or condition.	800
		V_{DR} Subindex Score	***1.00***
		Habitat Assessment Score	***1.00***
		Hydrology Assessment Score	***1.00***
		Biogeochemical Cycling Assessment Score	***1.00***

Remarks

ALASKA NORTH SLOPE REGION RAPID WETLAND ASSESSMENT

Section B: Onsite Data Collection

Site Name/Location:	WAA3	Latitude/UTM Northing:	
Sampling Date:		Longitude/UTM Easting:	
Region:		Coordinate System:	

ALASKA NORTH SLOPE REGION RAPID WETLAND ASSESSMENT			
Section C: Summary of Assessment Scores			
On-Site Variable Subindex Scores			
V_{MT}	Microtopography		
V_{SR}	Average species richness		
V_{BG}	Average percent bare ground		
V_{LDD}	Local evidence of dust deposition		
V_{LTK}	Local evidence of thermokarst		
Off-Site Variable Subindex Scores			
V_{LLD}	Local landscape disturbance	1.00	
V_{SW}	Anthropogenically derived surface water	1.00	
V_{IH}	Impediment to hydrology	1.00	
V_{DD}	Evidence of dust	No	
V_{LD}	Landscape disturbance	1.00	
V_{IW}	Impediment to wildlife	1.00	
V_{DR}	Distance to roadway	1.00	
V_{TK}	Evidence of thermokarst	No	
Assessment Scores			
	Habitat	***1.00***	
	Hydrology	***1.00***	
	Biogeochemical	***1.00***	
	On-site Modifer		
	AVERAGE SCORE	***1.00***	





Alaska Stand Alone Pipeline / *ASAP*

Functional Assessment
WAA 3
80m

Map Scale 1:1,000

0 10 20 Meters

N

Legend

ASAP Project Footprint Mitigation Area
- Permanent Impact
- Target
- Target Quadrants (80m/800m)

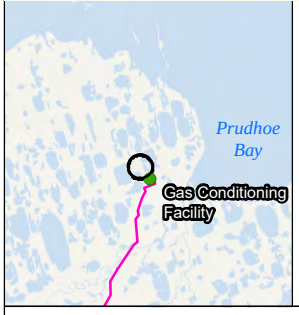
Target Disturbance (800m)
- Disturbed
- Undisturbed

Anthropogenic Water (80m)
- Water Present
- No Water Present

ASAP
Alaska's In-State Gas Pipeline
Alaska Gasline Development Corporation
3201 C Street, Suite 200 | Anchorage, AK 99503
P 907.330.6300 | F 907.330.6309 | www.agdc.us

	Appendix C
File Name	ASAP Mitigation Mapping
Date	April 30, 2018





Alaska Stand Alone Pipeline / *ASAP*

Functional Assessment
WAA 3
800m

Map Scale 1:10,000

0 100 200 Meters

N

Legend

ASAP Project Footprint Mitigation Area
- Permanent Impact
- Target
- Target Quadrants (80m/800m)

Target Disturbance (800m)
- Disturbed
- Undisturbed

Anthropogenic Water (80m)
- Water Present
- No Water Present

ASAP

Alaska's In-State Gas Pipeline

Alaska Gasline Development Corporation
3201 C Street, Suite 200 | Anchorage, AK 99503
P 907.330.6300 | F 907.330.6309 | www.agdc.us

	Appendix C
File Name	ASAP Mitigation Mapping
Date	April 30, 2018

ALASKA NORTH SLOPE REGION RAPID WETLAND ASSESSMENT

Section A: Desk Top (Offsite) Data

Site Name/Location:	WAA4	Latitude/UTM Northing:	70.32709855
Date:	4/24/2018	Longitude/UTM Easting:	-148.5814122
Impact/Mitigation:	Impact	Pre/Post:	Pre-Project
Region:	Arctic Coastal Plain	Coordinate System:	NAD83
HGM Class:		Imagery Source (Year):	AGDC 2013-2015
Investigator(s):	AGDC		

Determine values for variables 1-5 using an 80 meter radius plot.

1	V_{LLD}	Local Landscape Disturbance - percent of the plot (0 - 100) occupied by anthropogenic disturbance and/or man-made features.	30
		V_{LLD} Subindex Score	***0.25***
2	V_{SW}	Anthropogenically Derived Surface Water - percent of the plot (0 - 100) occupied by surface water derived from human activities, including thermokarst if directly associated, and conspicuously linked.	11
		V_{SW} Subindex Score	***0.31***
3	V_{IH}	Impediment to Hydrology - number of quarter segments (0 - 4) assignable in any direction that have hydrologic impediments.	0
		V_{IH} Subindex Score	***1.00***
4	V_{DD}	Evidence of Dust - accumulation of sediment on vegetation, appearing as areas of discoloration.	No
5	V_{TK}	Evidence of Thermokarst	Yes

Determine values for variables 6-8 using an 800 meter radius plot.

6	V_{LD}	Landscape Disturbance - percent of the plot (0 - 100) occupied by anthropogenic disturbance and/or man-made features.	4
		V_{LD} Subindex Score	***1.00***
7	V_{IW}	Impediment to Wildlife - number of quarter segments (0 - 4) assignable in any direction with impediments to the free movement of wildlife.	0
		V_{IW} Subindex Score	***1.00***
8	V_{DR}	Distance to Roadway - minimum distance in meters (0 - 800) to a roadway of any size, class, or condition.	800
		V_{DR} Subindex Score	***1.00***
		Habitat Assessment Score	***0.70***
		Hydrology Assessment Score	***0.64***
		Biogeochemical Cycling Assessment Score	***0.25***

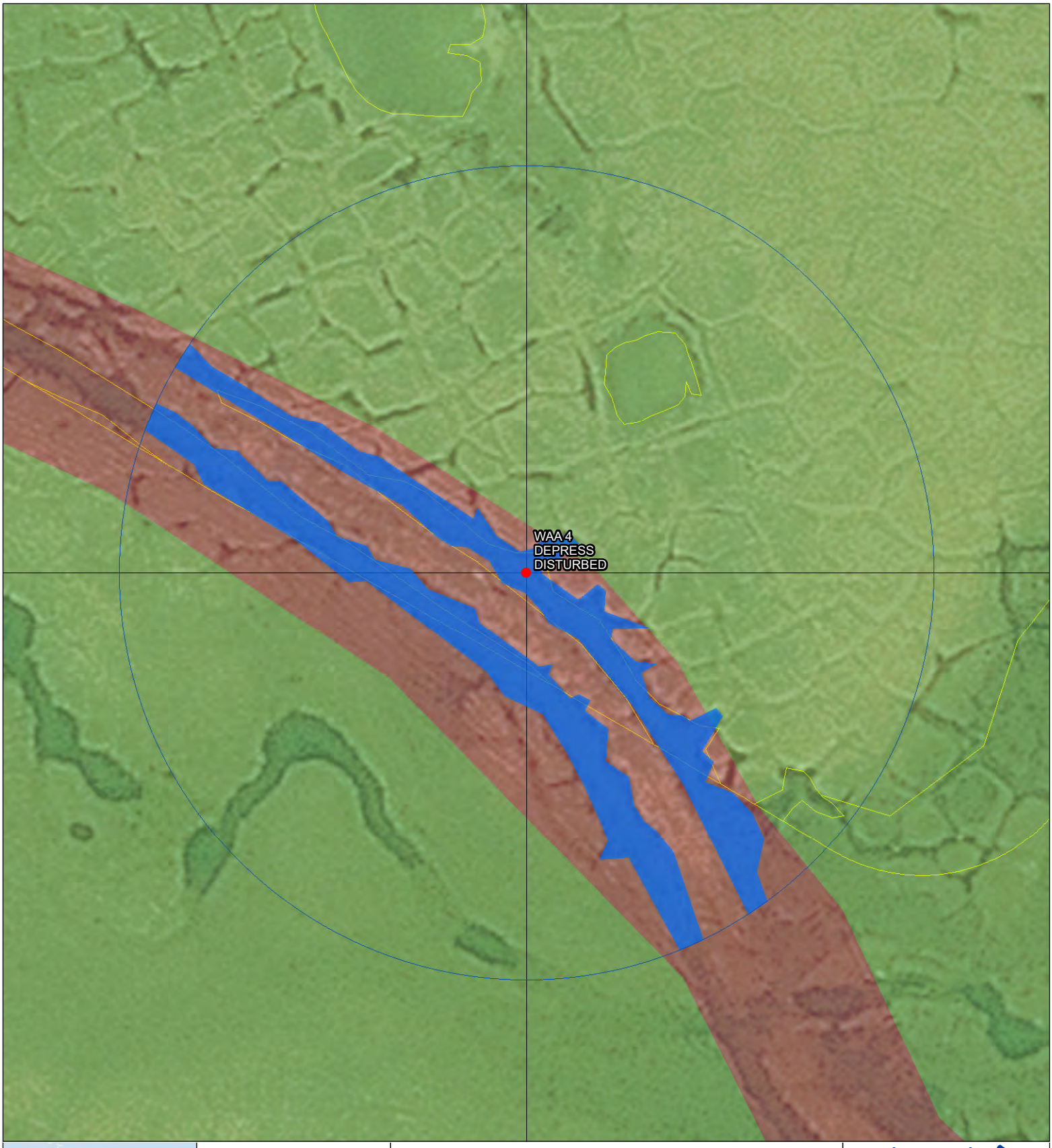
Remarks

ALASKA NORTH SLOPE REGION RAPID WETLAND ASSESSMENT

Section B: Onsite Data Collection

Site Name/Location:	WAA4	Latitude/UTM Northing:	
Sampling Date:		Longitude/UTM Easting:	
Region:		Coordinate System:	

ALASKA NORTH SLOPE REGION RAPID WETLAND ASSESSMENT			
Section C: Summary of Assessment Scores			
On-Site Variable Subindex Scores			
V_{MT}	Microtopography		
V_{SR}	Average species richness		
V_{BG}	Average percent bare ground		
V_{LDD}	Local evidence of dust deposition		
V_{LTK}	Local evidence of thermokarst		
Off-Site Variable Subindex Scores			
V_{LLD}	Local landscape disturbance	0.25	
V_{SW}	Anthropogenically derived surface water	0.31	
V_{IH}	Impediment to hydrology	1.00	
V_{DD}	Evidence of dust	No	
V_{LD}	Landscape disturbance	1.00	
V_{IW}	Impediment to wildlife	1.00	
V_{DR}	Distance to roadway	1.00	
V_{TK}	Evidence of thermokarst	Yes	
Assessment Scores			
	Habitat	***0.70***	
	Hydrology	***0.64***	
	Biogeochemical	***0.25***	
	On-site Modifer		
	AVERAGE SCORE	***0.53***	





Alaska Stand Alone Pipeline / *ASAP*

Functional Assessment
WAA 4
80m

Map Scale 1:1,000

0 10 20 Meters

N

Legend

ASAP Project Footprint Mitigation Area
- Permanent Impact
- Target
- Target Quadrants (80m/800m)

Target Disturbance (800m)
- Disturbed
- Undisturbed

Anthropogenic Water (80m)
- Water Present
- No Water Present

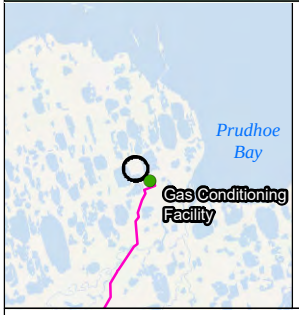
ASAP

Alaska's In-State Gas Pipeline

Alaska Gasline Development Corporation
3201 C Street, Suite 200 | Anchorage, AK 99503
P 907.330.6300 | F 907.330.6309 | www.agdc.us

	Appendix C
File Name	ASAP Mitigation Mapping
Date	April 30, 2018





Alaska Stand Alone Pipeline / *ASAP*

Functional Assessment
WAA 4
800m

Map Scale 1:10,000

0 100 200 Meters

N

Legend

ASAP Project Footprint Mitigation Area
- Permanent Impact
- Target
- Target Quadrants (80m/800m)

Target Disturbance (800m)
- Disturbed
- Undisturbed

Anthropogenic Water (80m)
- Water Present
- No Water Present

ASAP
Alaska's In-State Gas Pipeline
Alaska Gasline Development Corporation
3201 C Street, Suite 200 | Anchorage, AK 99503
P 907.330.6300 | F 907.330.6309 | www.agdc.us

	Appendix C
File Name	ASAP Mitigation Mapping
Date	April 30, 2018

ALASKA NORTH SLOPE REGION RAPID WETLAND ASSESSMENT

Section A: Desk Top (Offsite) Data

Site Name/Location:	WAA5	Latitude/UTM Northing:	70.33126844
Date:	4/24/2018	Longitude/UTM Easting:	-148.6073849
Impact/Mitigation:	Impact	Pre/Post:	Pre-Project
Region:	Arctic Coastal Plain	Coordinate System:	NAD83
HGM Class:		Imagery Source (Year):	AGDC 2013-2015
Investigator(s):	AGDC		

Determine values for variables 1-5 using an 80 meter radius plot.

1	V_{LLD}	Local Landscape Disturbance - percent of the plot (0 - 100) occupied by anthropogenic disturbance and/or man-made features.	29
		V_{LLD} Subindex Score	***0.28***
2	V_{SW}	Anthropogenically Derived Surface Water - percent of the plot (0 - 100) occupied by surface water derived from human activities, including thermokarst if directly associated, and conspicuously linked.	6
		V_{SW} Subindex Score	***0.63***
3	V_{IH}	Impediment to Hydrology - number of quarter segments (0 - 4) assignable in any direction that have hydrologic impediments.	0
		V_{IH} Subindex Score	***1.00***
4	V_{DD}	Evidence of Dust - accumulation of sediment on vegetation, appearing as areas of discoloration.	No
5	V_{TK}	Evidence of Thermokarst	Yes

Determine values for variables 6-8 using an 800 meter radius plot.

6	V_{LD}	Landscape Disturbance - percent of the plot (0 - 100) occupied by anthropogenic disturbance and/or man-made features.	6
		V_{LD} Subindex Score	***0.98***
7	V_{IW}	Impediment to Wildlife - number of quarter segments (0 - 4) assignable in any direction with impediments to the free movement of wildlife.	2
		V_{IW} Subindex Score	***0.50***
8	V_{DR}	Distance to Roadway - minimum distance in meters (0 - 800) to a roadway of any size, class, or condition.	800
		V_{DR} Subindex Score	***1.00***
		Habitat Assessment Score	***0.56***
		Hydrology Assessment Score	***0.70***
		Biogeochemical Cycling Assessment Score	***0.28***

Remarks

ALASKA NORTH SLOPE REGION RAPID WETLAND ASSESSMENT

Section B: Onsite Data Collection

Site Name/Location:	WAA5	Latitude/UTM Northing:	
Sampling Date:		Longitude/UTM Easting:	
Region:		Coordinate System:	

ALASKA NORTH SLOPE REGION RAPID WETLAND ASSESSMENT

Section C: Summary of Assessment Scores

On-Site Variable Subindex Scores

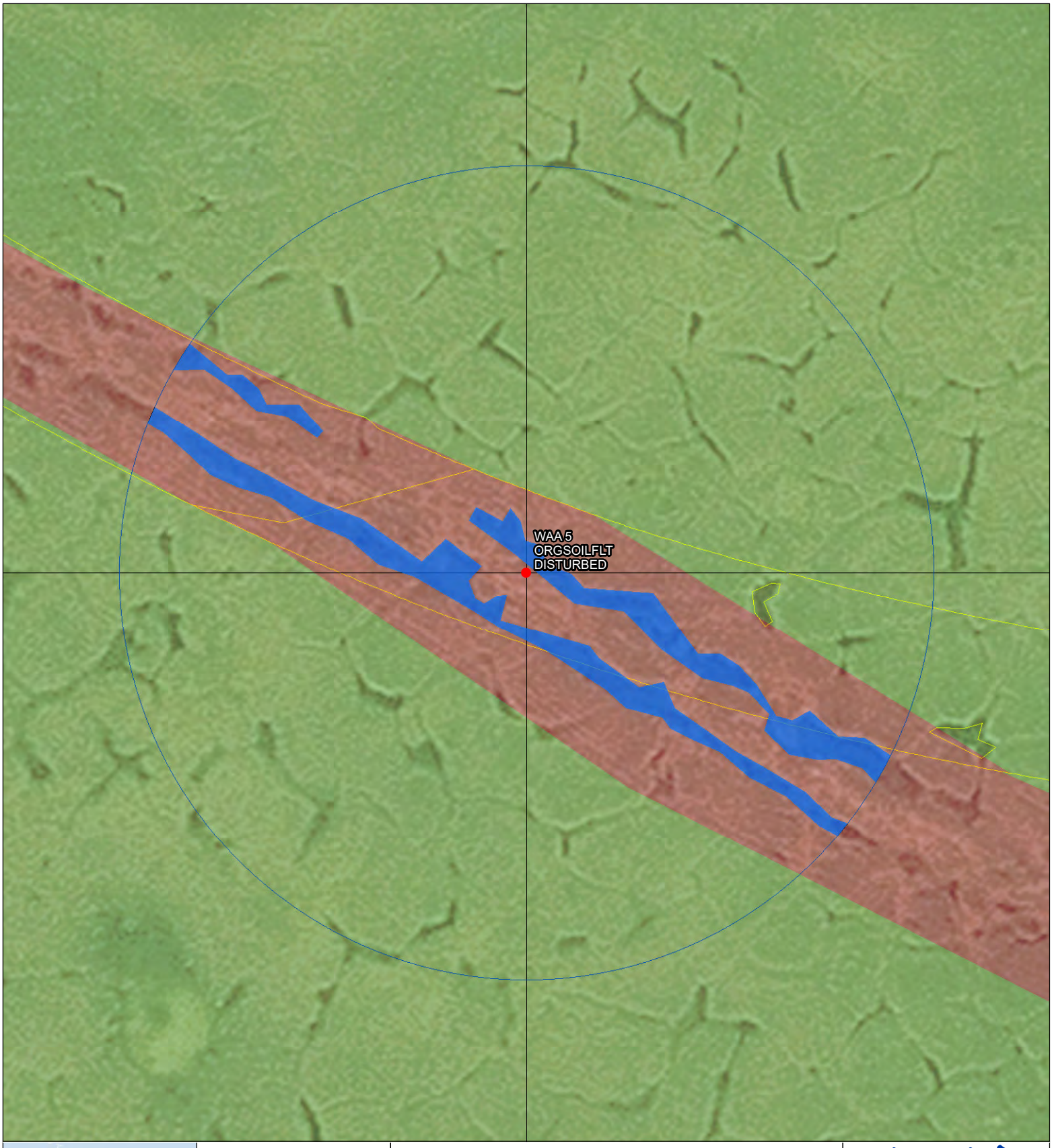
V_{MT}	Microtopography	
V_{SR}	Average species richness	
V_{BG}	Average percent bare ground	
V_{LDD}	Local evidence of dust deposition	
V_{LTK}	Local evidence of thermokarst	

Off-Site Variable Subindex Scores

V_{LLD}	Local landscape disturbance	0.28
V_{SW}	Anthropogenically derived surface water	0.63
V_{IH}	Impediment to hydrology	1.00
V_{DD}	Evidence of dust	No
V_{LD}	Landscape disturbance	0.98
V_{IW}	Impediment to wildlife	0.50
V_{DR}	Distance to roadway	1.00
V_{TK}	Evidence of thermokarst	Yes

Assessment Scores

Habitat	***0.56***
Hydrology	***0.70***
Biogeochemical	***0.28***
On-site Modifer	
AVERAGE SCORE	***0.51***





Alaska Stand Alone Pipeline / *ASAP*

Functional Assessment
WAA 5
80m

Map Scale 1:1,000

0 10 20 Meters

N

Legend

ASAP Project Footprint Mitigation Area
- Permanent Impact
- Target
- Target Quadrants (80m/800m)

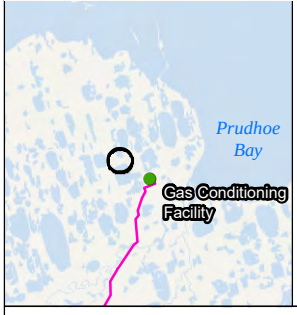
Target Disturbance (800m)
- Disturbed
- Undisturbed

Anthropogenic Water (80m)
- Water Present
- No Water Present

ASAP
Alaska's In-State Gas Pipeline
Alaska Gasline Development Corporation
3201 C Street, Suite 200 | Anchorage, AK 99503
P 907.330.6300 | F 907.330.6309 | www.agdc.us

	Appendix C
File Name	ASAP Mitigation Mapping
Date	April 30, 2018





Alaska Stand Alone Pipeline / *ASAP*

Functional Assessment
WAA 5
800m

Map Scale 1:10,000

0 100 200 Meters

N

Legend

ASAP Project Footprint Mitigation Area
- Permanent Impact
- Target
- Target Quadrants (80m/800m)

Target Disturbance (800m)
- Disturbed
- Undisturbed

Anthropogenic Water (80m)
- Water Present
- No Water Present

ASAP

Alaska's In-State Gas Pipeline

Alaska Gasline Development Corporation
3201 C Street, Suite 200 | Anchorage, AK 99503
P 907.330.6300 | F 907.330.6309 | www.agdc.us

	Appendix C
File Name	ASAP Mitigation Mapping
Date	April 30, 2018

ALASKA NORTH SLOPE REGION RAPID WETLAND ASSESSMENT

Section A: Desk Top (Offsite) Data

Site Name/Location:	WAA6	Latitude/UTM Northing:	70.35834819
Date:	4/24/2018	Longitude/UTM Easting:	-148.5868886
Impact/Mitigation:	Impact	Pre/Post:	Pre-Project
Region:	Arctic Coastal Plain	Coordinate System:	NAD83
HGM Class:		Imagery Source (Year):	AGDC 2013-2015
Investigator(s):	AGDC		

Determine values for variables 1-5 using an 80 meter radius plot.

1	V_{LLD}	Local Landscape Disturbance - percent of the plot (0 - 100) occupied by anthropogenic disturbance and/or man-made features.	19
		V_{LLD} Subindex Score	***0.53***
2	V_{SW}	Anthropogenically Derived Surface Water - percent of the plot (0 - 100) occupied by surface water derived from human activities, including thermokarst if directly associated, and conspicuously linked.	0
		V_{SW} Subindex Score	***1.00***
3	V_{IH}	Impediment to Hydrology - number of quarter segments (0 - 4) assignable in any direction that have hydrologic impediments.	3
		V_{IH} Subindex Score	***0.25***
4	V_{DD}	Evidence of Dust - accumulation of sediment on vegetation, appearing as areas of discoloration.	Yes
5	V_{TK}	Evidence of Thermokarst	Yes

Determine values for variables 6-8 using an 800 meter radius plot.

6	V_{LD}	Landscape Disturbance - percent of the plot (0 - 100) occupied by anthropogenic disturbance and/or man-made features.	4
		V_{LD} Subindex Score	***1.00***
7	V_{IW}	Impediment to Wildlife - number of quarter segments (0 - 4) assignable in any direction with impediments to the free movement of wildlife.	3
		V_{IW} Subindex Score	***0.25***
8	V_{DR}	Distance to Roadway - minimum distance in meters (0 - 800) to a roadway of any size, class, or condition.	12
		V_{DR} Subindex Score	***0.02***
		Habitat Assessment Score	***0.39***
		Hydrology Assessment Score	***0.69***
		Biogeochemical Cycling Assessment Score	***0.53***

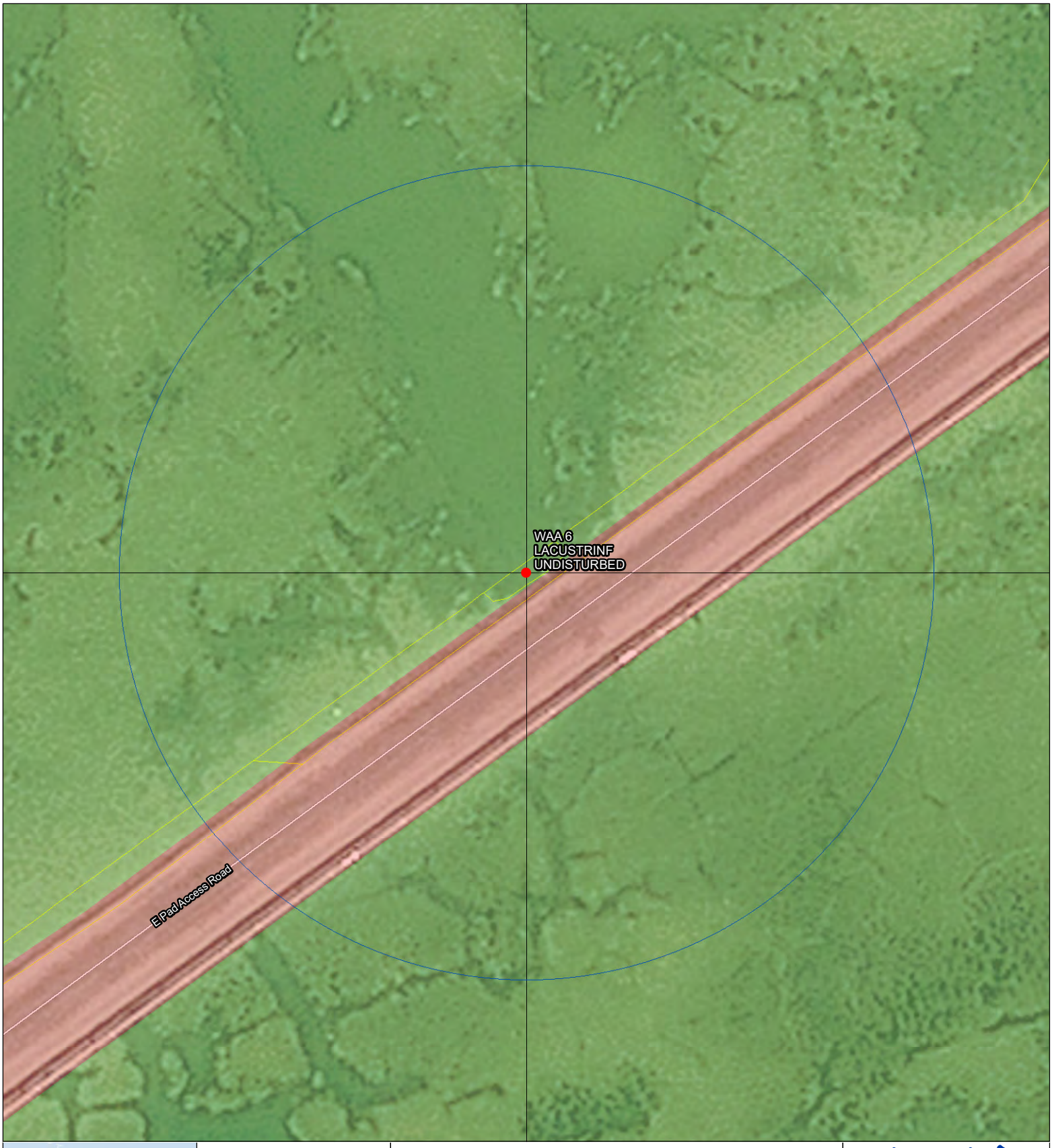
Remarks

ALASKA NORTH SLOPE REGION RAPID WETLAND ASSESSMENT

Section B: Onsite Data Collection

Site Name/Location:	WAA6	Latitude/UTM Northing:	
Sampling Date:		Longitude/UTM Easting:	
Region:		Coordinate System:	

ALASKA NORTH SLOPE REGION RAPID WETLAND ASSESSMENT			
Section C: Summary of Assessment Scores			
On-Site Variable Subindex Scores			
V_{MT}	Microtopography		
V_{SR}	Average species richness		
V_{BG}	Average percent bare ground		
V_{LDD}	Local evidence of dust deposition		
V_{LTK}	Local evidence of thermokarst		
Off-Site Variable Subindex Scores			
V_{LLD}	Local landscape disturbance	0.53	
V_{SW}	Anthropogenically derived surface water	1.00	
V_{IH}	Impediment to hydrology	0.25	
V_{DD}	Evidence of dust	Yes	
V_{LD}	Landscape disturbance	1.00	
V_{IW}	Impediment to wildlife	0.25	
V_{DR}	Distance to roadway	0.02	
V_{TK}	Evidence of thermokarst	Yes	
Assessment Scores			
	Habitat	***0.39***	
	Hydrology	***0.69***	
	Biogeochemical	***0.53***	
	On-site Modifer		
	AVERAGE SCORE	***0.54***	





Alaska Stand Alone Pipeline / *ASAP*

Functional Assessment
WAA 6
80m

Map Scale 1:1,000

0 10 20 Meters

N

Legend

ASAP Project Footprint Mitigation Area
- Permanent Impact
- Target
- Target Quadrants (80m/800m)

Target Disturbance (800m)
- Disturbed
- Undisturbed

Anthropogenic Water (80m)
- Water Present
- No Water Present

ASAP
Alaska's In-State Gas Pipeline
Alaska Gasline Development Corporation
3201 C Street, Suite 200 | Anchorage, AK 99503
P 907.330.6300 | F 907.330.6309 | www.agdc.us

	Appendix C
File Name	ASAP Mitigation Mapping
Date	April 30, 2018





Alaska Stand Alone Pipeline / *ASAP*

Functional Assessment
WAA 6
800m

Map Scale 1:10,000

0 100 200 Meters

N

Legend

ASAP Project Footprint Mitigation Area
- Permanent Impact
- Target
- Target Quadrants (80m/800m)

Target Disturbance (800m)
- Disturbed
- Undisturbed

Anthropogenic Water (80m)
- Water Present
- No Water Present

ASAP

Alaska's In-State Gas Pipeline

Alaska Gasline Development Corporation
3201 C Street, Suite 200 | Anchorage, AK 99503
P 907.330.6300 | F 907.330.6309 | www.agdc.us

	Appendix C
File Name	ASAP Mitigation Mapping
Date	April 30, 2018

Appendix H

Alaska Department of Conservation Section 401 Water Quality Certification

- Page Intentionally Left Blank -

THE STATE of ALASKA
GOVERNOR BILL WALKER

Department of Environmental Conservation

DIVISION OF WATER
Wastewater Discharge Authorization Program

555 Cordova Street
Anchorage, Alaska 99501-2617
Main: 907.269.6285
Fax: 907.334.2415
www.dec.alaska.gov/water/wwdp

August 27, 2018

Alaska Gasline Development Corporation
Attention: Mr. Kalb Stevenson
3201 C Street, Suite 200
Anchorage, AK 99503

Re: Alaska Gasline Development Corporation, Alaska Stand Alone Pipeline (ASAP)
POA-2009-651, Multiple Waterbodies

Dear Mr. Stevenson:

In accordance with Section 401 of the Federal Clean Water Act of 1977 and provisions of the Alaska Water Quality Standards, the Department of Environmental Conservation (DEC) is issuing the enclosed Certificate of Reasonable Assurance for placement of dredged and/or fill material in waters of the U.S., including wetlands and streams, associated with the development of an in-state gas pipeline, 733 miles long, between the North Slope, and the terminus in the southcentral region of the state.

DEC regulations provide that any person who disagrees with this decision may request an informal review by the Division Director in accordance with 18 AAC 15.185 or an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340. An informal review request must be delivered to the Director, Division of Water, 555 Cordova Street, Anchorage, AK 99501, within 15 days of the permit decision. Visit http://dec.alaska.gov/commish/ReviewGuidance.htm for information on Administrative Appeals of Department decisions.

An adjudicatory hearing request must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, PO Box 111800, Juneau, AK 99811-1800, within 30 days of the permit decision. If a hearing is not requested within 30 days, the right to appeal is waived.

By copy of this letter we are advising the U.S. Army Corps of Engineers of our actions and enclosing a copy of the certification for their use.

Sincerely,

James Rypkema
Program Manager, Storm Water and Wetlands

Enclosure: 401 Certificate of Reasonable Assurance

cc: (with encl.)
Jason Berkner, USACE, Anchorage
Megan Marie, ADF&G
Mike Thompson, AGDC
USFWS Field Office Anchorage
Matthew LaCroix, EPA Operations, Anchorage
Chandra McGee, DEC

STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CERTIFICATE OF REASONABLE ASSURANCE

In accordance with Section 401 of the Federal Clean Water Act (CWA) and the Alaska Water Quality Standards (18 AAC 70), a Certificate of Reasonable Assurance, is issued to Alaska Gasline Development Corporation, Alaska Stand Alone Pipeline (ASAP), Attention: Mr. Frank Richards, at 3201 C Street, Suite 200, Anchorage, Alaska 99503, for placement of dredged and/or fill material in waters of the U.S. including wetlands and streams in association with the development of an in-state gas pipeline, 733 miles long, between the North Slope, and the terminus in Southcentral region of the state.

A total of 21,237.34 acres (8,907.01 in jurisdictional waters of the U.S., including wetlands; and, 12,330.33 in uplands) would be impacted either permanently or temporarily by the proposed pipeline, aboveground facilities, access roads, and marine dredge or fill. The 8,907.01 acres of wetland impacts include 8,734.58 acres of impacts to freshwater habitat (categorized as palustrine emergent, palustrine shrub/scrub, and palustrine forest; and, pond, lake and intermittent waterbodies). The remaining 172.44 acres of jurisdictional marine impacts include discharges to 0.90 acres of intertidal and 171.54 acres of subtidal waters of the U.S. 12,330.33 in uplands) would be impacted either permanently or temporarily by the proposed pipeline.

The proposed Alaska Stand Alone Pipeline (ASAP) Project is comprised of a natural gas conditioning facility (GCF) capable of producing an annual average 500 million standard cubic feet per day (MMscfd) of utility-grade natural gas at peak capacity and a 1,480 pound per square inch (psig) natural gas pipeline. The pipeline would consist of a 733-mile long, 36-inch-diameter natural gas transmission mainline extending from the GCF near Prudhoe Bay south to a connection with the existing ENSTAR pipeline system in the Matanuska-Susitna Borough. A 30-mile-long, 12-inch-diameter lateral pipeline will connect the mainline to Fairbanks. The proposed pipeline would typically be buried with a minimum cover of 30 inches and a bottom-of-ditch depth of 6 to 8 feet except at possible fault crossings, elevated bridge stream crossings, pigging facilities, and block valve locations. The pipeline system was designed to transport natural gas that would be accessible to and useable by communities, government entities, and natural resource development projects.

Construction work pads refer to the zone along the alignment from which work is performed. Work-pads will be installed to support equipment required for pipeline construction. Three main types are required: ice/snow work pads, gravel work pads, and graded work pads. Culverts and temporary bridges will be installed, as required, to permit cross-drainage during summer. The right of way (ROW) will be maintained during construction to allow safe passage of construction equipment and to prevent degradation of the ROW and adjacent areas. Additional culverts, riprap embankments, or drainage ditches will be installed during construction, as required.

Heavy equipment working over an ice work pad (trencher, side booms, and trucks) will work north-to-south to dig a 5 foot-wide trench to the desired depth (generally, six to eight feet), casting spoils to the opposite side of the trench. For trenching and pipe installation on the North Slope, heavy equipment and trucks will drive on the working side of the trench, which will be protected by an ice pad and result in no impacts to wetlands from transportation.

Winter grading would be possible where soils are naturally strong enough to support equipment or on soils that are strong enough after shallow natural frost penetration. In winter, freezing temperatures would be

sufficient to strengthen these soils, and no frost packing would be necessary other than compacting or removing snow to prevent it from serving as an insulator over the ground. Most of the North Slope is considered wetlands and has thaw-unstable permafrost soils. No grading would occur on the North Slope segment, considered to be from the GCF to the Brooks Range foothills.

A chain-type excavator will excavate the ground by breaking up the frozen soil or rock with carbide-tipped teeth mounted in sockets welded to a continuous steel chain. The chain trencher will cut with a digging chain that is driven around a rounded metal frame, or boom. This type of trencher can cut ground that is too hard to cut with a bucket-type excavator, and can also cut narrow and deep trenches. The angle of the boom can be adjusted to control the depth of the cut. To cut a trench, the boom will be held at a fixed angle while the machine creeps slowly. This method of excavation will operate efficiently and will minimize the extent of surface disturbance. Ditching machines are effective in soils without oversized material and without a high water table. The organic layer and vegetative matting will be removed only from a 5-foot-wide section where trenching will occur. Upon digging the trench, construction teams will assess surficial and subsurface hydrology, as well as the potential for erosion and ponding. Engineers will use this information to inform their decisions for placing ditch plugs or other sub-surface hydrologic control measures where possible.

For the ASAP belowground pipe on the Arctic Coastal Plain (ACP), heavy equipment working over an ice work pad (trencher, side booms and trucks) will work north-to-south to dig a 5 foot-wide trench to the desired depth (generally, six to eight ft), casting spoils to the opposite side of the trench. Heavy equipment and trucks will drive on the working side of the trench, which will be protected by an ice pad and result in no impact to wetlands from transportation. A trencher, which is not compatible with large cobble or boulder areas, can be used because of the presence of a uniform deposit of fine-grained soils within trench depth on the ACP. The trencher will drive over an ice pad while digging the trench.

Trench spoils will be cast on to the non-traffic side of the ROW onto either the temporary ROW working area, or during winter construction, onto either ice, frost packing or snow (in agricultural areas the topsoil would be placed on the non-traffic side of the ROW and the spoils material on the non-traffic side next to the pipeline trench centerline). After the pipeline is placed in the trench the mixed soil layers will be backfilled into the trench and mounded over the top of the pipe, with the toe of the mound extending approximately two feet outward from the edge of the ditch. The pipe will be placed within the trench and filled during the same construction season in which it was dug. Excessive ditch subsoil spoil will be feathered and blended across areas of the disturbed construction corridor, creating a roughened surface to capture precipitation, decrease erosion, and provide safe sites for plant establishment.

If necessary, thaw-stable bedding and padding material will be added prior to backfilling to provide structural support and to help with settlement. This will help to protect the pipeline whenever the ditch passes through material that could damage the pipe coating, to mitigate buoyancy problems, and to protect against excessive loss of pipe cover due to erosion. In areas where these problems do not exist, the spoil material will be placed directly around the pipe.

Stabilization of the backfilled trench may be a multi-year process in some areas, particularly areas with fine-grained, ice-rich soils and wetlands. The proposed pipeline trench may intercept overland flow, but natural water flow paths will be maintained through the use of trench breakers and terrain contouring. Some areas may be covered with erosion control fabric or other material to prevent erosion. It is important that vegetation will be able to grow through the fabric. Disturbed areas where the vegetated mat is not

available, the surface would be prepared for natural revegetation by native plant species or seeded with plant species adapted to site conditions at the earliest opportunity to minimize erosion and siltation.

The proposed ASAP route generally parallels the Trans-Alaska Pipeline System (TAPS) and Dalton Highway corridor to near Livengood, northwest of Fairbanks. At Livengood, the mainline route would continue south, to the west of Fairbanks and Nenana. Under the applicant's current proposal, the pipeline would bypass Denali National Park and Preserve to the east and then generally parallel the Parks Highway corridor to Willow, continuing south to its connection into ENSTAR's distribution system at MP 39 of the Beluga Pipeline southwest of Big Lake. The Fairbanks Lateral tie-in would be located approximately 2.5 miles south of the Chatanika River crossing at MP 440 of the mainline. From the mainline tie-in point, the Fairbanks Lateral pipeline would traverse east over Murphy Dome, following the Murphy Dome and Old Murphy Dome Roads, and then extend southeast into Fairbanks.

The Alaska District, U.S. Army Corps of Engineers (Corps) has been designated the lead federal agency for development of the Supplemental Environmental Impact Statement (SEIS). The U.S. Bureau of Land Management (BLM), National Park Service (NPS), U.S. Environmental Protection Agency (EPA), U.S. Fish and Wildlife Service (USFWS), U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA), and the Alaska Department of Natural Resources State Pipeline Coordinator's Office (SPCO) are participating as cooperating agencies in the National Environmental Policy Act review process which includes the SEIS documents and references.

A state issued water quality certification is required under Section 401 because the proposed activity will be authorized by a U.S. Army Corps of Engineers permit (POA-2009-651) and a discharge of pollutants to waters of the U.S. located in the State of Alaska may result from the proposed activity. Public notice of the application for this certification was given as required by 18 AAC 15.180 in the Corps Public Notice POA-2009-651 posted from June 22, 2018 to July 22, 2018.

The proposed activity is located within the State of Alaska, from Prudhoe Bay the pipeline runs along the Dalton Highway to Fairbanks, then along the Parks Highway to Southcentral Alaska.

The Department of Environmental Conservation (DEC) reviewed the application and certifies that there is reasonable assurance that the proposed activity, as well as any discharge which may result, will comply with applicable provisions of Section 401 of the CWA and the Alaska Water Quality Standards, 18 AAC 70, provided that the following additional measures are adhered to.

1. Reasonable precautions and controls must be used to prevent incidental and accidental discharge of petroleum products or other hazardous substances. Fuel storage and handling activities for equipment must be sited and conducted so there is no petroleum contamination of the ground, subsurface, or surface waterbodies.
2. During construction, spill response equipment and supplies such as sorbent pads shall be available and used immediately to contain and cleanup oil, fuel, hydraulic fluid, antifreeze, or other pollutant spills. Any spill amount must be reported in accordance with Discharge Notification and Reporting Requirements (AS 46.03.755 and 18 AAC 75 Article 3). The applicant must contact by telephone the DEC Area Response Team for Central Alaska at (907) 269-3063 or Northern Alaska at (907) 451-2121 (depending on location of spill) during work hours or 1-800-478-9300 after hours. Also, the applicant must contact by telephone the National Response Center at 1-800-424-8802.

3. Ensure soil thermal regime is protected from erosion or melt. Use BMP's; including timing, and engineering practices, to protect the permafrost and to maintain the soil temperature to minimize potential for thaw damage to the soils.
4. Use of BMP's is required for all stream crossings to minimize the potential to spread sediment into the waterbodies.
5. HDD cuttings will need to be properly disposed of and not allowed to impact any waterbodies.
6. Low impact vehicles should be used when operating in wetland areas during non-frozen conditions to minimize long term impacts in wetland areas.
7. Construction equipment shall not be operated below the ordinary high water mark or high tide line if equipment is leaking fuel, oil, hydraulic fluid, or any other hazardous material. Equipment shall be inspected and recorded in a log on a daily basis for leaks. If leaks are found, the equipment shall not be used and pulled from service until the leak is repaired.
8. All work areas, material access routes, and surrounding wetlands involved in the construction project shall be clearly delineated and marked in such a way that equipment operators do not operate outside of the marked areas.
9. Natural drainage patterns shall be maintained, to the extent practicable, without introducing ponding or drying.
10. Excavated or fill material, including overburden, shall be placed so that it is stable, meaning after placement the material does not show signs of excessive erosion. Indicators of excess erosion include: gullying, head cutting, caving, block slippage, material sloughing, etc. The material must be contained with siltation best management practices (BMPs) to preclude reentry into any waters of the U.S., which includes wetlands.
11. Include the following BMPs to handle storm water and total storm water volume discharges as they apply to the site:
    a. Divert storm water from off-site around the site(s) so that it does not flow onto the project site(s) and cause erosion of exposed soils;
    b. Slow down or contain storm water that may collect and concentrate within a site and cause erosion of exposed soils;
    c. Place velocity dissipation devices (e.g., check dams, sediment traps, or riprap) along the length of any conveyance channel to provide a non-erosive flow velocity. Also place velocity dissipation devices where discharges from the conveyance channel or structure join a water course to prevent erosion and to protect the channel embankment, outlet, adjacent stream bank slopes, and downstream waters.
12. Use of best management practices is required during crossing of impaired waterbodies (e.g. Goldstream Creek, impaired for sediment/turbidity). A water is impaired for purposes of this permit if it has been identified by a State or Environmental Protection Agency (EPA) pursuant to Section 303(d) of the CWA as not meeting applicable State Water Quality Standards (these waters are called "water quality limited segments" under 40 CFR 30.2(j)). Impaired waters include both waters with approved or established Total Maximum Daily Load (TMDL), and those that a TMDL has not yet been approved or established. For further information on impaired waters and the most current

approved 303(d) Listed Waterbodies see: http://dec.alaska.gov/water/water-quality/impaired-waters.aspx A water is impaired for purposes of this permit if it has been identified by a State or Environmental Protection Agency (EPA) pursuant to Section 303(d) of the CWA as not meeting applicable State Water Quality Standards (these waters are called "water quality limited segments" under 40 CFR 30.2(j)).

a. Discharging to a CWA §303(d)-Listed Waterbody (Category 5) (e.g., Turbidity or Sediment)

   i. A permittee who places fill into a surface waterbody listed on the CWA §303(d) list for turbidity or sediment must monitor turbidity at the following locations to evaluate compliance with the turbidity Water Quality Standard when the activity occurs inside the riparian zone. The width of the riparian zone or areas are measured perpendicular to the ordinary high water mark on each bank of the watercourse and follow the shape of the channel. Width shall be at least: 50-feet wide on anadromous fish streams, and 25-feet wide on all other streams. Permittees shall consult the Alaska Department of Fish and Game (ADFG) or the state Anadromous Waters Catalog to determine fish status and appropriate riparian area width for streams at the site.

      (1) The permittee must sample the upstream turbidity in the §303(d)-listed receiving waterbody at a representative location (up gradient) from the project activity (activity) into the §303(d)-listed surface waterbody; and

      (2) The permittee must sample the downstream turbidity at a representative location immediately downgradient from the activity in the §303(d)-listed surface waterbody, inside the area of influence of the activity.

      (3) Samples must be collected concurrently, or within a one-hour of each other.

      (4) Monitoring frequency shall be "three times per week" starting on either the first or second day of the week that activities commence with subsequent samples taken every other day thereafter until three samples are collected.

      (5) If a sample is not collected due to safety concerns or a situation beyond the permittee's control, the circumstances must be documented in a log and another sample must be collected as soon as conditions allow.

      (6) Based on the sampling, the resulting water quality must meet the state Water Quality Standard for turbidity, as follows: the downstream sample may not exceed 5 nephelometric turbidity units (NTU) above the upstream sample when the upstream turbidity is 50 NTU or less, and may not have more than 10% increase in turbidity when the upstream turbidity is more than 50 NTU, not to exceed a maximum increase of 25 NTU.

      (7) If the difference between the upstream and downstream sample exceeds the turbidity Water Quality Standard, the permittee must:

         (a) Review the pipeline site plan and the BMPs selected for the project phase and make appropriate improvements and corrections to the BMPs within seven (7) calendar days of the date the discharge exceeds the water quality standard;

         (b) Implement improvements and changes to the BMPs;

         (c) Continue to sample according to the frequency identified under stipulation number 12.a.i(4) of the certification.

b. Discharging into a Surface Waterbody with an Approved or Established TMDL (Category 4a or 4b) (e.g., Turbidity or Sediment).

   i. The permittee must review the status of the TMDL each year by reviewing the current status of Approved and Scheduled TMDL's which can be accessed at the following website: http://dec.alaska.gov/water/tmdl/tmdl_index.htm. Goldstream Creek has an approved TMDL.

   ii. If the permittee discharges into a surface waterbody with an EPA-established or approved TMDL, the permittee must implement measures to ensure that the discharge of pollutants from the site is consistent with the assumptions and requirements of the EPA-established or approved TMDL. This includes ensuring that the discharge does not exceed specific waste-load or load allocation that has been established that would apply to the discharge. The permittee must also evaluate the recommendations in the implementation section of the TMDL and incorporate applicable measures into the operations.

c. Inspection Program. The permittee shall institute an inspection program. A daily visual inspection of the site must be conducted and documented in a log while on-site during the construction season, and include the following:

   i. An evaluation of the condition of all water control devices such as diversion structures and berms and all solids retention structures including, but not limited to: berms, dikes, pond structures, and dams; and

   ii. Visual monitoring for turbidity upstream of the site and at a point immediately downstream of the site.

   iii. If during a daily visual inspection the receiving water downstream of the operation appears more turbid than upstream, the permittee must take measures to determine the source and ensure compliance with discharge limits in stipulation number 12.a.i(6) of the certification and BMPs.

   iv. Visual monitoring requirements do not apply when activity occurs outside the riparian zone. The width of the riparian zone or areas are measured perpendicular to the ordinary high water mark on each bank of the watercourse and follow the shape of the channel. Width shall be at least: 50-feet wide on anadromous fish streams, and 25-feet wide on all other streams. Operators shall consult the Alaska Department of Fish and Game (ADFG) or the state Anadromous Waters Catalog to determine fish status and appropriate riparian area width for streams at the site.

d. Sampling and Analysis Methods

   i. Turbidity analysis must be performed with a calibrated EPA-approved turbidimeter.

   ii. Turbidity Sampling Protocol:

      (1) Grab samples shall be collected in sterile polypropylene or glass containers.

      (2) Samples must be cooled to 4 degrees Celsius / 39 degrees Fahrenheit (iced), if analysis is not performed immediately.

      (3) Cooled samples must be analyzed within 48 hours of sample collection.

e. Recordkeeping

i. A permittee must retain records of all monitoring information, field logbooks, or visual monitoring logbooks for a minimum of three years from the time of measurement or observation.

ii. For each sample collected, the permittee must record in a log the following:

(1) The date, monitoring location, method, and time of sampling;

(2) The name and title of the individual(s) who performed the sampling and analyses;

(3) The date(s) and time any analyses was performed;

(4) The analytical techniques or methods used; and

(5) The results of such analyses in nephelometric turbidity units (NTU) and all calibration and quality control information used to validate the measurement(s).

f. Reporting: Monitoring for turbidity is required while working near Goldstream Creek. All monitoring information should be sent to Compliance and Enforcement Program, dec-wqreporting@alaska.gov, 555 Cordova Street, Anchorage, Alaska 99501 and to Water Quality Standards, Assessment and Restoration Program, Attention: Chandra McGee (Chandra.McGee@alaska.gov, 907-451-2140) at 610 University Avenue, Fairbanks, Alaska 99709.

13. Additional Monitoring Required by DEC. DEC may notify the permittee of additional discharge monitoring requirements. Any such notice will state the reasons for the requested monitoring, locations, and parameters to be monitored, frequency and period of monitoring, sample types, and reporting requirements.

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

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

This certification expires five (5) years after the date the certification is signed. If your project is not completed by then and work under U.S. Army Corps of Engineers Permit will continue, you must submit an application for renewal of this certification no later than 30 days before the expiration date (18 AAC 15.100).

Date: August 27, 2018

James Rypkema, Program Manager
Storm Water and Wetlands

Appendix I

Corps Supporting Documentation

- Page Intentionally Left Blank -

Appendix I – Corps' Supporting Documentation

APPENDIX I1	Public Interest Factors
APPENDIX I2	Evaluation of Compliance with 404(b)(1) Guidelines
APPENDIX I3	Means to Minimize, Avoid, and Mitigate Adverse Environmental Impact
APPENDIX I4	Determinations

Appendix I1 - Public Interest Factors

The following public interest review factors relevant to the national concern for both protection and utilization of important resources are discussed below. The public interest review factors also consider the potential cumulative and secondary effects of the proposed Project.

CONSERVATION (33 CFR 320.4(A), (M), (N))

One of the tenets of the Corps Regulatory Program is conservation of the Nation's aquatic resources. The Corps must also consider potential impacts to other natural resources that may be caused by permits issued for a proposed action. The Project would result in impacts to WOTUS, including wetlands, as well as soils, permafrost, vegetation, land, cultural resources, wildlife, economics, and hydrocarbons (i.e., natural gas). Proposed mitigation measures and BMPs have been designed to minimize potential impacts to these resources, with the exception of hydrocarbons which would be exploited. Overall, the Project would result in adverse short-term impacts on conservation and variable (generally adverse to neutral) long-term effects on other natural resources. The effects to these resources are summarized in the FSEIS in Table ES-1 of the Executive Summary and throughout each resource-specific section of Chapter 4.

ECONOMICS (33 CFR 320.4 (A))

During the operation and maintenance phase of the proposed Project, the State of Alaska would collect revenue through state gas taxes and royalties, resulting in a positive economic impact for the state. Property and sales taxes would be collected by local governments, with minimal impact to local infrastructure and services, due to the limited number of employees required for pipeline operation and maintenance. A conservative estimate of natural gas production from the proposed Project was used for this analysis. Initially it is assumed that the Project would produce 250 million standard cubic feet (MMscf) or 91,250 MMscf per year. This would represent an increase of approximately 27 percent from 2015 natural gas production within Alaska. Therefore, assuming the net value of natural gas production remains fairly constant, this would result in an additional $27.3 million in annual natural gas production tax revenue for the State of Alaska. As described by the Applicant, it is anticipated that full capacity of the Project would be 500 MMscfd. Once the proposed Project reaches this level of production, then it could be expected that the estimated annual gas production taxes would increase to $54.6 million. Once the proposed Project reaches full production, then it could be expected that these estimated taxes would increase by a total of $13.2 million. Provided that natural gas production within Alaska would increase by 27 percent due to proposed Project construction, an additional $75.3 million in royalties would be collected by the State of Alaska. At 500 MMscfd, it could be expected that these estimated royalty payments would increase by a total of $150.5 million. Moderate positive effects on state government revenues are expected in the long-term during pipeline operations. In addition, property taxes, sales taxes, and land lease revenues would likely increase as a result of pipeline operations.

An estimated peak of 6,400 temporary construction jobs and 50 to 75 permanent jobs are expected with the proposed Project as well as an unknown number of jobs associated with constructing and operating the flow lines on the North Slope. Thus moderate to major positive impacts would be expected to employment (during both construction and operation).

AESTHETICS (33 CFR 320.4(E), 40 CFR 230.53)

Overall, impacts to aesthetics are expected to range from minor to major along the pipeline route based on an analysis using elements of the BLM's Visual Resource Management system. Visual impacts along the Fairbanks Lateral are expected to be minor. The Visual Resource Management system consists of an inventory of visual conditions and visual management objectives, which were evaluated in the context of existing scenic quality, and viewer sensitivity, for each pipeline segment. Visual impacts during construction are generally higher than during operations due to the presence of construction activities, materials, equipment, open-cuts in the landscape, and work camps.

There is a high concentration of visitors in the commercial areas located near the Denali NPP entrance. The route through Denali NPP already contains developed land, including existing infrastructure, the Parks Highway, and the Alaska Railroad. This route would not have extensive visual contrast with the surrounding undeveloped natural areas. If constructed, the visual impact to visitor-focused areas of Denali NPP would be minor.

GENERAL ENVIRONMENTAL CONCERNS (33 CFR 320.4(A)(1) AND 33 CFR 320.4(P))

General environmental concerns include impacts to wetlands, soils, permafrost, water, land, air, and human factors, such as food, or health issues. Subsistence, health, noise, air quality, and climate change were identified in the FSEIS as matters of general environmental concern which are not included in the standard public interest topics. The following sections provide additional details on potential effects associated with the Project, as summarized in the FSEIS in Table ES-1 of the Executive Summary and throughout each resource-specific section of Chapter 4.

WETLANDS (33 CFR 320.4(B))

Most impacts to wetlands would occur in areas of continuous and discontinuous permafrost, while there would be negligible impacts where continuous and discontinuous permafrost does not occur. Impacts to drainage patterns, vegetation, and landscape could occur in areas where the pipeline is buried in frost susceptible soil and/or sensitive terrain. Construction and operation of a pipeline and other facilities in active layer soils above permafrost may result in propagation of permafrost thaw and alternations to drainage patterns. Permafrost thaw and development of frost bulbs could alter the thermal regime, change drainage patterns, and result in reduced support for the pipeline. Propagation of thaw into surrounding soils could occur, resulting in a positive feedback loop, where changes in the thermal regime and water flow routes result in additional degradation.

Wetland loss or disturbance would be widespread throughout the pipeline ROW. Impacts would be long-term, and forested wetlands would be converted to scrub/shrub or another

wetland type. During operations, the impact is ranked as minor and direct, as most wetland impacts would occur during construction, but dust deposition could still occur during operations and may impact wetlands long-term. There is potential for the proposed Project to change the function, value, or water type code of wetlands. Wetland fragmentation would be widespread throughout the pipeline ROW, be long-term and range from minor to major. The mitigation measures continued in Appendix M of the FSEIS, as well as the permit conditions contained in Appendix F, would be implemented during construction to minimize impacts to wetlands.

HISTORIC AND CULTURAL RESOURCES (33 CFR 320.4(E))

Various information sources have been used to assess impacts to the cultural resources potentially affected by the proposed Project. Assessments for the FSEIS were based on the most current and accessible documents. A summary of previous cultural resource survey coverage is presented in Chapter 3, Section 3.15.5, of the FSEIS. The processes for future surveying, identification, and evaluation of historic properties is addressed in the ASAP Section 106 Programmatic Agreement (PA).

Impacts to known cultural resources that are potentially eligible for inclusion under the National Register of Historic Places and are within the direct area of potential effects were evaluated on a site-by-site basis. An impact ranking was assigned to each of the sites. Impact rankings range from negligible to major depending on the site and proposed mitigation measures.

For the purposes of NEPA, Table 4.19-12 of the FSEIS provides a summary of site-by-site assessments for direct impacts. For both construction and operation phases of the proposed Project, impact ratings range from negligible to major. The direct impact area would include 19 major effects, 40 moderate effects, 43 minor effects, and 19 negligible effects; 18 of the sites with minor effects from construction would reduce to negligible during operations. The indirect impact area could potentially affect 544 known sites. There are no known cultural resources within the direct impact area of the Denali NPP Route Variation, however 14 known resources could experience indirect effects.

The Corps has completed coordination and consultation pursuant to Section 106 of the NHPA. In cooperation with the ASAP Section 106 Workgroup, a Programmatic Agreement (PA) was developed to address the requirements of the Section 106. The PA is attached to this JROD as Appendix D.

Appendix E of this JROD is the draft Cultural Resources Management Plan (CRMP). This plan provides an overview of cultural resource identification, consultation, and National Register of Historic Places eligibility evaluation completed to date for the Project. The draft CRMP identifies actions that will be completed to satisfy the terms of the PA, including strategies for the avoidance, minimization and mitigation of historic properties that may be adversely affected by the proposed Project. The final version of the CRMP will be attached to the PA when complete.

FISH AND WILDLIFE (33 CFR 320.4(C))

The proposed Project would result in minor adverse impacts to fish, fish habitat and wildlife due to pipeline operations. Potential impacts during the construction phase include

minor effects to the reproduction, function, and health of fish and wildlife, potential fish mortality, and moderate impacts to wildlife resilience.

Construction of the proposed Project would result in minor adverse effects to fish and fish habitat, although the degree of impacts would depend on the following factors: crossing type, construction timing, fish habitat types, construction techniques, and the effectiveness of the selected conservation measures. Impacts to fish and fish habitat would be site-, reach-, or river-specific, temporary, and would affect only a few individuals in a population. Impacts on fish and fish habitat during operations would be negligible and limited to the potential (although unlikely and site-specific) contamination from spills during maintenance activities, potential for fugitive dust from gravel access roads adjacent to waterbodies, and minor hydraulic changes in streams due to permanent structures at crossings (bridges or culverts).

Impacts resulting from the proposed Project may include direct mortality during construction and operation, habitat loss or alteration, biological and behavioral responses due to construction disturbance, distribution changes due to anthropogenic practices, introduction of invasive species, turbidity, and contaminants. There is low likelihood that any marine mammal take would occur during construction or operations, however land-based habitat loss, and alteration could occur for polar bears in Prudhoe Bay at the GCF and pipeline ROW. Steller's or spectacled eider could be injured or die from collisions with the GCF, or with equipment. If eiders were injured or died from collisions with proposed Project facilities or equipment, impacts would be moderate. Land-based habitat loss and alteration would occur for Steller's eider and spectacled eider, near Prudhoe Bay at the GCF and pipeline ROW. The proposed Project would result in direct, but minor impacts due to injury or mortality for threatened, endangered, and candidate species.

FLOOD HAZARDS (33 CFR 320.4)

Temporary flooding could occur in a few isolated locations along the Project ROW. Flood impacts could be greater within existing floodplains, which are identified on Chapter 3, Figure 3.3-8 of the FSEIS. A significant portion of the proposed Project Area however has not been mapped by the Federal Emergency Management Agency, and have been designated as having possible, but undetermined, flood hazard risks. Flooding risk is expected to temporarily increase during construction activities due to stock piles of materials and temporary modifications to the area around the construction ROW. During the operations phase of the proposed Project the potential of flooding is expected to return to the same level as it was prior to construction, this is due to the fact the pipeline would be buried, and any aboveground facilities would be located outside of known floodplains, where practicable. The proposed Project would result in negligible impacts from flood hazards.

FLOODPLAIN VALUES AND MANAGEMENT (33 CFR 320.4(1))

Effects to floodplains may occur as a result of ice road construction and aboveground and support facility construction, use of heavy equipment, and fill placement. Flooding from ice road construction would be minimized through the use of established BMPs for ice roads. In general, if aboveground facilities were located within a floodplain, the result could reduce flood storage capacity of the flood plain due to the changes in topography,

or reduce flow restriction causing increased upstream stages due to backwater effects. Proposed Project facilities would be located outside of known floodplains, where practicable. Construction of the GCF would not require fill in a Federal Emergency Management Agency -mapped floodplain.

Storage of sand and gravel materials could result in a reduction in flood storage capacity. Five material storage sites are proposed within the Sagavanirktok River floodplain. Material would be stockpiled in these locations prior to transport. These affects to the Sagavanirktok River floodplain would be minimal, localized and temporary during the construction phase of the Project.

Ice road development would not adversely affect surrounding water resources, or significantly alter flooding during spring break up such that it would endanger human health, biological resources, or the function or integrity of the resource. Flooding as a result of ice roads would be somewhat likely, would be site-specific or occur within a few isolated locations, and would occur intermittently for a duration of 1 to 2.5 years. When developed properly the use of slotting at stream crossings and outlets allows water to flow past an ice road. When constructed properly, the impact of ice roads on floodplains would be minor.

The effects to floodplains from aboveground and support facilities, the use of heavy construction equipment, and the placement of fill during trench installation could visibly or measurably alter the floodplain capacity. These increased flooding risks would be mitigated by placing aboveground and support facilities outside the floodplain, to the extent practicable, through the use timbers or geotextile fabrics to minimize surface disturbance and maintain natural flows, and through post-construction contouring to re-establish natural flow patterns. While there could be slight impacts to floodplains, it is not expected that flooding from the proposed Project would increase the danger to human health, biological resources, or the function or integrity of the floodplain.

Overall, the effects on floodplains as a result of ice road development, construction of aboveground and support facilities, use of heavy construction equipment, and fill placement is expected to be moderate, as described in FSEIS Table 4.7-9.

LAND USE (33 CFR 320.4(A)(1))

The proposed Project would cross lands managed according to numerous federal, state, borough, and local management plans. The majority of lands with applicable management plans (or similar), have provisions for utility crossings compatible with the proposed Project. As defined in SB 70, Alaska Statutes have been amended to allow portions of Denali State Park, Nancy Lakes, Willow Creek State Recreation Area and other locations to be leased for a right-of-way for a natural gas pipeline. Section 6(f) of the Land and Water Conservation Act requires that the conversion of lands or facilities acquired with Land and Water Conservation Act funds be coordinated with the U.S. Department of Interior, NPS. The Project would cross Denali State Park, and the Nancy Lake State Recreation Area, which are Section 6(f) parklands. Approximately 227 acres of Denali State Park land and 17 acres of Nancy Lake State Recreation Area land would be converted to permanent operations ROW of the proposed Project, however recreational use could still occur after construction.

The Denali National Park Improvement Act (DNPIA) states that the Secretary of Interior may issue ROW leases for a high-pressure natural gas transmission pipeline in non-wilderness areas within the boundary of Denali NPP within, along, or near the approximately 7-mile segment of the Parks Highway that runs through the park. A ROW lease would only be issued if the lease is consistent with the laws generally applicable to utility ROWs within units of the National Park System. A ROW lease would be consistent with Section 1106(a) of Alaska National Interest Lands Conservation Act, if an appropriate NEPA analysis is conducted and determines that the ROW route through the park has the least adverse environmental effects on the park.

The Project would have moderate, short-term effects on Land Use during construction and minor effects during operation of the pipeline (see Section 4.15 of the FSEIS).

NAVIGATION (33 CFR 320.4(O))

Impacts to navigation resources resulting from increased use by vessels would be minor during the construction phase and negligible during the operations phase of the proposed Project. Displacement of vessels from their current route are expected to be negligible.

Table 1. River Crossings Subject to Section RHA

Navigable Water Name	Anadramous	Type of Crossing	Crossing Mode	Longitude-DMS	Latitude-DMS
Yukon River	Y	Stream	Trenchless Design	149°44’31.546”	65°52’ 46.496”
Chatanika River	Y	Stream	Isolated Open Cut	148°40’54.427”	64°55’ 06.278”
Tanana River	Y	Stream	Trenchless Design	149°07’04.081”	64°34’ 12.028”
Nenana River	Y	Stream	Isolated Open Cut	149°18’03.880”	64°21’ 03.517”
Nenana River	Y	Stream	Isolated Open Cut	149°08’55.749”	64°31’37.345”
Nenana River	N	Bridge	Bridge	148°55’59.517”	63°48’10.011”
Nenana River	N	Bridge	Bridge	148°48’14.754”	63°27’23.187”
East Fork Tolovana River	N	Stream	Isolated Open Cut	148°37’59.017”	65°27’40.193”
Susitna River	Y	Bridge	Bridge	150°10’27.834”	62°10’31.579”
Willow Creek	Y	Stream	Trenchless Design	150°07’22.310”	61°46’36.913”
Little Susitna River	Y	Stream	Isolated Open Cut	150°08’27.992”	61°28’14.958”

Notes: DMS = degrees, minutes, and seconds; N = no; Y = yes

SHORE EROSION AND ACCRETION (33 CFR 320.4(A)(1) AND 33 CFR 320.4(G))

The proposed pipeline route and access roads would cross 310 streams by one of five methods (as presented in Table FSEIS 4.7-2). Disturbance to ground cover in relation to streams would occur within the 120-foot construction ROW. FSEIS Appendix F provides a complete list of stream crossings for the Mainline, Fairbanks Lateral and access roads, along with the waterbody type and crossing mode.

Approximately, 160 waterways would be crossed by OC and IOC methods. The OC method involves excavating through a stream, placing the pipe in the trench and then backfilling. The OC method would be used at smaller streams and could be completed in winter or summer. The IOC method isolates the open trench from the flowing water of the stream prior to and during the installation. IOC techniques include dam and pump, diversion, cofferdams, and flumes. The IOC crossings could be completed in winter or summer and applied at crossings with higher flow volume than streams, where the OC would be employed

The short-term (1 to 3 days) affects and somewhat likely occurrence indicate that OC and IOC crossings, which account for the majority of stream crossings throughout the study area, would have a moderate impact on stream bank stability and shore erosion.

An additional 186 waterways would be crossed that do not meet the definition of a stream (i.e. no bed and bank). Shore erosion on these waters would be anticipated to be short-term and have minor impacts.

The DH3 modification at West Dock would result in approximately 9.9 acres of marine and estuarine waters to be filled with gravel. This modification is not anticipated to result in a measureable increase in accretion.

RECREATION (33 CFR 320.4(A)(1) AND 33 CFR 320.4(E))

Overall, the proposed Project could result in short-term adverse effects on recreation, primarily attributed to a general decline in recreation quality, competition for local public services, and restricted access in proximity to the pipeline route during construction. Recreation would be effected by shipment of construction materials and construction activity within the temporary ROW (e.g., use of heavy equipment and machinery). The highest concentration of recreational opportunities appears to be located south of Livengood, as well as the area between the proposed Project terminus and area around the Denali NPP entrance. The Mainline pipeline would either cross, or be located within 1 mile of a number of key recreation features in Alaska, such as streams used for sports fishing, boat launches, scenic viewpoints, recreation areas and key areas for wildlife viewing. In addition, both public and private land along the Mainline route, outside designated recreation areas, is commonly subject to dispersed recreation activities. Impacts to recreation would be moderate during construction and minor during operations.

WATER SUPPLY AND CONSERVATION (33 CFR 320.4(M))

Water withdrawal would be required for pipeline construction activities, including hydrostatic testing; HDD crossings, ice roads, hydroseeding, dust control, and camp use as well as construction of pads and temporary camps. Water withdrawals would be conducted under permits from ADNR and coordinated with ADF&G to meet guidance regarding screen requirements for pump inlets and maximum withdrawal rates and volumes. Localized impacts to water availability would occur where water is withdrawn for HDD and hydrostatic testing as described in Section 4.7, Tables 4.7-5 and 4.7-6 of the FSEIS. The effect of thawing of permafrost could substantially alter the groundwater flow characteristics in addition to contributing to soil subsidence and erosion, thus impacting surface water, especially in areas of discontinuous permafrost (MP 168 to MP 634).

Impacts to surface water and stream bank stability are expected to occur somewhat equally throughout the Project area at OC and IOC streams, and waterbody crossings as well as sediment loading from aboveground facilities and access roads, these impacts would be mitigated through the use of BMPs, regrading activities, and bank stabilization projects. Impacts to water resources including surface water, groundwater, stream bank stability and geomorphology, flooding, and water availability are expected to range from moderate to major during construction and minor to moderate during operations.

WATER QUALITY (33 CFR 320.4(D))

Along the proposed pipeline route, construction taking place during the winter when the ground is frozen would have fewer impacts on water quality than summer construction, due to reduced runoff. Suspended solids may increase temporarily during construction, resulting in a moderate affect to water quality, but the use of erosion control techniques would mitigate potential impacts to the function or integrity of the stream. Potential impacts from OC stream crossings would be considerable given the number required, but the duration of those effects would be temporary (i.e., lasting only the period during construction). Additionally OC stream crossing impacts would be localized to each stream, and any effects to water quality would be site, reach, or stream specific, the geographic extent of the impact would be minor.

Releases during refueling activities or use of hazardous materials near surface waterbodies could result in detrimental impacts to surface water quality and potentially groundwater quality. Depending on the magnitude of the release and the substance, impacts could range from minimal to major and could affect human populations, wildlife, vegetation, and many additional resources. The duration and extent of impact would also depend on the quantity and substance released. Should conditions require refueling within 100 feet of waterbodies, the contractor would implement a preapproved Spill Prevention, Control and Countermeasure Plan, as required by 40 CFR 112. Potential surface water contamination due to use of hazardous drilling fluids would be mitigated through the use of methods approved under an ADEC Water Quality Certification, as well as minimizing the use of highly toxic types of drilling fluids when practicable, so affects to surface waters are expected to be negligible.

Upgrades to dock and causeway infrastructure would be required and would primarily occur during winter. An increase in turbidity and sedimentation associated with dredging would be temporary and result in minor impacts to water quality.

ENERGY NEEDS (33 CFR 320.4 (N))

The geographic majority of Alaska has no long-term source of fuel other than wood, coal, or heating oil. Alaska's North Slope has over 30 trillion cubic feet of conventional natural gas reserves. A pipeline is the safest and most efficient way to transfer this energy source and develop it for the maximum benefit of Alaskans. Clean-burning natural gas would help to substantially improve Fairbanks air quality by providing a substitute to wood and oil-burning heating systems (for those that convert to gas heating units), helping the region meet federal Environmental Protection Agency (EPA) standards (Henry, 2015). Additional discussion of potential impacts to air quality as a result of the proposed Project are described in FSEIS Section 4.22, Air Quality, Climate Change, and Greenhouse Gas

Emissions. A new source of affordable and reliable natural gas would also provide relief from high-energy costs by increasing the energy supply. The Project is anticipated to have a long-term major beneficial effect on energy needs

SAFETY

The pipeline and aboveground facilities associated with the proposed Project must be designed, constructed, operated, and maintained in accordance with U.S. Department of Transportation Minimum Federal Safety Standards in 49 CFR 192. A description of pipeline safety standards and regulations are provided in the FSEIS, Section 4.25.2, Pipeline Safety Standards.

A buried pipeline is considered less susceptible to random acts of violence and terrorism than an aboveground line. The very remote location of major portions of the pipeline also provides significant protection from intentional damage. Remote locations make accidents like underground utility strikes less likely. However, the remote route may hamper activities needed to operate, maintain, or repair the pipeline. Short-term disruptions in service could result in a loss of natural gas to users and put strain on other natural gas providers as well as other energy resources.

FOOD AND FIBER PRODUCTION

For the northern portion of the proposed Project, the arctic climate and conditions of the proposed action area are not conducive to food and fiber production due to frozen soils, saturated soils, and short growing season. Subsistence activities for harvesting of wild food are conducted but there is no human cultivation of food or fiber across the large regional area of the Arctic Coastal Plain.

Further south, construction within agricultural lands may prevent crops from being produced within the proposed Project ROW, during the growing season the construction takes place. To mitigate impacts to agricultural soils, the surface layer would be segregated in agricultural areas as described in Appendix M of the FSEIS. Overall, the impacts to agricultural lands (and therefore, food and fiber production) as a result of construction are expected to be minor. Impacts during operations and maintenance activities are not expected to occur on agricultural lands.

MINERAL NEEDS

For the proposed Project, 25 million cubic yards of gravel from a total of 89 new or existing material sites and two commercially available sources would be required to construct the GCF pad, access roads, access pads, temporary camps and marshalling yards, the temporary barge bridge at West Dock, and for backfilling the pipeline trench where necessary. The material sites are located throughout the Project Area as indicated in Figures 2.2-14 through 2.2-17 of the FSEIS. The proposed action would not provide for mineral needs of others, only consume them for their construction fill area.

CONSIDERATIONS OF PROPERTY OWNERSHIP

The Project would result in negligible to minor short-term to long-term adverse effects on property ownership. Based on public comments received on the Draft FSEIS, the

Applicant shifted the proposed pipeline alignment to avoid private property to the extent practicable (see Appendix M, Part II of the FSEIS for a description of ASAP Pipeline Route Refinements).

Land access agreements and lease stipulations for rights-of-way will be negotiated between the Applicant and each land owner.

The FSEIS addressed a range of potential adverse and beneficial impacts related to property owners along the proposed pipeline corridor, including potential nuisance effects (Sections 4.22, Air Quality and 4.23, Noise), Public Health (Section 4.21), Socioeconomics and Environmental Justice (Sections 4.18 and 4.18.2.2, respectively), and water supplies and water quality (Section 4.7, Water). Most of these resource areas have been addressed in prior sections of this public interest review. Some property ownership effects would be adverse in the short term during construction, while others would be beneficial, such as access to natural gas for heating fuel as well as potential job opportunities and revenues generated by construction and operation of the proposed pipeline Project.

NEEDS AND WELFARE OF THE PEOPLE

This section considers factors relevant to the needs and welfare of the people that are not otherwise addressed elsewhere in this assessment. Specifically included here are environmental justice and subsistence.

Executive Order 12898 requires federal agencies to consider impacts on minority or low-income populations to determine if the Project would result in “disproportionately high and adverse effect on minority or low-income populations.” This assessment, referred to as Environmental Justice, is provided in Section 4.18.2.2, Environmental Justice, of the FSEIS.

In general, it is expected that minority and low-income communities could be positively affected by the proposed Project through the creation of both temporary and permanent jobs. While the Project would increase employment during construction, leading to increased discretionary income for some area residents, this effect would be temporary and would cease after the construction period. However, during the operations phase, area residents could be employed for the life of the proposed Project (a minimum of 30 years). The Project would provide an opportunity for more reliable access to cleaner and more affordable home heating fuels in these communities.

The results of the impact analysis indicate that the major impacts to subsistence, discussed in this section and summarized in Table 4.20-7 of the FSEIS, are concentrated in rural communities. These subsistence use areas lie directly along the proposed Project or have greater areas of undisturbed habitat that would be crossed. The potential impacts to users include reduced access to subsistence areas and reduced resource availability. For construction, these major impacts are anticipated for Wiseman, Coldfoot, and Minto. For operation, these major impacts are anticipated for Minto and Nenana.

Moderate impacts due to construction and/or operations are expected for the remainder of the rural communities who reside outside state designated non-subsistence locations along the proposed Project route. Minor impacts in construction and/or operations are expected for rural communities (and the non-rural community of Fairbanks) that are

located farther from the proposed Project but who are more likely to partake in subsistence harvest activates in areas crossed by the proposed Project, or possibly experience effects related to user access and resource availability.

Negligible impacts due to construction and/or operations are expected for the remaining study communities, which are primarily non-rural, or located the farthest from Project activities and to who effects related to user access and resource availability are more unlikely. Many of the communities where impacts are expected to be negligible are located south of Willow, and are also state-designated subsistence areas.

As described in Section 4.20.7.1.1.1 of the FSEIS, the proposed Project only overlaps a small portion of Anaktuvuk Pass, Utqiagvik, and Kaktovik use areas and a slightly larger portion of Nuiqsut use areas. Therefore, impacts to subsistence users may occur near Nuiqsut due to the greater portion of use areas that are overlapped but are unlikely near Utqiagvik, Kaktovik, and Anaktuvuk Pass as the proposed Project only intersects the fringe of these communities' use areas. The chance that subsistence users from these communities would be conducting subsistence activities at these locations at the same time and place as construction of the proposed Project is unlikely.

Resource availability impacts during construction, particularly for caribou (see Section 4.10 of the FSEIS), are possible for Nuiqsut and Anaktuvuk Pass because of their closer proximity to the proposed Project. Of all study communities, Anaktuvuk Pass has the greatest reliance on caribou (nearly 80 percent of total harvest) to meet their subsistence needs. The Applicant would avoid construction in areas during time periods that caribou are known to migrate as a way to reduce impacts to the extent practicable. Resource availability impacts to Utqiagvik and Kaktovik are unlikely due to their distance from the proposed Project. Impacts to bowhead whale resource availability could occur for Nuiqsut due to their close proximity to West Dock operations but are unlikely for Utqiagvik and Kaktovik. The Applicant has met with and received comments from the North Slope Borough Planning Department (Utqiagvik), the North Slope Borough Department of Wildlife Management (Utqiagvik), the Alaska Eskimo Whaling Commission, and the Kuukpik Corporation (Nuiqsut). The Applicant has stated it would continue to meet with Utqiagvik and Nuiqsut whalers and other stakeholders to employ appropriate mitigation measures to avoid and minimize disturbance of noise and vessel traffic to subsistence species and activities. By implementing appropriate mitigation developed in coordination with these communities, impacts to subsistence would be further reduced.

PUBLIC INTEREST REVIEW GENERAL CRITERIA (33 CFR 320.4(A)(2))

The following general criteria were considered in the public interest review.

The relative extent of the public and private need for the proposed structure or work.

The Project would help meet the statewide demand for improved access to a clean, reliable, and affordable energy source. The proposed Project would deliver North Slope natural gas to Fairbanks, Southcentral, and other communities in Alaska. Improved access to natural gas would help to improve air quality in the Fairbanks area, which is adversely affected by widespread combustion of wood and coal. A demonstrable demand

for natural gas exists and the Applicant's stated purpose to provide Alaskans with a stable, affordable, long-term supply of natural gas for heating and powering their homes and businesses is not unduly speculative. Since the Project would transport natural gas, it would be accessible to communities adjacent to the line that choose to tap into it, and develop the required infrastructure for its use. The Project would make expansion of commercial and industrial enterprises possible statewide. It would also provide a substantial number of jobs to Alaskans and economic benefit to the State of Alaska through royalties.

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

There are no unresolved conflicts as to resource use.

The extent and permanence of the beneficial and/or detrimental effects which the proposed structure or work is likely to have on the public and private uses to which the area is suited.

The FSEIS addressed a range of potential adverse and beneficial impacts related to the proposed Project. Hydrocarbon extraction and transport has been ongoing in the Project Area since before construction of the TransAlaska Pipeline System was complete in 1977. Existing land use in the Project Area consists predominantly of remote, undeveloped wetland and upland areas, and small amounts of agricultural and developed land; the latter is concentrated in the southern portion of the Project Area in Southcentral Alaska. Public uses of the area are generally limited, and in most regions subsistence and recreation use are relatively low.

Active construction would occur for approximately two and a half years, with concurrent restoration conducted as the pipeline installation progresses. Some areas would not be reclaimed until 10 years after construction was completed while other areas may require up to 30 years or longer before they would be fully reclaimed and revegetated.

The public benefit of the proposed Project is the potential for delivery of a long-term, reasonably priced supply of natural gas to Southcentral, Fairbanks, and other Alaskan communities for:

- Heating homes, public safety facilities, military bases, and businesses
- Generating electrical energy
- Continuing economic stability and growth by supporting industrial users
- Accommodating future population growth, and increased commercial usage served by the existing ENSTAR Natural Gas Company's distribution system, and for the Fairbanks/North Pole area and other Railbelt communities
- Improving air quality in the Fairbanks area, which is currently classified as an air quality Non-attainment Area by ADEC and EPA (see ADEC Division of Air Quality website: https://dec.alaska.gov/air/PM2-5_AK.htm)
- Promoting Compressed Natural Gas as a substitute for gasoline and diesel fuel used by cars and trucks in Fairbanks; for use by communities along the Parks

Highway, including tour buses in Denali NPP; and for use by Anchorage and communities on the Kenai Peninsula
- Providing compressed natural gas for distribution to rural Alaska communities via the Yukon and Tanana rivers and marine barges from Cook Inlet
- Facilitating the development of infrastructure to allow more economic development of mining and oil and gas projects

In many regions in Alaska, there is no long-term source of fuel other than heating oil. Alaska's North Slope has more than 30 trillion cubic feet of conventional natural gas reserves. A pipeline is a proven and efficient way to transfer this energy source and develop it for the benefit of Alaskans. The Applicant's proposed Action meets the goal of providing a stable, long-term supply of clean, affordable energy for both developed and developing markets within Alaska, including Southcentral, Fairbanks, and the Railbelt.

Appendix I2 - Evaluation of Compliance with 404(b)(1) Guidelines

The Final Supplemental Environmental Impact Statement (FSEIS) contains appropriate analysis of all the factors within the Guidelines, except as supplemented here-in as specifically needed to comply with the 404(b)(1) Guidelines.

POTENTIAL EFFECTS ON PHYSICAL AND CHEMICAL CHARACTERISTICS OF THE AQUATIC ECOSYSTEM (SUBPART C)

Section 230.20 Substrate

The substrate of the aquatic ecosystem underlies open waters of the United States (WOTUS) and constitutes the surface of wetlands and streams. It consists of organic and inorganic solid materials, and includes water and other liquids or gases that fill the spaces between solid particles.

The dredging associated with Dock Head 3 would result in removal of 250,000 cubic yards of material. Screeding may also be necessary because of the potential for the channel to be infilled by late summer. Gravel fill would be placed in the benthic environment to widen the West Dock causeway. Approximately 9.9 acres of marine and estuarine waters would be filled with gravel for the work. Dredging and screeding activities are expected to be similar in nature to the natural processes occurring seasonally in the Prudhoe Bay nearshore areas, such as ice scouring, or wind and wave action. Dredging and screeding activities would be short-term and localized to the West Dock area and nearshore environment; therefore, impacts to the benthic community from dredging and screeding are expected to be minor.

Stripping of the surface layer from the pipeline corridor may have major effects that could degrade the value, integrity, and function of soil and geologic resources in areas where permafrost is present. The vegetative mat and the surface layer moderate the albedo of the surface and provide an insulating effect. Destruction of this material could cause long-term changes not likely to be reversed over a period of decades. As stated in Alaska Gasline Development Corporation (AGDC or Applicant) 2014, some sections of inundated trench may propagate permafrost thaw into the surrounding area. Rehabilitation of

thawed permafrost generally requires spans of 10 years and longer, and only after several decades do plant communities, ground ice, and other site characteristics return to preexisting conditions (North Slope Science Initiative [NSSI], 2015). Propagation of thaw may occur directly adjacent to the pipeline or, due to the flow of suprapermafrost groundwater or surface water, at some distance to the pipeline. In areas of massive ground ice, propagation could cause a feedback loop, such that thaw and settling makes adjacent areas more susceptible to additional thaw. The Applicant's initial geothermal modeling shows that by revegetating the right-of-way (ROW) in discontinuous permafrost terrain, the indirect permafrost thaw affected zone (surface) over a 30-year period would be limited to less than 35 feet (10.7 meters) beyond the directly impacted area.

Permafrost thaw, whether caused by the Project or by cumulative/climate change (discussed in FSEIS Section 4.26), can impact soil and geologic resources. However, the Project also depends on those resources for physical support, both for the pipeline and the gravel access pad. The Applicant's geothermal modeling predicts no subsidence on the North Slope, but does not account for changes in albedo, surface water flow, or groundwater flow. The Applicant's geothermal modeling shows a predicted thaw depth of 22 to 28 feet (6.7 to 8.5 meters) could occur in discontinuous permafrost areas (AGDC, 2017a). The model is based on the results of soil and rock laboratory testing of samples from over 10,000 discrete boreholes. In some areas the discontinuous permafrost material may contain ice lenses and wedges. In some soil layers, ice content can be as high as 70 to 90 percent. Thawing in areas of massive ice or thaw-susceptible soil would result in subsidence. Subsidence changes water flow for both surface water and suprapermafrost groundwater. The potential for heat to be added to the system through water flow paths is not considered in the model used to provide the predicted thaw depth. Accurate estimation of the thaw depth and the proportion of subsurface ice within thaw susceptible soil that would thaw is required to accurately estimate how much thaw-stable permafrost soils should be placed in the trench. Either too much or two little thaw-stable permafrost soils would result in ground surface elevation changes (the crown being higher or lower than the surrounding ground surface), which can result in the potential for areas of water to collect or channel, resulting in further heat addition and melting.

Thirty years after construction, the maximum expected thaw strain (i.e., thaw settlement per thaw depth) expected by the Applicant is 20 percent. For cleared terrain, the Applicant calculated the 30-year thaw depth to be 18 feet (5.5 m) beneath the gravel pad, and 22 feet to 25 feet (6.7 to 7.6 meters) with and without an organic layer below the gravel pad, respectively. Up to 4 feet to 5 feet (1.1 to 1.5 meters) of thaw settlement could occur based on the modeled thaw depth below the undisturbed active layer in discontinuous permafrost terrain.

Construction of buried pipe in permafrost areas may cause impacts of major intensity. Based on observations at the MS3 trenching test site and Washington Creek test site where the thermal regime was disrupted, it could take decades before a new thermal equilibrium is reached (ABR and BPXA, 2013). As described in Section 4.6.3.1 of the FSEIS, the Applicant proposes specific mitigation measures to minimize the potential impacts to permafrost including but not limited to: installation of ditch plugs; additional backfill to account for settling; installation of thermosyphons or applying insulation to control ground thawing in localized areas; as well as other measures described in the

FSEIS. In addition, the Corps would require certain Special Conditions including but not limited to: immediate stabilization of disturbed areas; topsoil segregation and reuse (where practicable), revegetation of disturbed areas as soon as conditions allow; post construction monitoring; and remedial work (as needed) including regrading or replanting for a period of 10 years (or more) from completion of the Project. It is anticipated that mitigation measures and permit conditions would reduce the intensity of the impacts on permafrost.

Construction would require approximately 25 million cubic yards of material from gravel sites project-wide, impacting approximately 5,200 acres of land. An unspecified volume of thaw-sensitive permafrost soils would be removed from the pipeline trench and roadbeds. Once disposed of, such material is expected to thaw. This thawed material is expected to result in major impacts at the disposal site, and these impacts could last for more than 3 years (Alaska Department of Transportation & Public Facilities [ADOT&PF], 2009; R&M Consultants, Inc., 1973).

Operations and maintenance of the proposed pipeline may have major impacts to soil and geologic resources. Installation of thermosiphons, lifting and leveling the pipe, or replacing backfill would require heavy equipment. The Applicant has indicated that maintenance may require construction of new ice roads. For less intrusive work, use of low ground pressure equipment or helicopter would be considered for site access. Given that long stretches of pipeline are not located adjacent to existing roads, accessing sections to repair damage associated with changes to the thermal regime or due to other factors could require access for heavy equipment over long distances. Impacts from these maintenance measures could degrade the integrity of the resource, occur over wide areas, and could last more than 3 years.

Section 230.21 Suspended Particulates and Turbidity

Turbidity, resulting from dredging operations at West Dock, DH3 would reduce light penetration, thus reducing photosynthesis. It would also flocculate phytoplankton, and decrease food availability for visual feeders. However, given the short-term duration of dredging and that natural conditions in the area are dynamic whereby ocean processes are constantly mixing the water column, the effects of increased turbidity on benthos would be negligible and short lived.

The proposed pipeline route would cross 496 waterbodies, including 310 steams. Construction activities including trenching, dredging, construction of roads and bridges, installation of culverts, as well as erosion and run-off from adjacent upland activities all have the potential to increase sedimentation in waterbodies within the Project Area. Increased total suspended solids and turbidity would reduce the rate of primary production through temporary reduced light penetration, increased water temperatures, altered pH, and conductivity. The increase in total suspended solids would also result in decreased oxygen availability, and increased transportation of contaminants (including heavy metals). However after post construction rehabilitation these impacts are expected to be minimal and short lived.

Section 230.22 Water

Water availability could be impacted by changes to hydrology or permafrost resulting from operation of the pipeline, which could affect surface or groundwater resources. Topographic changes caused by gravel placement or thawing permafrost may cause hydrologic changes that result in the creation of new surface water bodies or reduction of existing ones. The proposed Project, including the Mainline, the Fairbanks Lateral, and access roads, would cross a total of 310 streams. Of these streams, 263 would be impacted by the Mainline, seven impacted by the Fairbanks Lateral, and 40 impacted by access roads (see Table 1).

Water withdrawal would be required for pipeline construction activities, including hydrostatic testing; horizontal directional drill (HDD) crossings, ice roads, and pad construction; construction of temporary camps; camp use; hydroseeding; and dust control. A minimum of 975 million gallons of water would be required to support construction activities (U.S. Army Corps of Engineers [USACE], 2012b). Hydrostatic testing would require approximately 197 million gallons of water. Heated (36 degrees Fahrenheit [°F] to 38°F) (2 degrees Celsius [°C] to 3°C) and untreated water would be used for hydrostatic testing (AGDC, 2016b). A complete Hydrostatic Test Plan would be developed in conjunction with the selected pipeline contractors and the pipeline operator prior to construction. A total of approximately 27.6 million gallons of water would be required for HDD activities with proposed water withdrawal rates ranging from 23 to 51 thousand gallons per day. This volume is a conservative (larger than anticipated) estimate of water needs for HDDs based on the possibility of encountering unpredictable geotechnical conditions. Ice road construction on the North Slope would take place during winter of years 1 and 2, subject to approval from Alaska Department of Natural Resources (ADNR) (AGDC, 2016c). Ice chips and unfrozen water would be used to build and maintain ice roads throughout the construction season. The impacts on water availability as a result of water use for HDD, hydrostatic testing, and ice road development, is expected to be temporary and moderate.

Table 1. Stream Crossings

Project Stream Crossings Project Component	Total Crossings	Aerial (Bridge) Crossings	OC Crossings	IOC Crossings	HDD Water Crossings [a]	Culvert Crossings
Mainline	263	6	95	155	7	0
Fairbanks Lateral	7	0	3	4	0	0
Access Roads	40	17	0	0	0	23
Total	310	23	98	159	7	23

[a] An additional HDD would be required to install the pipe through an area of higher elevation rather than at a waterbody crossing. This HDD would require water use from the Nenana River, and as such, is discussed in FSEIS Section 4.7.4.1.1 Water Availability.

Impacts to drinking water availability could occur as a result of Project induced changes to hydrology or permafrost, or if water withdrawals took place at a waterbody that is hydrologically connected to a drinking water reservoir. Surface water contamination related to equipment leaks or fueling activities would be minimized by conducting all refueling of equipment at least 100 feet from any surface waterbody unless mitigation measures were implemented to restrict potential for release to surface water. Table 3.3-14 of the FSEIS provides a list of drinking water wells within 500 feet of the proposed pipeline route. Proposed water withdrawal locations are provided in Tables 4.7-6 and 4.7-7 of the FSEIS. Water withdrawal would be conducted in accordance with permits issued by ADNR, and in coordination with Alaska Department of Fish and Game (ADF&G), and any impacts are anticipated to be intermittent and relatively short in duration.

Disturbance of the active layer (which serves as a layer of insulation from above freezing atmospheric temperatures) during construction could result in permafrost thaw. Permafrost thaw could result in thermokarst, soil subsidence, and altered surface and groundwater drainage patterns, and ultimately lead to additional erosion. Based on observations at the MS3 trenching test site (FSEIS Section 4.6, Soils and Geology) locations where natural drainages intersect the trench, water can be expected to flow along the trench above or below the ground surface unless mitigation is applied, as proposed by the Applicant. Altered water flow paths could contribute to further soil erosion, and potentially altered groundwater flow.

Removal of the vegetative mat and topsoil, which serve to insulate thaw susceptible soils, would affect the pre-existing thermal regime. The Project would entail segregating topsoil and replacing it as the last layer of backfill in the trench within designated agricultural lands. In areas where topsoil would not be segregated, the time required for revegetation to take place would be significantly greater. Impacts to soils and geology are described in detail in Section 4.6 of the FSEIS, Soils and Geology. Mitigation measures described in Appendix M of the FSEIS include salvaging the surface layer, stabilizing slopes, and planting of vegetation, would encourage revegetation and minimize permafrost thaw.

Where the pipe is buried in a thaw-susceptible area, monitoring for thaw settlement would detect whether additional mitigation is necessary to protect the pipeline. As part of “Identification and Evaluation of Time-Dependent Route Geohazards” (FSEIS Appendix G), The Applicant has proposed a range of potential mitigation measures that might be necessary:

- Removing heat from the ground through the use of thermosiphons;
- Elevating the pipeline above the ground surface;
- Lifting and leveling pipe; and
- Replacing soil with select backfill (AGDC, 2016d).

The impacts on groundwater as a result of the Project is expected to be moderate overall.

Impacts to water resources associated with the Denali National Park & Preserve (NPP) Variation would include two crossings of the Nenana River: a buried (HDD) crossing south of the McKinley Village, and an aboveground crossing using an existing pedestrian/bike bridge at the crossing south of the Canyon commercial area. HDD is a steerable trenchless method of installing underground pipe, conduit, or cable in a shallow arc along a prescribed bore path by using a surface-launched drilling rig, with minimal impact on

the surrounding area. Negligible effects to stream bank stability are expected to be associated with both the HDD and aerial span crossings, as described in Section 4.7.4.1.3 of the FSEIS. Mounting the pipeline aerially across the Nenana River would not be expected to cause additional impacts to water resources because of the use of the existing pedestrian bridge.

Section 230.23-24 Current Patterns and Water Circulation and Normal Water Fluctuations

Natural water fluctuations in aquatic systems consist of daily, seasonal, and annual tidal and flood fluctuations in water level. Biological and physical components of aquatic systems are either attuned to or characterized by these periodic fluctuations.

The footprint of the modifications at West Dock would not alter water circulation, and the proposed ballasted barges would be temporary. Stream crossings and HDD may cause only temporary changes in water flow but would not result in permanent effects and are therefore not considered further. Overall, the Applicant's preferred alternative would not drastically alter current patterns or water circulation due to activities proposed at West Dock, or for trenching for pipeline placement and stream crossings along the pipeline route.

Section 230.25 Salinity Gradients

Salinity gradients form where fresh water from land meets and mixes with salt water from the ocean. Obstructions which divert or restrict flow of either fresh or salt water may change existing salinity gradients. Similarly, a significant reduction in the volume of fresh water moving into an estuary could also affect salinity gradients.

The Project would not restrict flow of fresh or salt water due to activities proposed at West Dock, trenching for pipeline placement or stream crossings along the pipeline route. For these reasons, salinity gradients would not be affected by the Applicant's preferred alternative.

POTENTIAL EFFECTS ON BIOLOGICAL CHARACTERISTICS OF THE AQUATIC ECOSYSTEM (SUBPART D)

Section 230.30 Threatened and Endangered Species

Pursuant to Section 7 of the ESA, the Corps consulted with both NMFS and USFWS on ESA-listed species that may be found within the Project area. A NMFS Letter of Concurrence and a USFWS Biological Opinion are included as Appendices B (USWFS) and C (NMFS) of this JROD.

Construction-related disturbance at the Gas Conditioning Facility (GCF) would be short-term and would be unlikely to result in population-level effects on any threatened, endangered, or candidate species under consideration (i.e., polar bear, Steller's eider, or spectacled eider). Construction-related disturbance of some eiders and possibly polar bears, would likely cause them to avoid the area. Within the first 25 miles of pipeline construction for the ROW, 64.7 acres of tundra habitat would be permanently lost and an additional 426.0 acres would be temporarily used for construction. Also adjacent to the

ROW area the following permanent impacts to tundra habitat would occur, 87.6 acres for access roads; 212.0 acres for material source sites; 2.8 acres for pipe storage yards. The construction of ice roads in the area would result in temporary impacts to 33.0 acres of tundra habitat on the Arctic Coastal Plain (ACP) was not identified as a significant factor resulting in the decline of spectacled eiders (U.S. Fish and Wildlife Service [USFWS], 1993) and remains a non-significant threat to eider populations (USFWS, 2010a).

If polar bear dens are not identified in advance of construction activities, dens could collapse from equipment passing over, or disturbance could lead to abandonment of dens and cubs. Temporary displacement of wildlife is expected where construction activities occur. With the implementation of the seasonal and spatial restrictions during breeding and denning periods, impacts related to disturbance would be minor because they are temporary and would not result in population-level effects. Lighting on the GCF would be designed in coordination with USFWS to minimize bird interactions, while ensuring the lighting safety requirements of operators are met. If bird strikes were to occur, injury or mortality are possible, the effects would be direct, occurring at the individual level and not at the population level.

The effects to Endangered Species Act (ESA)-listed or candidate species from construction of the pipeline would be minor, as displacement and disturbance would be short-term, localized, and would not cause population-level effects. Any injury or mortality of threatened, endangered, or candidate species due to construction activities along the ROW would be minor as the number of these incidents would likely be low and not cause population-level effects.

The aspects of the West Dock modification that have the potential to incidentally harass threatened or endangered species include the airborne and underwater noise associated with vibratory and impact pile driving, winter dredging, ice road construction and on-ice construction, as well as the general increased presence of humans, vessels, and trucks in the area. Dredging and pile driving activity under Alternative 1 could adversely affect polar bears, ringed seals and bearded seals by exposing them to elevated noise levels in the vicinity of the Project area around West Dock. Disturbance, including from increased noise or presence of vessels or vehicles, may affect bears and seals differently depending on their reproductive status and activity at the time of exposure. Behavioral responses to these disturbances could include, but are not limited to, avoidance or attraction.

Female polar bears entering dens, or females in dens with cubs, are more sensitive to disturbance than males and non-denning females, which can more readily avoid or move away (USFWS, 2016). The biological significance of these behavioral changes is difficult to predict and assess. Considering the dredging and pile driving activities would be temporary, if polar bears in the area were exposed to elevated noise, the effects are not likely to result in long-term changes to habitat or bear behavior such that it would result in population-level affects. Overall, the effects of dredging and pile driving that may occur during open water season on polar bears is considered minor because it would be short-term (a few months), over a small geographic area and would not likely result in mortality, disturbance to reproduction, or population-level effects. Because ice road construction is proposed over two winters, the potential effects on polar bears would likely be moderate due to potential disturbance over the longer period and potential changes to prey availability if ringed seals avoid the area.

Assuming a 20-hour work day, actual impact pile driving would average 25 percent of a 20-hour period, or approximately 5 hours per day. For the Applicant's preferred alternative, a spreading loss of 20 log(R) was used to calculate exclusion zones during trenching, grading, and use of ditch witch. During vibratory and impact pile driving, 17.5 log(R) was used to calculated exclusion zones. Based on this approach, underwater sound levels from all activities would be below National Marine Fisheries Service thresholds (National Marine Fisheries Service [NMFS], 2016) at a distance of 2.2 kilometers (7,218 feet) from the source, and sound levels are likely to diminish to background levels at less than 5 km from the source. The distances for impact pile driving to the Level A peak thresholds are less than 5 meters (16 feet) from the source (AGDC, 2017b). The distances to the Level A thresholds for vibratory pile driving are approximately 1,500 meters (4,921 feet) and less than 50 meters (165 feet) for all non-pile driving activities (AGDC, 2017b). Received airborne levels would be less than 100 decibel threshold at less than 50 meters (165 feet) from the source. The distance to the Level B threshold for impact pile driving is approximately 1.1 kilometers from the source, and approximately 2.2 kilometers (7,218 feet) for vibratory pile driving, and is less than 180 meters (591 feet) for all other non-pile driving activities.

Average received underwater noise levels for vibratory pile driving in open water were reported by Greene *et al.* (2008) to be 143 decibels re 1 µPA at 100 meters (approximately 328 feet). Dredging and vibratory pile driving activity under Alternative 1 could adversely affect ringed seals by exposing them to elevated noise levels in the vicinity of the Project Area. Behavioral responses to increased sound levels from the Applicant's preferred alternative could include changing direction, changing durations of surfacing or dives, reduced/increased vocal activities, changes in socializing or feeding, startle, or avoidance (Richardson *et al*., 1995). Kelly et al. (1986) reports that some ringed seals temporarily departed their lairs when sound sources were within 0.06 to 1.9 miles (97 to 3,000 meters) but did return to their lairs later. However, considering the dredging and pile driving activities would be temporary, if seals in the area were exposed to elevated underwater noise, the effects are not likely to result in Permanent Threshold Shift or Temporary Threshold Shift[1].

Activities would be short-term (a few months), over a small geographic area and, therefore, not likely result in mortality or population-level effects associated with disturbance during reproduction (i.e., pupping). Based on available data, noise levels are not expected to result in mortality. While injury or disturbance of ringed seals could still be possible during winter activities, these effects are not likely to affect large numbers of animals or the overall population. The effects of dredging and pile driving on ringed and bearded seals is considered minor despite the potential for noise from dredging and pile driving

Approximately 104 acres of ice roads and 110 acres of ice pads would be used during construction. The location of all ice roads and pads are identified in the online interactive map viewer: http://asapgas.agdc.us/interactivemap.html. Ice road and ice pad

[1] Exposure to sound with sufficient duration and sound pressure level may result in an elevated hearing threshold (i.e., a loss of hearing sensitivity), called a noise-induced threshold shift (NITS). If the hearing threshold eventually returns to normal, the NITS is called a temporary threshold shift; otherwise, if thresholds remain elevated after some extended period of time, the remaining NITS is called a permanent threshold shift.

construction would be initiated before March 1. If construction of ice roads or pads is initiated after March 1, an agency-approved method would be used to conduct surveys for ringed seal dens prior to construction work. The bearded seal overwinters in the Bering Sea, far from Prudhoe Bay (USFWS, 2016); therefore, they are not likely to be in the Project Area during winter construction activities. Bowhead whales would not be found near Prudhoe Bay during winter months, as they would have migrated further south during this time of year.

Ringed seals generally occur over water depths of 33 to 66 feet (10 to 20 meters) on shorefast ice (ADNR, 2009); although, as stated earlier, seals have been observed in water 6 to 10 feet deep. Since pups are born in late March and April, there is potential for disturbance of seals if dredging and disposal operations are not yet underway during these months. Williams et al. (2006) concluded that within a few meters of the Northstar Island oil development, ringed seal breathing holes and lairs were established in the landfast ice before and during development and construction activities. Despite the presence of low frequency industrial noise and vibration due to construction and use of ice roads, many of these structures were maintained by seals for up to 163 days. While the construction and use of ice roads may result in mortality (due to crushing) or disturbance from vibration or noise, these studies indicate that ringed seals may tolerate the presence of low frequency industrial noise and vibration. Assuming ice road and pad construction is initiated prior to March 1 or any previously undisturbed area is surveyed for ringed seal lairs prior to construction after March 1, the potential for effects associated with Alternative 1 on ringed seals in lairs (including pups) is considered minor.

In a single summer season six shallow-draft tugs ranging in size from 70 to 92 feet (21 to 28 meters) would be used to transport barges from the open water marshalling area 3 to 5 miles (5 to 8 kilometers) offshore into DH3. These summer activities in and out of Prudhoe Bay could affect bowhead whales, though the effects are not likely to be biologically significant. As noted by NMFS (2013), slow-moving vessels within several hundred meters may be tolerated by some marine mammal species, especially when the vessel is not directed toward the animal and when there are no sudden changes in direction or engine speed (Wartzok et al., 1989; Richardson et al., 1995). Given that existing vessel traffic in and out of West Dock during summer months is high, it is anticipated that while they could be disturbed due to human activity, animals would not likely be affected to the point where disturbance results in a population-level effect.

Section 230.31 Fish, Crustaceans, Mollusks, and other Aquatic Organisms in the Food Web

Dredging and screeding of the nearshore environment around West Dock, DH3 during winter could cause mortality to marine invertebrates inhabiting or overwintering in the local substrate. Most non-mobile benthic organisms would likely be destroyed in areas excavated by dredging. In addition, placement of the gravel fill would crush or smother any benthic organisms beneath it. However, densities of benthic species would not likely be diminished given the regular ice scour that occurs in this area and that species in such locations typically recolonize quickly as described in van Dalfsen and Essink (2001). Changes in food availability would likely contribute to a stronger response by epifaunal organisms (USACE, 2012b), but dredging operations would result in a negligible impact

on benthic food availability. While dredged spoils could cover benthic biota at the proposed location, the likelihood of this resulting in population-level mortality of benthic species is low because of the constantly changing seabed and the regular occurrence of ice gouging and natural seasonal sedimentation of the area.

Ballast water that may be released from tugs or barges could have potential to introduce invasive species, such as, bacteria, viruses, and non-native crabs, mussels and fish into the nearshore environment. For most potentially invasive species, the extremely harsh environment of the Project Area would likely not allow the substantial proliferation of native benthic communities.

The likelihood of a hazardous substance spill is low (i.e., less than 10 percent) given the spill prevention measures that would be in place during these phases of operations (see FSEIS Appendix M). If a spill were to occur, there could be adverse effects on immobile benthos including mortality or injury. Any affected benthic communities would be expected to recolonize relatively quickly (over a few seasons) assuming normal circulation and other environmental conditions are not affected. Therefore, the impact of a potential spill of hazardous material on benthic organisms would be negligible.

Waterbody crossing activities associated with this Applicant's preferred alternative would affect crossings at a particular location for a short period of time. It is possible that equipment may cross a waterbody multiple times during construction; however, the crossing zone would likely be a small portion of a waterbody. Therefore, while mortality may result from crushing or smothering due to crossing equipment, the number of benthic organisms affected over even a localized population, would be minor. Once construction at a specific site moves on, benthos are expected to recolonize the area within 1 year.

Effects to marine fish and fish habitat during the modification of West Dock would be expected to be minor, limited to the area of West Dock with temporary impacts that would be reversed over one reproductive season. Construction of pipeline crossings (particularly using open cut (OC) and isolated open cut (IOC) methods) and access road crossings were identified as causing the primary potential impact to fish and fish habitat, including essential fish habitat. Mitigation measures, management plans, and construction timing proposed for the construction of stream crossings would reduce mortality and potential reproductive, growth, and health impacts. Given mitigation measures, impacts to habitat associated with the disturbance at stream crossings would be expected to be limited to the area of the crossing itself, or to a limited area downstream. Impacts due to the HDD of stream crossings are expected to be negligible, given the Best Management Plans (BMP) and mitigation measures to protect water quality in the rivers and adjacent wetlands during construction. Impacts to fish and fish habitat during operations and maintenance are considered negligible.

Section 230.32 Other Wildlife (Mammals, Birds, Reptiles, and Amphibians)

Construction of the GCF would result in the permanent filling of 90.6 acres of wetland/water habitat for the facility pad and workspace, and an additional 20.2 acres for the GCF work camp. Construction of the GCF would provide new perching sites for predatory birds. An increase in predator activity would alter predator-prey population cycles. Disturbance from noise or human presence could cause behavioral or

physiological changes in wildlife, such as avoidance or stress response, but the likelihood that this type of effect could result in negative impacts on reproduction is unlikely. This area is already used for industrial activity throughout the year and some wildlife species may already tolerate a certain level of human disturbance and the overall disturbance to bird populations would be negligible.

Within the ACP, the buried pipeline between milepost (MP) 0 to MP 62 would allow for unimpeded movement of wildlife, yet has the possibility to impact permafrost and hydrology, in turn impacting wetland and water habitats. While it is expected that the proposed engineering design and mitigation measures would reduce impacts to wetland and water habitats resulting from hydrologic alteration, it is unknown to what degree the mitigation measures would limit hydrologic impacts (along the ROW or laterally extending from the pipeline trench). As stated in Section 4.6.8 of the FSEIS, restoring the surface layer would help minimize impacts to the trenched area. It would also help minimize the risk that permafrost thaw propagates into a larger area. Additional information on the potential effects of the Project and mitigation measures (both Applicant proposed and agency-proposed) on the trench area are presented throughout Section 4.6 of the FSEIS. The net impact of the proposed buried pipeline to wildlife and aquatic habitats on the ACP would be expected to be moderate.

Disturbance from construction activities could displace some wildlife, especially during sensitive breeding, denning, calving, and migration periods, and from mineral lick sites. Specific sensitive periods for wildlife species and locations along the proposed route are presented in Table 4.10-5 of the FSEIS. Species and sensitive periods evaluated include Dall sheep (mineral licks and lambing), raptors and waterfowl (nesting), brown bear (denning), moose (calving) and caribou (calving areas). Sources for the locations of these sensitive activities along the proposed route include the digitized version of the ADF&G Habitat Atlas (ADF&G, 1985; 1986a, b, c), and state and federal survey data (ADF&G, 2013). Potential wolf denning habitat occurs throughout the entire proposed pipeline corridor, although specific denning sites were not identified for this FSEIS (given that wolves are considered abundant in the state and are highly adaptable to human activity [ADF&G, 2008]).

As with other construction, human presence and noise associated with construction of the HDD crossings could cause changes including, but not limited to, stress response (i.e., physiological changes), avoidance, or even attraction to the activity (i.e., bears). However, the temporary nature of the construction of these crossings is likely to minimize exposure of animals to disturbance, and would not likely cause impacts to reproduction given it would be short-term. Overall, impacts on wildlife associated with HDD construction at the river crossing is expected to be minor.

Wildlife inhabiting the proposed construction areas that rely on forest vegetation would be affected by a loss of forest habitat. Mitigations for seasonal vegetation removal would reduce mortality impacts associated with the activity. Although Alaska is a very large state and there is available habitat for many species, the continued development and activity in the state contributes to habitat reduction and fragmentation. Cumulative impacts from both anthropogenic and natural loss of habitat, due to development, fire, and climate change, should be considered.

With the implementation of the fore mentioned BMPs and mitigation measures, impacts to most species related to disturbance would likely be minor because construction could cause periodic, temporary, or short-term changes that are reversed over one reproductive season (1 year), and would not cause population-level effects. The geographic extent of noise disturbance activities would be localized. Any construction disturbance would be short-term and is unlikely to have population-level effects on any species under consideration.

POTENTIAL EFFECTS ON SPECIAL AQUATIC SITES (SUBPART E)

Section 230.40 Sanctuaries and Refuges

Sanctuaries and refuges consist of areas designated under State and Federal laws or local ordinances to be managed principally for the preservation and use of fish and wildlife resources. Sanctuaries and refuges may be affected by discharges of dredged or fill material.

The proposed pipeline alignment was designed to avoid recreational areas to the greatest extent practicable, however, the Project would either cross, or within 1 mile of a number of the following refuges:

- Arctic National Wildlife Refuge
- Minto Flats State Game Refuge; and
- Susitna Flats State Game Refuge

There are no designated sanctuaries within the Project area. Section 4.9.3 of the FSEIS, state that a portion of the alignment was moved from Minto Flats to the upland Summer Ridge area to avoid and minimize impacts to wetlands and reduce impacts to a state game refuge.

The Alternative 1 Mainline Segment 1b construction would occur less than 0.2 mile (1,056 feet) from Arctic National Wildlife Refuge. Considering that Mainline Segment 1b construction would be short-term (3 to 4 months), intermittent, and localized, airborne and ground-borne vibration impacts on recreational visitors would likely be minor. As described in FSEIS Section 4.15.4, a Special Area Permit is required for any construction work, including any habitat altering activity on state land or water, in any of the designated State Game Refuges (5 Alaska Administrative Code 95.420). ADF&G Habitat Division would review all proposed activities for consistency with the management plan and with regulation 5 Alaska Administrative Code 95.505. Activities would be approved, conditioned, or denied based on the direction provided in the management plan.

Section 230.41 Wetlands

Wetlands consist of areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. The discharge of dredged or fill material in wetlands is likely to damage or destroy habitat and adversely affect the biological productivity of wetlands ecosystems by smothering, dewatering, permanently flooding, or altering substrate elevation, or periodicity of water movement.

For the purposes of NEPA, the FSEIS analyzed two categories of impacts to wetland resources: temporary and permanent. The FSEIS conservatively categorized the duration of wetland impacts irrespective of whether they resulted from discharges of dredged or fill material (i.e. not subject to CWA 404), or whether the discharged material would be removed and the wetland returned to the approximate pre-project grade and elevation. Rather, the FSEIS distinguished between temporary and permanent wetland impacts based on whether the activities would result in a loss of wetland functions for a duration of greater than 5 years.

Temporary impacts are not anticipated to change the function, value, or water type code of wetlands. Temporary impacts include work off ice pads and roads, frost pack, and mats. Other examples include construction equipment crossing over, or being staged in a wetland. Throughout the DA permit application evaluation process, the Corps worked with the Applicant to encourage the maximum use of techniques and practices that minimize impacts to wetlands.

Permanent impacts to wetlands associated with discharges of dredged and/or fill material are broadly calculated as 7,739 acres, which is the sum of all wetlands located within the >733-mile–long variable-width permanent/operations ROW. This total includes 3,555 acres of wetlands that would be anticipated to return to wetlands following trenching (e.g. excavation, sidecast, and backfill) activities associated with burying the pipeline. Discharges of dredged and or fill material would occur over approximately 4,021 acres of wetlands for construction of gravel work pads, ROW access roads, and material barrow sites. The barrow sites would be reclaimed in accordance with state and federal regulations, with a substantial percentage of area converting to another wetland type or to open water. The remaining difference of 364 acres of proposed wetland fill would be discharged for permanent facilities and access roads. The proposed wetland impacts are depicted in the Project Footprint Map[2] (FSEIS Appendix I). Table 2 contains a tally of proposed wetland impacts by NWI Type, region and by activity

The permanent impacts to wetlands would be primarily to the palustrine scrub/shrub wetlands type (54.6 percent); palustrine emergent wetlands would receive the second greatest area of impact (29.2 percent). The permanently impacted areas would primarily be to the flat HGM classification (65.6 percent); the slope HGM class would receive the second most acres of impact (23.8 percent). Wetland loss or disturbance would be widespread throughout the entire pipeline ROW, impacts would be long-term, and forested wetlands would be converted to scrub/shrub or another wetland type.

[2] Appendix I does not depict the 7-mile route through the DNPP. The Project Footprint Map has since been updated to include the DNPP Route.

Table 2. Project Footprint in Wetlands, by Region and by Activity

Wetland Acres	E1	E2	L1	M1	PAB	PEM	PFO	PSS	PUB	R2	R3	R4	R5	TOTAL
Northern	9.16	1.78	0.02	409.94	0.96	2,524.74		1,136.01	50.46	334.52	0.85	22.25	0.00	4,490.69
Arctic Coastal					0.62	1,037.74		10.36	33.54	176.41		3.87		1,262.54
Permanent					**0.62**	**292.47**		**10.03**	**18.29**	**175.65**		**3.87**		500.93
Access						36.07		2.65	0.34	0.40				39.47
Camp						1.23								1.23
Constructio						57.70		0.03	1.28	0.00				59.01
Material					0.62	182.04		7.35	16.66	175.25		3.87		385.80
Pipe						15.41								15.41
Vertical						0.01			0.00					0.02
Temporary						**745.28**		**0.32**	**15.25**	**0.76**				**761.61**
Bridge						0.00				0.72				0.72
Constructio						549.67		0.25	11.47	0.03				561.41
Constructio						158.99		0.07	3.70	0.01				162.77
Ice Access						36.61			0.08					36.69
Pipeline						0.01			0.00					0.01
Arctic Foothills					0.34	599.90		550.26	0.68	157.97	0.04		0.00	1,309.20
Permanent					**0.34**	**507.25**		**524.52**	**0.68**	**157.95**	**0.04**			**1,190.79**
Access						59.85		25.60	0.01					85.46
Camp						4.60		1.49						6.09
Constructio					0.34	421.03		201.39	0.58	0.07	0.04			623.44
Material						14.66		295.72	0.10	157.89				468.36
Pipe						7.12		0.32						7.44
Temporary						**92.65**		**25.74**		**0.01**	**0.01**		**0.00**	118.41
Constructio						64.21		19.25						83.46
Constructio						18.77		5.58						24.35
Ice Access						8.79								8.79
Pipeline						0.00		0.02		0.01	0.01		0.00	0.04
Temporary						0.88		0.89						1.77
Brooks Range						733.90		575.40	1.39	0.13	0.80	18.31		1,329.93
Permanent						**731.98**		**575.18**	**1.39**	**0.13**	**0.37**	**18.19**		1,327.23
Access						10.97		10.89	0.00		0.01	0.21		22.08
Camp						0.00		0.17						0.17
Constructio						462.13		385.96	0.77	0.13	0.36	4.44		853.80
Existing						0.00		0.00						0.00
Material						256.62		166.38	0.62			13.54		437.16
Pipe						2.25		11.77						14.02
Temporary						**1.92**		**0.22**	**0.00**	**0.00**	**0.43**	**0.12**		2.70
Constructio						0.35		0.05			0.30			0.71
Pipeline						0.00		0.12	0.00	0.00	0.13	0.12		0.38
Temporary						1.56		0.05			0.00			1.61
GCF	9.16	1.78	0.02	409.94		153.20			14.85			0.07		589.02
Permanent	**9.04**	**1.78**	**0.02**	**159.83**		**153.20**			**14.85**			**0.07**		338.80
Access		0.06	0.02			52.99			4.26			0.07		57.40
Camp						17.91			2.31					20.22
Dredge				100.00										100.00
Facility						82.30			8.28					90.59
West Dock				59.29										59.29
West Dock	0.04													0.04
West Dock	7.61	1.72		0.55										9.88
West Dock	1.39													1.39
Temporary	**0.12**			**250.10**										250.22
Sea Ice				145.93										145.93
Sea Ice				104.18										104.18
West Dock	0.12													0.12
Interior					0.01	226.48	767.00	3,494.17	5.76	16.30	13.01	7.17	0.11	4,530.00
Permanent					**0.01**	**203.87**	**611.60**	**3,275.91**	**5.54**	**0.31**	**4.04**	**6.23**	**0.06**	4,107.57
Access						30.66	105.14	361.11	1.01	0.28	0.57	0.30	0.05	499.11
Camp						0.06	19.87	73.89	0.00					93.81
Constructio					0.01	155.25	307.22	2,389.40	2.14	0.03	3.47	5.53		2,863.06
Existing								0.18						0.18
Facility						0.03	0.77	7.58					0.01	8.38
HDD Entry						0.11		1.32						1.43
HDD Exit								1.37						1.37
Material						13.40	171.11	409.43	2.18			0.35		596.47
Pipe						3.60	6.47	29.45						39.52
Railroad						0.77	1.02	2.18	0.21					4.18
TAPS												0.05		0.05
Temporary						**22.62**	**155.40**	**218.26**	**0.22**	**15.99**	**8.97**	**0.94**	**0.05**	422.43
Access						0.01	0.00	0.04		0.75	1.68	0.41	0.01	2.91
Bridge											1.36			1.36
Constructio						0.01		0.30						0.31
Constructio						17.10	153.58	200.17	0.20	0.16	0.06	0.16		371.41
HDD								0.24		12.28				12.52
HDD False						0.73		3.70						4.43
Ice Access						4.70	1.62	11.27		2.74	4.41	0.05	0.03	24.81
Pipeline						0.01	0.00	0.09	0.02	0.06	1.11	0.33	0.01	1.64
Temporary						0.06	0.19	2.46			0.34			3.05
Southcentral					0.22	120.70	135.10	323.54	2.86	9.33	4.63	0.92	0.08	597.38
Permanent					**0.22**	**108.49**	**97.62**	**262.14**	**1.41**	**0.96**	**2.28**	**0.66**	**0.05**	473.84
Access					0.22	43.47	9.12	65.35	0.71		1.18	0.36	0.02	120.44
Camp								1.29						1.29
Constructio						48.27	55.44	187.61	0.70	0.96	0.31		0.03	293.32
HDD Exit						0.20	1.17							1.38
Material						14.21	31.89	3.88			0.78	0.31		51.08
Pipe						1.52		3.78						5.30
Railroad						0.82		0.22						1.04

Temporary						**12.21**	**37.47**	**61.40**	**1.45**	**8.36**	**2.36**	**0.26**	**0.03**	123.55
Access											0.69	0.10		0.79
Bridge										2.54	0.26			2.80
Constructio								0.09						0.09
Constructio						3.60	4.32	26.82	0.13		0.07			34.94
HDD						1.49	5.82	0.73		5.15	1.18			14.37
HDD False						4.58	27.13	25.39	0.08			0.14		57.31
Ice Access						2.54	0.21	7.92	1.24	0.62				12.52
Pipeline						0.00	0.00			0.06	0.15	0.02	0.03	0.28
Temporary						0.00		0.45						0.45
Total	9.16	1.78	0.02	409.94	1.19	2,871.93	902.09	4,953.72	59.09	360.14	18.49	30.34	0.19	9,618.07

The functions and values that wetlands provide to the ecosystem could be altered or reduced by the Project. Adding gravel fill to a wetland, fragmenting a wetland, introducing invasive species, or altering the wetland's vegetation, soil, or hydrology are examples of how a wetland's function or value could be altered through development. If changes occur in a wetland, the wetland would need time to recover to function at its original capacity. Other natural resources, such as wildlife, threatened and endangered species, fish, water resources, soils and geology, and visual resources could be impacted as a result of changes in wetland function.

Forested wetlands cleared of mature vegetation would convert to a different wetland type and function than what had existed previously. Wetlands impacted along the construction ROW would be expected to recover to an early successional stage, assuming the water regime is the same post-construction. Some wetlands classes would be expected to recover more quickly than others due to the length of time it would take succession to occur. Forested wetland removal would result in longer recovery depending on species composition. In areas such as the ACP, recovery of wetland vegetation would be expected to be slower than in other areas due to the extremely short growing season.

Unique concerns exist where the Project would cross continuous and discontinuous permafrost. As stated in Section 5.1.2.1 of the Applicant's Environmental Evaluation Document, "Depending on the content of massive ice in the vicinity, some sections of inundated trench may propagate permafrost thaw into the surrounding area, especially where stretches of flooded trench intersect ice wedge troughs" (AGDC, 2016b). Massive ground ice, up to and greater than 50 percent by volume (Kreig and Reger, 1982), is found along the northern portion of the proposed pipeline route. Propagation of permafrost thaw results in melting of the massive ice. This directly results in a decrease in the volume of the impacted soil and frequently reduces the bearing capacity of the soil to near zero. This could result in a decrease in the elevation of the ground surface. Saturated soil tends to be darker than dry soil. Thus, permafrost thaw could result in a decrease in the albedo of the soil causing further propagation of the thaw.

Construction of a pipeline and other facilities in active layer soils above permafrost may result in propagation of permafrost thaw and alternations to drainage patterns. If propagation of permafrost thaw begins, it may be difficult to control. Decreased soil volume (due to thaw of ice-rich soils) could result in reduced support for the pipeline. Thaw and development of frost bulbs could alter the thermal regime and change drainage patterns. The Applicant's documents indicate that propagation of thaw into surrounding soils may occur (see Appendix E Part I of the SEIS). The Applicant's *Analysis of Potential Indirect Impacts to Wetlands Related to Buried Pipeline Construction* discusses which pipeline segments are most at risk to permafrost thaw. The Applicant suggests that areas

with discontinuous permafrost (466 miles of the proposed Project, MP 168 to MP 634) are the most at risk. The project contains 466 miles of discontinuous permafrost (MP 168 to MP 634), of this 191.4 miles have high thaw susceptibility potential, 65.5 miles have moderate potential, and 178.3 have low potential. The highest risk area begins at MP 250, near Coldfoot, Alaska (see Figure 26 of Appendix E Part I of the SEIS, Analysis of Potential Indirect Impacts to Wetlands Related to Buried Pipeline Construction).

In some instances, an improperly constructed trench in wetlands could cause a "French drain effect," where the trench drains the wetland. Slope wetlands often occur along elevation gradients and have the greatest potential of the wetland types for being impacted by subsurface soil disturbances. Changes in the permeability of the surface or subsurface soil of a slope wetland could result in increased drainage and altered functionality, temporarily or permanently. Construction methods, such as trench breakers and ditch plugs, would be used to reduce the likelihood of the French drain effect occurring in wetlands. The wetlands would be contoured, as close as possible, to their preconstruction state after backfilling is complete; however, leftover trench spoil piles adjacent to the trench and/or "crowns" of soil on the trench line could create barriers to surface water flow and alter hydrology across the local landscape.

Dust deposition in the construction ROW would result in local impacts to wetlands and their vegetation communities, primarily from hauling backfill and lining material to the construction areas, crew vehicles accessing the construction sites daily, development of new gravel access roads, and the use of existing gravel roads. If not properly controlled with mitigation measures (e.g., road watering, covering gravel loads in trucks), long-term dust deposition could result in thermokarsting of permafrost or the loss of sensitive species. The Applicant would implement BMPs during construction to reduce the impacts of fugitive dust (see Section 4.22 of the FSEIS, Air Quality, Climate Change, and Greenhouse Gas Emissions).

While impacts from invasive plants could include altered diversity and abundance of native species, disruption of food webs, or degradation of habitat and biodiversity, Alaska regulations prohibit movement of material containing prohibited noxious weeds. The impacts to wetlands due to the introduction of invasive and non-native species during the construction phase would be minor provided BMPs are properly implemented.

Heavy equipment used during construction of the ROW could compact soils and create ruts along the ROW, which could inhibit seed germination, reduce water infiltration, inhibit root establishment, and result in bare soil exposure. Soil compaction and erosion impacts would likely be minimized if geo-textile mats, or similar, are placed under excavated material in wetland areas during the summer construction season. By placing the excavated materials on a geotextile or frost packing, more of the excavated material could be removed at the end of the construction process with less damage to vegetation and preservation of underlying permafrost. The impacts to wetlands due to soil compaction and erosion during the construction phase would be minor, assuming implementation of BMPs, including the use of geotextiles or ice pads.

To revegetate and stabilize disturbed wetlands, the Applicant has proposed to consult with BLM and follow ADNR's Plant Materials Center Revegetation Manual for Alaska. The Applicant's proposed Revegetation Plan (see Appendix H of the FSEIS) is proposed for use as a guide for seed application and fertilization, however fertilization and/or seeding is only proposed to occur in highly sensitive and erosive areas. The plan does not define "highly sensitive" areas. Other (non-sensitive) areas are proposed to remain unseeded in supposition of natural revegetation. If the reclamation standard of 30 percent cover over a 3-year period does not occur, the Applicant proposes that additional revegetation efforts would commence, per the proposed Revegetation Plan.

Rehabilitation activities to regrade the landscape to pre-construction topography, the utilization of topsoil to cap the trench, and seeding of the disturbed areas would aid in wetland recovery. Preserving the vegetative seedbank and soil strata in the wetland would be beneficial for wetland recovery success. If applicant-proposed BMPs are successful, it would be expected that once soils subside over the buried pipeline, surface hydrology would resume and disturbed vegetation would recover. If unsuccessful, hydrology may be permanently altered and the wetland could convert to an upland or lose functionality.

Applicant proposed BMPs would reduce the severity of adverse effects to wetland functions. The addition of appropriate and practicable special conditions to the DA permit, if issued, would further minimize adverse effects to ensure that the authorized activities would not cause or contribute to significant degradation of WOTUS.

Section 230.42 Mud Flats

Mud flats are broad flat areas along the sea coast and in coastal rivers to the head of tidal influence and in inland lakes, ponds, and riverine systems. The discharge of dredged or fill material can cause changes in water circulation patterns which may permanently flood or dewater the mud flat or disrupt periodic inundation, resulting in an increase in the rate of erosion or accretion.

There are no mudflats within the Project Area where discharge of fill or dredged material is proposed. Therefore, impacts to mud flats are not anticipated.

Section 230.43 Vegetated Shallows

Vegetated shallows are permanently inundated areas that under normal circumstances support communities of rooted aquatic vegetation, such as turtle grass and eelgrass in estuarine or marine systems and a number of freshwater species in rivers and lakes. The discharge of dredged or fill material can smother vegetation and benthic organisms.

There are no known vegetated shallows within the Project Area where placement of fill material is proposed. Therefore, impacts to vegetated shallows are not anticipated.

Section 230.44 Coral Reefs

Coral reefs consist of the skeletal deposit, usually of calcareous or siliceous materials, produced by the vital activities of anthozoan polyps or other invertebrate organisms

present in growing portions of the reef. The discharge of dredged or fill material can adversely affect colonies of reef building organisms by burying them, by releasing contaminants such as hydrocarbons into the water column, by reducing light penetration through the water, and by increasing the level of suspended particulates.

There are no coral reefs within the Project Area. Therefore, impacts to coral reefs are not anticipated.

Section 230.45 Riffle and Pool Complexes

Steep gradient sections of streams are sometimes characterized by riffle and pool complexes. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a coarse substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. Pools are characterized by a slower stream velocity, a steaming flow, a smooth surface, and a finer substrate. Riffle and pool complexes are particularly valuable habitat for fish and wildlife. Discharge of dredged or fill material can eliminate riffle and pool areas by displacement, hydrologic modification, or sedimentation. Sedimentation induced through hydrological modification or as a direct result of the deposition of unconsolidated dredged or fill material may clog riffle and pool areas, destroy habitats, and create anaerobic conditions.

The Project route includes 496 waterbody crossings, including 310 stream crossings. Construction activities including trenching, construction of roads and waterbody crossings, installation of culverts, and run-off from adjacent upland activities all have the potential to increase sedimentation in waterbodies within the Project Area. Streams with riffle and pool complexes adjacent to or directly crossed by the pipeline route may be impacted due to sediment runoff. BMPs including: salvaging and storing the vegetation layer to aid in bank reclamation following construction; limiting grading of stream banks for trenching equipment to the trench line; and grading work areas away from the waterbody would all minimize runoff entering the waterbody. Additional measures described in detail in Appendix M of the FSEIS would further reduce the potential for impacts to riffle and pool complexes. While the number of waterbody crossings is high, the implementation of BMPs would result in minor impacts to riffle and pool complexes. The 7-mile segment through the Denali NPP would not cross Riffle and Pool Complexes.

POTENTIAL EFFECTS ON HUMAN USE CHARACTERISTICS (SUBPART F)

Section 230.50 Municipal and Private Water Supplies

Municipal and private water supplies consist of surface water or ground water which is directed to the intake of a municipal or private water supply system. Impacts to drinking water availability could occur as a direct result, or if water withdrawals took place at a waterbody that is hydrologically connected to a drinking water reservoir.

Table 3.3-14 of the FSEIS provides a list of drinking water wells within 500 feet of the proposed pipeline route. According to the ADNR WELTS database (ADNR, 2017), there are 23 drinking water wells within 500 feet of the proposed pipeline route. The closest drinking water well to the proposed pipeline route is 42 feet and is located along the Parks Highway. Proposed water withdrawal locations are provided in Tables 4.7-5 and 4.7-6 of

the FSEIS. The Applicant proposes to avoid construction activities in close proximity to drinking water wells and would adjust the location of construction activities within the ROW where necessary and practicable (see Appendix M of the FSEIS). Water withdrawal would be conducted in accordance with permits issued by ADNR, and in coordination with ADF&G and are anticipated to be intermittent and relatively short in duration. The impacts of the Project on municipal and private water supplies is expected to be minor with implementation of the proposed mitigation measures.

Within 500 feet of the Project there are two drinking water wells noted in Table 3.3-14 of the FSEIS including Denali NPP, River Estates and McKinley Village.

Section 230.51 Recreated and Commercial Fisheries

Recreational and commercial fisheries consist of harvestable fish, crustaceans, shellfish, and other aquatic organisms used by man. The discharge of dredged or fill materials can affect the suitability of recreational and commercial fishing grounds as habitat for populations of consumable aquatic organisms.

There are no recreational or commercial fisheries in Prudhoe Bay where the Applicant proposes to dispose of dredged material (see Section 230.20 and Chapter 2 of the FSEIS for additional detail). Therefore, there would be no impacts to recreational or commercial fisheries from dredging at West Dock. The proposed river and stream crossings would result in temporary effects associated with minor increases in sediment during construction (see Section 230.20). These minor effects would result in negligible impacts to recreational or commercial fisheries.

Section 230.52 Water-Related Recreation

Water-related recreation encompasses activities undertaken for amusement and relaxation. Activities encompass two broad categories of use: consumptive, e.g., harvesting resources by hunting and fishing; and non-consumptive, e.g. canoeing and sight-seeing. Discharge of dredged material or fill associated with the proposed Project would not result in impacts to water-related recreation. There is no water-related recreational in Prudhoe Bay where dredged material from West Dock would be disposed of during winter.

The proposed Project includes an HDD crossing at the Yukon River. HDD is a steerable trenchless method of installing underground pipe, conduit, or cable in a shallow arc along a prescribed bore path by using a surface-launched drilling rig, with minimal impact on the surrounding area. HDDs would be scheduled to occur during both winter and summer construction seasons with construction-related activities occurring around the HDD site for 24 hours per day until pipe placement is complete. Construction of the proposed pipeline across the Yukon River would result in short-term effects on the quality of recreation opportunities near construction activities. The Yukon River Camp, rest area, and boat launch are located immediately northwest of the existing highway bridge while the Bureau of Land Management's (BLM) visitor contact station located immediately to the northeast of the bridge. None of these are in proximity to the Project work area. There could be a potential increase in the population from construction workers serving the proposed Project that might result in competing demands for local public services in some locales. Including competition with tourists and recreational users during high-use

periods, which could detract from the recreational experience and adversely affect local tourism. The effects of the Project on water-related recreation would be temporary and localized for the duration of construction and are considered minor.

The Denali NPP Route Variation would be constructed in an area of the Denali NPP in which a low level of water-related recreational currently occurs. For this reason, potential impacts on water-related recreation from the Denali NPP Route Variation would be negligible.

Section 230.53 Aesthetics

Aesthetics associated with the aquatic ecosystem consist of the perception of beauty by one or a combination of the senses of sight, hearing, touch, and smell. Aesthetics of aquatic ecosystems apply to the quality of life enjoyed by the general public and property owners.

The Project consists of a pipeline buried below ground for the extent of the route, and the HDD crossing of the Yukon River (see Section 4.17 of the FSEIS). Although some segments are a mix of developed and undeveloped land, the portions of the natural landscape within each segment have high scenic quality, with views of wildlife, mountains, tundra, forest, rivers, and lakes interspersed with commercial, industrial, public, and private development. All proposed pipeline segments were considered to have high scenic quality to some degree. Several aspects of Project construction and operations would be visible across all pipeline segments, and are summarized herein. Figures 2.2-1 and 2.2-2 in Chapter 2 of the FSEIS depict the Mainline and Fairbanks Lateral proposed routes respectively.

The visual impacts of construction activities for these camps include nighttime lighting and associated glare. During late spring, summer, and early fall, nighttime lighting conditions rarely include full darkness. As a result, while nighttime construction (and work camp) lighting may be visible, the contrast between this lighting and nighttime visual conditions would be low to moderate. During the remainder of the year, nighttime construction lighting would contrast with dark night skies. Visual contrast during construction would be the highest in undeveloped areas that are visible to the public, such as the Dalton and Parks highway corridors.

With the majority of the pipeline buried, there would be minor impacts to visual resources once in operation. Visual impacts during construction are generally higher than during operations, due to the presence of construction activities, materials, equipment, and work camps.

The ROW (which would be maintained in grasses or other low vegetation) would contrast with the boreal forest landscape; however, within the Parks Highway corridor (south of Denali State Park), the corridor is relatively developed with power line ROWs, residences, and businesses, minimizing the visual contrast of the cleared pipeline ROW. Visual impacts would be limited to undeveloped areas visible from the Parks Highway, where the pipeline is outside of the Parks Highway ROW.

Visual impacts during construction of through Denali NPP would be moderate. Although construction activities including pipeline construction, staging areas, and increased traffic would be expected to alter the visual landscape throughout the segment for the duration

of construction, the segment is relatively short and construction in the area is scheduled in late fall so visitor concentration would be off peak. While there is a high concentration of visitors in the area around the entrance to Denali NPP, the area already had impacted views due to commercial development. Any additional visual impact from construction activities would be minimal. No construction work camps are proposed to be located along the Denali NPP Route Variation. Nighttime construction would result in a low to moderate visual contrast with nighttime conditions during the tourist season for Denali NPP (mid-May to mid-September). During winter months, when dark nighttime skies are prevalent, only a limited number of residents and travelers would see nighttime construction lighting associated with construction.

Once constructed, the visual impact of the Denali NPP Route Variation pipeline ROW would be expected to be minor. The pipeline ROW would be clearly visible where the ROW would be alongside or adjacent to the Parks Highway. In these areas, cleared ROW segments would contrast with surrounding forest. Views from Denali NPP itself would be limited, particularly from the visitor center, and along Denali Park Road, where the highest sensitivity viewers would travel.

Section 230.54 Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves

These preserves consist of areas designated under Federal or State laws, or local ordinances to be managed for their aesthetic, educational, historical, recreational, or scientific value. The Project would involve routing approximately seven miles of the pipeline through Denali NPP between MP 535.8 and MP 543.

The 2013 Denali National Park Improvement Act (DNPIA) “authorizes the Secretary to issue ROW permits, subject to certain terms and conditions, for: 1) a high-pressure natural gas transmission pipeline (including appurtenances) in non-wilderness areas within the boundary of the Park within, along, or near the approximately seven-mile segment of the George Parks Highway that runs through the Park; and 2) any distribution and transmission pipelines and appurtenances that the Secretary determines to be necessary to provide natural gas supply to the Park”. The DNPIA also states “a permit authorized under subsection (b)(1) may be issued only: (A) if the permit is consistent with the laws (including regulations) generally applicable to utility rights-of-way within units of the National Park System; (B) in accordance with section 1106(a) of the Alaska National Interest Lands Conservation Act (16 U.S. Code [USC] 3166(a)); and (C) if, following an appropriate analysis prepared in compliance with the National Environmental Policy Act of 1969 (42 USC 4321 et seq.), the route of the ROW is the route through the Park with the least adverse environmental effects for the Park; and (2) shall be subject to such terms and conditions as the Secretary determines to be necessary” (Public Law 113-33).

The route through Denali NPP was developed through close coordination between the National Park Service (NPS), the Applicant, and the Corps to minimize potential impacts to the aesthetic, educational, historical, recreational, and scenic values of the Park to the extent practicable. On May 6 and 7, 2016, staff from NPS, the Applicant, and the Corps conducted a site visit to finalize the pipeline alignment through the Denali NPP, with the intent of avoiding and minimizing potential adverse effects. The selected route alignment represents the route with the least adverse environmental effects on the park.

The proposed Project would traverse 7 miles of Denali NPP lands, of which the majority is located adjacent to the Parks Highway ROW. Approximately 89 percent of the Denali NPP Route Variation is either upland or currently developed land, according to the proposed Project's wetland mapping data. The remaining 20.3 percent of the Denali NPP Route Variation is wetland consisting of: 21.2 acres of scrub/shrub, 0.5 acre of emergent, 0.13 acre of riverine, and less than 0.001 acre is other palustrine (ponds).There are no forested wetland within this area of the Project. Detailed maps for the Denali NPP Route Variation are provided in Chapter 2 of the FSEIS (FSEIS Figure 2.4-1).

Evaluation and Testing (Subpart G)

Section 230.60-61 General Evaluation of Dredging or Fill Material and Chemical and Physical Evaluation of Testing (respectively)

Chemical analysis of potential dredge sediment is required under Clean Water Act 404[b][1] guidelines (Code of Federal Regulations [CFR], Title 40, Part 230.60) prior to dredging and discharging dredge spoils. The Applicant has proposed that the Corps issue a permit with a condition of physical and chemical testing of sediment prior to dredging, with sampling and testing protocols matching those in existence under an existing U.S. Department of the Army (DA) Permit (POA-2017-00383) issued to British Petroleum Exploration Alaska.

Sediments on the eastern side of West Dock have been sampled and analyzed by other entities for purposes not related to the proposed Project (Oasis, 2002; Oasis, 2010; URS, 2012; ERM, 2014). While not all data are public, they are likely to be on file with the appropriate resource agencies. Sediment surface data were collected in 2002 (Oasis 2002), and sediment core surface and subsurface data were collected in 2011 (URS 2012). ERM conducted sampling programs immediately east and less than 100 feet offshore of DH3 in 2010 and 2014. Surface sediment samples were taken in water depths less than 7.5 feet. Organic compounds (gasoline range organics, diesel range organics, residual range organics, benzene, toluene, ethylbenzene, total xylenes) and inorganic compounds (arsenic, barium, cadmium, copper, lead, nickel, zinc, silver, mercury) were assessed in 2002, 2010, and 2014 and compared against Alaska Department of Environmental Conservation (ADEC) Alaska Cleanup Levels (Arctic zone direct contact / migration to groundwater) (ADEC, 2016) and Corps screening levels (USACE, 1998) to determine suitability of dredged material for disposal.

Physical sediment data in the form of sediment core logs reaching to depths of 8 to 11 feet (URS, 2012) were included as an attachment to Appendix F of the Draft SEIS published in June 2017. In summary, the referenced studies provide a characterization of sediments on the eastern side of West Dock that show Prudhoe Bay and the West Dock area are generally free of contamination related to metals or hydrocarbons (Oasis, 2002; URS, 2012; ERM, 2014). In at least one set of results, the lab detection level for benzene was above the ADEC Alaska Cleanup Levels. Furthermore, a review of the oil and hazardous substance spills reporting to ADEC (http://dec.alaska.gov/applications/spar/SpillsDBQuery/search.asp) indicated minimal spills in the West Dock area have escaped recovery or containment in the past 15 years (less than 15 gallons lost).

The Project would comply with the Corps requirements for sediment testing and disposal. The Applicant would ensure that material to be dredged would be properly tested (e.g., chemical and toxicity testing, benthic recovery) and disposal sites are managed (e.g., disposal site marking buoys, inspectors, the use of sediment capping and dredge sequencing) to minimize impacts associated with dredge material. Additional, the Project would involve dredging the through the ice during the winter to minimize sedimentation effects on water quality.

ACTIONS TO MINIMIZE ADVERSE EFFECTS (SUBPART H)

Section 404(b)1 Subpart H considers the extent to which steps have been taken to minimize potential adverse effects. The Guidelines state that no discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem except as provided under Section 404(b)(2).

The Applicant has identified several potential measures to minimize adverse impacts which are summarized in Appendix M, Part I as well as throughout Chapter 4 of the FSEIS for each resource evaluated. The Corps has reviewed the minimization measures proposed by the Applicant and considers them to be a reasonable starting point for developing the list of all appropriate and practicable steps which can be taken to minimize the potential adverse impacts of the proposed Project. JROD Appendix F includes the list of Special Conditions that would be imposed by the Corps to further minimize adverse effects of the proposal to the maximum extent practicable.

For specific details on the actions to avoid, minimize and mitigate potential effects, please see Section 3 of this Appendix.

FACTUAL DETERMINATION (SUBPART B, SECTION 230.11)

Construction of the Applicant's preferred alternative would include the discharge of dredged or fill material in WOTUS, including wetlands. The Guidelines (40 CFR 230.11, Subpart B) require determination of the potential short-term and long-term effects of the proposed discharges of dredged or fill material on the physical, chemical, and biological components of the aquatic environment. These factual determinations help determine if there is minimal potential for short-term or long-term significant adverse environmental effects of the proposed discharge. The determinations are presented below, based on the findings of Subparts C through F.

Physical Substrate Determinations (40 CFR 230.11(a))

Physical substrate determinations include an evaluation of effect that the proposed discharge would have, individually and cumulatively, on the substrate at the proposed disposal site. Considerations include: similarity in particle size, shape, and degree of compaction of the material proposed for discharge and the material constituting the substrate at the disposal site; and any potential changes in substrate elevation and bottom contours, including changes outside of the disposal site which may occur as a result of erosion, slumpage, or other movement of the discharged material. The duration and physical extent of substrate changes is also considered. Potential changes in substrate elevation and bottom contours are predicted on the basis of the proposed

method, volume, location, and rate of discharge, as well as on the individual and combined effects of current patterns, water circulation, wind and wave action, and other physical factors that may affect the movement of the discharged material.

Section 3.2, Soils and Geology of the FSEIS describes the existing substrate within the Project Area. A determination of the potential impacts to substrate from the Project is based on the detailed assessment presented in Section 4.6, Soils and Geology, of the FSEIS, the Technical Evaluation Factors in Subpart C (, and Actions to Minimize Adverse Effects in Subpart H. In addition, Appendix O of the FSEIS (Effect of Climate Warming on Expected Long-Term Thaw Depths on the Alaska Stand Alone Gas Pipeline [ASAP], ROW) provides and assessment of the expected effect of assumed climate warming on long-term thaw depths both on and off the pipeline ROW.

Discharge of dredged or fill material into WOTUS from trench excavation for the pipe, gravel mine development, construction of the GCF, and support facilities including access roads and temporary camps and storage facilities would impact approximately 21,493 acres of substrates (upland and wetland), including substrates of 310 streams.

As a result of construction activities, the Project would result in localized alterations of topography, geology, and soils. As construction materials are added to and removed from along the pipeline corridor, soils would be replaced, redistributed, or compacted. The addition or subtraction of material also would raise or lower the elevation of specific areas along the pipeline corridor. Impacts from earthwork activities would be minimized by the use of BMPs.

The Permittee would be required to implement a number of BMPs and minimization measures as required by state and federal permits (see 2.7.9.2 and FSEIS Appendices F and G). These measures include minimizing disturbance of permafrost and maintaining permafrost stability as practicable, minimizing erosion and sedimentation, managing water flow, stabilization of disturbed areas, storing and re-using growth media for use during reclamation, and performing concurrent and final reclamation to minimize soil loss and erosion. The Applicant's initial geothermal modeling shows that by revegetating the ROW in discontinuous permafrost terrain, the indirect permafrost thaw affected zone over a 30-year period would be limited to less than 10 m (35 feet) beyond the directly impacted area.

The proposed discharge would cause a permanent adverse effect on the substrates of the wetlands filled.

Water Circulation, Fluctuation and Salinity Determinations (40 CFR 230.11(b))

Water circulation, fluctuation, and salinity determinations include evaluation of the nature and degree of effect that the proposed discharge would have individually and cumulatively on water, current patterns, circulation including downstream flows, and normal water fluctuation. Consideration is given to water chemistry, salinity, clarity, color, odor, taste, dissolved gas levels, temperature, nutrients, eutrophication, and any other appropriate characteristics. Consideration is also given to the potential diversion or obstruction of flow, alterations of bottom contours, or other significant changes in the hydrologic regime. Potential impacts on the current patterns, water circulation, normal water fluctuation, and

salinity are evaluated on the basis of the proposed method, volume, location, and rate of discharge.

Section 3.3 of the FSEIS describes the existing conditions for water resources within the Project Area while potential impacts to water resources are described in Section 4.7 of the FSEIS. The determination of impacts on water circulation, fluctuation, and salinity is based on the Technical Evaluation Factors findings in Subpart C, Sections 3.3 and 4.7 of the FSEIS and on the proposed actions for minimizing effects found in Subpart H (Appendix M of the FSEIS).

Streamflow may be affected due to minor alterations in the amount of runoff into streams and water that percolates into the groundwater system due to changes in topography, soil permeability, vegetative cover, water flow and infiltration, and storage and routing of water because of discharge of dredged or fill materials associated with construction. The primary construction impacts to surface waters would be from excavation in waterbodies at stream crossings. The proposed pipeline route and access roads would cross a total of 310 streams by one of five methods (as presented in Table 4.7-2 of the FSEIS): 1) aerial (bridge) crossings; 2) OC; 3) IOC; 4) HDD; or 5) culvert crossings. Disturbance to ground cover in relation to streams would occur within the 120-foot construction ROW. Permanent impacts could include changes to the stream profile and structure (bed and hyporheic zone) at crossing locations. The construction duration across a waterbody (stream) would occur over 1 to 3 days. The potential for stream bank erosion as a result of vegetation removal could occur for a period of time after construction activities or spring break up if constructed during winter. Construction during the winter when the ground is frozen would have substantially fewer impacts on water resources versus during the summer. The majority of stream crossings throughout the study area would be OC or IOC, resulting in moderate, short-term (1 to 3 days) adverse effects on stream bank stability.

Temporary localized drainage pattern alterations (e.g., diversions) could occur during construction to accommodate pipeline installation and equipment staging. The Applicant proposes to identify measures that would mitigate long-term impacts to local drainage patterns during engineering design. Specific measures might include ditch plugs (foam, sandbags, bentonite, or compacted, cohesive soils placed next to the pipeline to prevent water from running parallel to the pipe), crowning soil in a mound over the pipeline trench to account for subsequent settlement, and recontouring to promote runoff and minimize ponding and erosion. Altered water flow paths could contribute to further soil erosion and subsequently, further altered surface water flow.

Water withdrawal would also be required for pipeline construction activities, including hydrostatic testing; HDD crossings, ice road, and pad construction; construction of temporary camps; camp use; hydroseeding; and dust control. Impacts to water resources associated with the final discharge of water withdrawals could include altered water quality of the discharge waterbody including decreased oxygen concentrations, increased organic matter, turbidity, temperature, and changes to pH (AGDC, 2011).

Overall, impacts on open waters, tidally influenced waters, and salinity gradients are not expected to occur. Impacts on streamflow regimes are expected to be minor to moderate and temporary as described above.

Suspended Particulates and Turbidity Determinations (40 CFR 230.11(c))

Determinations on suspended particulates and turbidity include an evaluation of the nature and degree of effect that the proposed discharge would have on the kinds and concentrations of suspended particulates and turbidity in the vicinity of the disposal site. Grain size of the material proposed for discharge, shape and size of the plume of suspended particulates, duration of the discharge and resulting plume, and whether or not the potential changes would cause violations of applicable water quality standards are considered in the determination.

The proposed method, volume, location, and rate of discharge, as well as the individual and combined effects of current patterns, water circulation and fluctuations, wind and wave action, and other physical factors on the movement of suspended particulates are important factors in this determination.

Sections 3.9 (Benthic) and 3.3 (Water) of the FSEIS describe existing characteristics of water quality, including suspended particulates and turbidity in both marine and freshwater in the Project Area. A determination of impacts on suspended particulates and turbidity is based on the impact analysis found in Sections 4.7 (Water) and 4.13 (Benthic) of the FSEIS, the Technical Evaluation Factors findings in Subpart C (Sections 2.7.1 through 2.7.6) and the Actions for Minimizing Adverse Effects found in Subpart H (Appendix M of the FSEIS).

Upgrades to West Dock infrastructure would be required and would primarily occur during winter. Disposal of dredged material would occur in the nearshore environment, on bottomfast ice, where it would be slowly deposited over time as ice melts during spring. The nearshore environment in the proposed disposal location is naturally scoured each year by ice, resulting in regular re-suspension of bottom sediments and naturally high turbidity. Impacts due to dredging and disposal would be moderate, as they would indisputably alter a physical resource. The effect would be localized however, occurring for a period of less than 2.5 years, and affects to water quality due to sedimentation would be temporary.

Contaminant Determinations (40 CFR 230.11(d))

The factual determinations within the Guidelines require a determination of the degree to which the material proposed for discharge could introduce, relocate, or increase contaminants. This determination considers the material to be discharged, the aquatic environment at the proposed disposal site, and the availability of contaminants.

The determination of the potential for contaminants is based on the analysis of impacts in Sections 4.6 (Soils and Geology), 4.7 (Water), 4.8 (Vegetation), 4.9 (Wetlands) and 4.25 (Reliability and Safety), and on the evaluation of dredged and fill materials conducted as part of the Evaluation of Dredged or Fill Material in Subpart G (Section 2.7.5) of this document.

Historic sediment sampling in the Project Area characterize the sediments on the eastern side of West Dock and show Prudhoe Bay and the West Dock area as generally free of contamination related to metals or hydrocarbons (AGDC, 2016f; URS, 2012). Based on a 2010 study, observed metals concentrations are within the natural variability of

background values reported for Beaufort Sea coastal sediment (Brown et al., 2005; Neff, 2010; and Trefry et al., 2003 as reported in Bureau of Ocean Energy Management [BOEM], 2010). Data collected for the Arctic Nearshore Impact Monitoring in Development Area (ANIMIDA) Project did not indicate the presence of contamination from petroleum hydrocarbons (Kuhle, 2010 and OASIS, 2006 as reported in BOEM, 2010). ADEC maintains a database of oil and hazardous substance spill reports (http://dec.alaska.gov/spar/csp/db_search.htm); minimal spills in the West Dock area have escaped recovery or containment in the past 15 years (i.e., less than 15 gallons lost). There have been no spills at the Port of Seward resulting from vessel grounding or unauthorized bilge discharges. Operation and maintenance activities could affect important habitat and degrade water quality by accidentally introducing minor amounts of contaminants, oils, or fuels. The minor impacts from small spills and discharges could be partially mitigated through the establishment and implementation of a Hazardous Materials Control Plan.

Based on the above, the Corps has determined that the Project would result in a minor amount of contaminants being introduced, relocated, or increased into the environment.

Aquatic Ecosystems Structure and Function Determinations (40 CFR 230.11(e))

The determination of impacts on the structure and function of aquatic ecosystems includes an evaluation of potential changes in substrate characteristics and elevation, water or substrate chemistry, nutrients, currents, circulation, fluctuation, and salinity on the existence or recolonization of indigenous aquatic organisms or communities.

The aquatic ecosystems of the Project Area include both freshwater and marine habitats. These ecosystems support wetland vegetation, invertebrates, fish, birds, and marine mammals. A determination of impacts on the structure and function of the aquatic ecosystem is based on the impact analysis found in FSEIS Sections 4.8 and 4.9 (Vegetation and Wetlands), 4.10 (Wildlife), 4.11 (Fish), 4.12 (Marine Mammals) and 4.13 (Benthic) of the FSEIS, the Technical Evaluation Factors findings in Subparts D and E, and the Actions for Minimizing Adverse Effects found in Subpart H. This factual determination also includes information based on the Subpart G: Evaluation of the Dredged or Fill Material to evaluate the effect the discharge may have on communities or populations of organisms expected to be exposed to it.

The Project would cause a minor to moderate adverse effect on the substrates of the aquatic ecosystems filled. Impacts on open waters, tidally influenced waters, and salinity gradients are not expected to occur. Impacts on streamflow regimes are expected to be minor to moderate and temporary.

Proposed Disposal Site Determination (40 CFR 230.11(f))

The proposed disposal site for dredged and fill materials is described in detail in Section 2.2.3 (Use of West Dock at Prudhoe Bay) of the FSEIS and the Applicant's Final Department of the Army Permit Application (AGDC, 2018). As part of the Project, fill materials would be placed for the construction of Project components and facilities including gravel infrastructure for the GCF, roads, and pads; and bridges and culverts associated with the gravel roads. In addition to these Project components, the Project would also include placement of up to 25,000 cubic yards of gravel in up to 1.5 acres of

tidal waters, matching the footprint of the barge bridge, to create a level pad for the barge bridge. This would occur in the spring, using equipment working from an ice pad. The location of the proposed disposal site for the Project is provided in Figure 2.2.4 of the FSEIS.

The Guidelines state that the mixing zone associated with each specified disposal site shall be confined to the smallest practicable area consistent with the type of discharge dispersion being used. As part of this determination, the Corps must evaluate the acceptability of the proposed disposal sites and mixing zone based on the following factors:

- Depth of water at the disposal site;
- Current velocity, direction, and variability at the disposal site;
- Degree of turbulence;
- Stratification resulting from causes such as obstructions or salinity or density profiles at the disposal site;
- Discharge vessel speed and direction if appropriate;
- Rate of discharge;
- Ambient concentration of constituents of interest;
- Dredged material characteristics including concentrations of constituents, amount of material, type of material, and settling velocities; and
- Other factors of the disposal site that affect the rate and patterns of mixing.

Section 3.3.8 (Nearshore Beaufort Sea) of the FSEIS provides a description of existing conditions at the proposed disposal site. The factual determination of the proposed disposal site is based on the analysis presented in FSEIS Section 4.7.4.1.4.7. (Dredging and Disposal at West Dock) as well as Subparts C and H of this document. Considering the relatively shallow location nearshore, frequent natural scouring of the disposal area, relatively slow rate of discharge as ice melts in the spring, and the naturally high amount of suspended sediment in the disposal area, the Corps has determined the Project would result in minor, temporary impacts at the disposal site.

Determination of Cumulative Effects on the Aquatic Ecosystem (40 CFR 230.11(g))

Cumulative effects are the changes in an aquatic ecosystem attributable to the collective effect of a number of individual discharges of dredged or fill material. While an individual discharge may constitute a minor change, the cumulative effect of numerous such piecemeal changes can result in a major impairment of the water resources and interfere with the productivity and water quality of existing aquatic ecosystems. A determination of cumulative impacts that may result from the discharge of dredged or fill material in WOTUS has been evaluated to the extent reasonable and practical. It is critical to focus the assessment on meaningful cumulative impact issues, rather than on all conceivable impact relationships. This is especially important given the dynamic nature of development Projects and natural ecosystems.

Past and present actions in the Project area that have affected the aquatic ecosystem in the Project Area include oil and gas exploration and development, roads and railroads,

community development, military infrastructure, scientific research, mining, and shipping. See Section 4.26.7 and Table 4.26-3 of the FSEIS for a complete description of the past, present and reasonably foreseeable future actions and natural events that were considered in the assessment of cumulative effects.

The determination of cumulative effects on the aquatic ecosystem is be based on the impact analysis presented in FSEIS Section 4.26 as well as the Technical Evaluation Factors in Subparts D and E.

The Project is a long, 733 mile linear pipeline project that would traverse 60 Hydrologic Unit Code (HUC) 10 watersheds, most of which are remote (i.e., little to no human development) with relatively unaltered hydrology, few impervious or compacted surfaces, and little urbanization. Table 4 presents the differences between the level of anthropogenic disturbances within watersheds pre and post project construction. Following project construction, 50 of the 60 traversed watersheds would conservatively continue to have less than 1 percent of human induced disturbance. The difference between the level of human disturbance within watersheds before and post project construction conservatively ranges between 0-0.25 percent. Significant impacts to aquatic resources in most watersheds traversed by the project are not anticipated.
It is assumed that wetland fragmentation has occurred from existing infrastructure near or within the proposed Project ROW. For example, construction of the TransAlaska Pipeline System, highway construction, and current North Slope oil and gas operations have fragmented wetlands. Reasonably Foreseeable Future Actions (RFFA) consisting of North Slope oil and gas exploration and development projects, and interior Alaska oil and gas exploration and development projects, could cumulatively impact water resources potentially affected by the proposed Project. Therefore, additional fragmentation would occur if similar projects are executed. It is presumed that if the Project is constructed, the AK LNG project would not be a RFFA. Changes to surface water flow as a result of fragmentation would result in degradation of wetlands as well as increase the recovery time of wetlands (see Section 4.26.9.4 of the FSEIS). As with the proposed Project, it is assumed other resource development and exploration RFFAs would restore some wetland habitat following construction. However, the overlap between these projects and the proposed Project are limited to a specific, isolated location; and the duration of the impact is expected to be seasonal. As a result, impacts to the aquatic ecosystem within the proposed Project area are expected to be moderate.

Climate change could impact wetland resources as a result of changing temperatures and precipitation. Direct and indirect changes in temperature may result in alteration of wetland system water quality and quantity. Extreme climate events that could impact wetlands and increase the cumulative impact of the proposed Project (and RFFAs) include altered hydrology; increased heat stress; increased flooding, wildfires, landslides, avalanche, and mudslides; increased erosion; and decreased flood plain recharge (Erwin, 2009). Climate change could also result in earlier breakup of river ice, increases in precipitation, coastal erosion, increased ocean elevations, potential increases in permafrost thaw, droughts, warmer or cooler temperatures, and more frequent occurrence of extreme weather conditions in the same areas that would be affected by

the proposed Project. The likelihood of increased flooding causing changes to surface and groundwater flow over the next 10 years is considered somewhat likely. The overall impact of flooding as a result of climate change is expected to be moderate.

A report titled Arctic Climate Impact Assessment states that the likelihood of increases in permafrost temperatures and in the depth of the active layer are very likely to cause settling within this century (Arctic Climate Impact Assessment [ACIA], 2004). While all permafrost areas that are susceptible to soil instability as a result of thawing permafrost could be impacted by climate change, the impacts are expected to be most notable in areas characterized as discontinuous permafrost. Thus, climate change could exacerbate the impacts of all the RFFAs which include activities on permafrost or discontinuous permafrost. Alterations in seasonal temperatures and annual precipitation could alter freeze/thaw cycles and cause changes to surrounding topography and drainage patters as a result of permafrost alterations. Thawing permafrost could drive the active zone deeper and destabilize existing or proposed roads, buildings, and pipelines, requiring rebuilding, maintenance, and additional investment. The construction of future infrastructure may require the development of new technologies to address changing soil and geologic conditions (ACIA, 2004).

Certain environments may be more sensitive to impacts than others depending on the magnitude, extent and severity of the cumulative effect. When considered collectively with other RFFAs including climate change, based on the information summarized here and in Section 4.26 of the FSEIS, Project-induced changes in soils and geology, wetland and vegetative cover, streamflows and seasonal hydrologic regimes, could result in moderate adverse cumulative effects in the long term.

Determination of Secondary Effects on the Aquatic Ecosystem (40 CFR 230.11(h))

Secondary effects are effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material. A consideration of secondary effects may include the potential for a spill of hydrocarbon or other toxic materials; impacts to wetlands, vegetation, and water bodies as a result of fugitive dust, permafrost thawing or settlement; or the disturbance of wildlife populations as a result of noise or human activity.

The types of potential secondary impacts to the aquatic ecosystem are introduced in each resource section of Chapter 4 in a subsection titled “Description of Effects,” followed by detailed analyses of those effects throughout each resource section. The factual determination of secondary effects is based on these impact analyses and on the analyses found in Subparts D and E of this document.

Secondary impacts associated with the placement of fill material include wetland and stream habitat fragmentation, topographic changes, and the addition of sediment into these environments from temporarily exposed soils. These impacts would be moderate over the long-term.

Restrictions on Discharges (Subpart B, Section 230.10)

Alternatives (230.10 [a]):

There is no practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem that does not have other significant adverse environmental consequences. (See JROD Section 7, “Alternatives” for supporting information on this determination.)

True ☒ False ☐

Other program requirements (230.10[b]):

The proposed activity violates applicable State water quality standards or Section 307 prohibitions or effluent standards. (See Section 8 “Related Laws and Policies” for supporting information on this determination)

No ☒ Yes ☐

The proposed activity jeopardizes the continued existence of federally listed threatened or endangered species or affects their critical habitat. (See “Section 230.30” above and JROD Section 8 “Related Laws and Policies” for supporting information on this determination)

No ☒ Yes ☐

The proposed activity violates the requirements of a federally designated marine sanctuary. (See Section 8 “Related Laws and Policies for supporting information on this determination)

No ☒ Yes ☐

Significant Degradation (230.10[c]):

The activity would not cause or contribute to significant degradation of WOTUS. This finding is based on appropriate factual determinations, evaluations, and tests required by Subparts B and G , after consideration of Subparts C through F, with special emphasis on the persistence and permanence of the effects as discussed above.

True ☒ False ☐

Minimization of adverse effects (230.10[d]):

Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem.

Appendix I3 - Means to Minimize, Avoid, and Mitigate Adverse Environmental Impact

Table 3. Degree and Amount of Wetland Impacts by Activity Types

Impact Level	Activity	Wetland			Impacts		
		Acres[1]	Percentage of Total Wetland Acreage[1]	Percentage of Total Land Acreage[1,2]	Hydrology	Vegetation	Wetland Value/ Function Impact
1	Work off ice, frost pack, and mats (temporary impact / minimization)	1,679	17%	8%	No Change	Negligible	No or Negligible Impact; Full Recovery
2	Restored trench and areas designated for trench spoil placement / removal	3,555	37%	17%	Permeable Surface	Fully Revegetated	Low Impact; Full to Nearly Full Wetland Recovery

Impact Level	Activity	Wetland			Impacts		
		Acres[1]	Percentage of Total Wetland Acreage[1]	Percentage of Total Land Acreage[1,2]	Hydrology	Vegetation	Wetland Value/ Function Impact
3	ROW work pad, temporary facility pads and access roads, material sites	4,021	42%	19%	Semi-Permeable Surface or Open Water	Scarified and Revegetated Pads and Roads, Reclaimed Pits w/ Open Water	Partial Wetland Recovery, Conversion to Open Water or Conversion to Vegetated Upland
4	Permanent facilities and access roads	364	4%	2%	Relatively Impermeable Surface	Maintained Pad; Low / No Revegetation	Full Impact

1 Impact acreage and percentage values are approximations and dependent upon a set of reasonable assumptions and averages applied in the analysis.

2 Remaining percentage of land use is upland (55%).

AVOIDANCE

The route alignment of the proposed pipeline has undergone several revisions since the original application and Final EIS of 2012. The alignment alternatives evaluated in the Final FSEIS avoid waters of the U.S., including wetlands, to the maximum extent practicable. Examples of employed avoidance measures include elimination of new access roads, use of ice roads and pads, avoidance of open waters, limiting material sites, collocation of facilities, etc.

Approximately 55% of the total proposed land disturbance for the project would avoid WOTUS. Additional information on avoidance measures may be located in FSEIS Chapter 4 and Appendix M of the FSEIS and the applicant's *Wetlands Compensatory Mitigation Plan*, dated September 13, 2018 (JROD Appendix G).

MINIMIZATION

The proposed construction methodologies would employ several actions to minimize impacts to WOUS including restoration of the pipeline trench and trench spoil/removal areas, where near to full recovery of wetlands are anticipated, with the exception of rooted trees within the pipeline Right-of-Way. Additionally, work pads, temporary construction facility pads and access roads within WOTUS would be expected to partially recover or convert to vegetated uplands, maintaining limited functions within the watersheds. Material sites would be reclaimed and would result in conversions from forested/palustrine wetlands to open water. Other minimization measures include use of construction matting, geotextile/mats under trench spoils, clearing above ground surface, low pressure tire vehicles, revegetation, siting of construction related infrastructure away from waterbodies, maintaining drainage patterns, siting the proposed ROW and project related infrastructure within previously developed and/or degraded areas, etc.

The FSEIS categorized any wetland impact lasting longer than 5 years as a permanent impact to conservatively disclose potential impacts to the public. The wetlands affected by the pipeline trench, with proper construction and restoration techniques, are expected to return, albeit after several years. The duration for complete revegetation increases with decreased soil temperatures (up to 30 years on the North Slope). The project would permanently impact a total of 7,939 acres of wetlands over 733 miles, of which it is anticipated that 3,555 acres would recover most wetland functions, 4,021 acres would partially recover or convert to open water (reclaimed material pits) or vegetated uplands providing limited functions, and 364 acres would have a complete loss of functions (See Table 3).

A notable minimization measure employed by the applicant was locating the proposed Gas Conditioning Facility (GCF) on the ACP over a large area of relic "tractor tracks" that severely degraded the permafrost wetlands and altered surface water hydrology. The gravel fill of the GCF would provide insulation to the underlying permafrost and eliminate additional thaw in the area. This minimization measure would impact lower quality habitat and reduce functional losses in the ACP.

The Denali NPP sub alternative would further reduce impacts to aquatic resources by reducing impacts to approximately 87 acres of wetlands and eliminating 2 material sites,

6 pipeline stream crossings, and 8 road stream crossings to prevent disturbance within watersheds.

FSEIS Chapter 4 and Appendix M of the FSEIS and the applicant's *Wetlands Compensatory Mitigation Plan*, dated September 13, 2018, provide additional information on minimization measures. The DA permit, if issued, would require additional minimization measures by special condition to ensure that the authorized activities do not cause or contribute to significant degradation of WOTUS.

COMPENSATION

"All compensatory mitigation will be for significant resource losses which are specifically identifiable, reasonably likely to occur, and of importance to the human or aquatic environment" (33 CFR 320.4(r)(2). The USACE determination of appropriate and practicable compensatory mitigation requirements for unavoidable losses of aquatic resources was based on a watershed-level analysis consistent with federal regulations and the 2018 Joint USACE-EPA Memorandum of Agreement.

The Corps determination of compensatory mitigation requirements for unavoidable losses of aquatic resources started with a cumulative watershed level analysis of anthropogenic disturbance (fill, mining, agriculture, etc.) both historically (pre-project) and following project construction (post project). The ASAP project is a long, 733 mile linear pipeline project that would traverse 61 HUC 10 watersheds, most of which are remote (i.e., little to no human development) with relatively unaltered hydrology, few impervious or compacted surfaces, and little urbanization. The difference between the level of anthropogenic disturbance within watersheds pre and post project construction conservatively ranges between 0.00 to 0.25 percent, with 51 of the 61 traversed watersheds having less than 1 percent cumulative human disturbance post project construction (See Table 4). Significant impacts to aquatic resources in most watersheds traversed by the project are not anticipated.

Table 4 Cumulative Anthropogenic Disturbances in HUC 10 Watersheds

HUC10 #	HUC10 Name	% Developed Land Pre Project	% Developed Land Post Project	Difference
1908030609	Lower Chena River	22.13%	22.16%	0.03%
1902040108	City of Anchorage-Frontal Cook Inlet	12.87%	12.87%	0.00%
1902050512	Little Susitna River	4.13%	4.15%	0.02%
1908030907	Headwaters Goldstream Creek	2.50%	2.51%	0.01%
1902050503	Trapper Creek-Susitna River	2.26%	2.29%	0.03%
1906040101	Putuligayuk River-Frontal Beaufort Sea	2.05%	2.26%	0.21%
1906040114	Sakonowyak River-Frontal Gwydyr Bay	1.38%	1.41%	0.03%
1902050506	Willow Creek	1.27%	1.27%	0.00%

HUC10 #	HUC10 Name	% Developed Land Pre Project	% Developed Land Post Project	Difference
1906040208	Upper Sagavanirktok River	0.59%	1.18%	0.58%[3]
1906040216	Middle Sagavanirktok River	0.90%	1.15%	0.25%
1908030809	Lignite Creek-Nenana River	0.78%	0.95%	0.17%
1902050501	Montana Creek	0.90%	0.91%	0.01%
1906040201	Atigun River	0.60%	0.84%	0.24%
1908030813	Outlet Nenana River	0.77%	0.79%	0.02%
1909010105	Minnie Creek-Middle Fork Koyukuk River	0.56%	0.78%	0.22%
1909010101	Dietrich River	0.50%	0.69%	0.19%
1908040408	Erickson Creek-Hess Creek	0.61%	0.66%	0.05%
1908030908	Goldstream Creek	0.57%	0.65%	0.08%
1902050510	Fish Creek-Susitna River	0.61%	0.63%	0.02%
1908030902	Headwaters Tolovana River	0.53%	0.56%	0.03%
1902050210	Lower Chulitna River	0.51%	0.54%	0.03%
1908040402	1908040402	0.44%	0.52%	0.08%
1908040403	Outlet Ray River	0.46%	0.51%	0.06%
1902050505	Little Willow Creek	0.46%	0.49%	0.03%
1909010106	Marion Creek-Middle Fork Koyukuk River	0.31%	0.47%	0.16%
1906040217	Lower Sagavanirktok River-Frontal Beaufort Sea	0.45%	0.47%	0.02%
1908030807	Riley Creek-Nenana River	0.32%	0.46%	0.14%
1908030722	Bonanza Creek-Tanana River	0.45%	0.45%	0.00%
1909010205	Jim River	0.24%	0.39%	0.15%
1908030803	Jack River	0.29%	0.34%	0.05%
1908030904	Washington Creek	0.27%	0.30%	0.03%
1908040405	Isom Creek-Yukon River	0.27%	0.30%	0.02%
1908030901	West Fork Tolovana River	0.27%	0.29%	0.02%
1908030910	Tatalina River	0.25%	0.28%	0.04%
1909010401	Upper Kanuti River	0.23%	0.28%	0.05%
1906040102	Headwaters Kuparuk River	0.22%	0.27%	0.05%

[3] The post project developed land increase for this watershed consists entirely of gravel extraction activities in the Upper Sagavanirktok River. The project would not result in discharges of fill material within WOTUS in this watershed.

HUC10 #	HUC10 Name	% Developed Land Pre Project	% Developed Land Post Project	Difference
1909010203	Middle South Fork Koyukuk River	0.16%	0.26%	0.10%
1908030903	Montana Creek-Tolovana River	0.26%	0.26%	0.00%
1908040320	West Fork Dall River-Dall River	0.19%	0.26%	0.07%
1909010206	Bonanza Creek	0.17%	0.25%	0.07%
1906040117	Return Islands-Beaufort Sea	0.20%	0.24%	0.04%
1902050201	Middle Fork Chulitna River	0.14%	0.23%	0.09%
1902050502	Sheep Creek	0.21%	0.21%	0.00%
1909010204	Prospect Creek	0.13%	0.20%	0.06%
1909010207	Fish Creek	0.16%	0.19%	0.04%
1902050204	Upper Chulitna River	0.16%	0.19%	0.03%
1908031102	Sawmill Slough-Tanana River	0.16%	0.17%	0.01%
1902050513	Susitna River-Frontal Cook Inlet	0.16%	0.16%	0.01%
1908020101	Upper North Fork Chandalar River	0.12%	0.16%	0.04%
1906040204	Headwaters Sagavanirktok River	0.10%	0.15%	0.06%
1908030812	Teklanika River	0.12%	0.14%	0.02%
1902050202	East Fork Chulitna River	0.06%	0.10%	0.04%
1906040111	1906040111	0.05%	0.10%	0.04%
1902050206	Middle Chulitna River	0.09%	0.10%	0.01%
1906040107	Upper Toolik River	0.06%	0.09%	0.03%
1908030909	Chatanika River	0.04%	0.09%	0.04%
1902050504	Kashwitna River	0.08%	0.08%	0.00%
1906040109	Lower Toolik River	0.04%	0.07%	0.03%
1908040407	Mastodon Creek	0.05%	0.05%	0.00%
1906030407	Upper Itkillik River	0.01%	0.02%	0.00%
1908030806	Yanert Fork	0.00%	0.01%	0.01%

The Corps has determined that compensatory mitigation would be required to offset unavoidable losses of aquatic resources in watersheds that would, following construction of the project, have a cumulative level of disturbance that is statistically measureable, where changes in functional capacity may occur. The Corps conservatively determined that in order to prevent watersheds from reaching a state of being “impacted”, based on

the Impervious Cover Model[4], compensatory mitigation would be required for watersheds that are approaching or greater than 5 percent of total anthropogenic disturbance (impervious cover, agriculture, barren land, etc.) following construction of the project. Additionally, considering that urbanization can be focalized in relatively large undeveloped HUC 10 watersheds, the Corps analyzed HUC 12 sub-watersheds that would be traversed by the project, further increasing overall mitigation requirements. The Corps Determined that 7 HUC 12 watersheds would be cumulatively impacted, requiring compensatory mitigation to offset unavoidable losses to 229 acres of aquatic resources (See Table 5).

Table 5 Cumulatively Impacted Watersheds (HUC-12)

ECOREGION	HUC12	HUC12 NAME	SERVICE AREA	HGM	IMPACT ACRES
Northern	190604010104[5]	Prudhoe Bay-Frontal Beaufort Sea	PRM	DEPRESSIONAL	33.38
				FLAT	136.01
				RIVERINE	0.07
				LACUSTRINE FRINGE	0.02
Interior	190803060906	Cripple Creek	Tanana Bank	DEPRESSIONAL	0.03
				FLAT	32.45
				RIVERINE	0.38
	190803060907	Chena River	Tanana Bank	DEPRESSIONAL	3.82
	190803090703	O'Connor Creek	Tanana Bank	DEPRESSIONAL	0.42
				FLAT	6.24
				SLOPE	8.24
Southcentral	190204010503	Big Lake	SuKnik	FLAT	0.07
	190205050105		SuKnik	DEPRESSIONAL	0.85

[4] The majority of available scientific literature regarding impacts of development and urbanization on watersheds support that at approximately 10 percent of urbanization (impervious cover) watersheds become impacted to the point at which development measurably impacts the attributes of the watershed's aquatic resources, such as water quality, bank erosion, sedimentation, aquatic habitat, biodiversity, and macroinvertebrate, fish, and plant communities. Some studies have noted that urbanization begins to have a measurable influence on certain biological parameters (e.g., sensitive species) within watersheds at slightly lower threshold levels, ranging between 5 and 10 percent. The Impervious Cover Model developed from decades of aquatic system research has indicated that, "certain zones of stream quality exist, most notably at about 10 percent impervious cover, where sensitive stream elements are lost from the system" (Center for Watershed Protection, 2016)

ECOREGION	HUC12	HUC12 NAME	SERVICE AREA	HGM	IMPACT ACRES
		Little Montana Creek-Montana Creek		RIVERINE	0.32
	190205050605	Outlet Willow Creek	SuKnik	DEPRESSIONAL	3.09
				RIVERINE	3.45
Grand Total					228.85

[5] Includes additional acreage outside of HUC 190604010104 associated with the Gas Conditioning Facility

HGM – Hydrogeomorphic Classification

The Corps is additionally requiring compensatory mitigation for all wetlands that would be impacted within 500 feet of anadromous waterbody crossings to maintain the biological integrity of important fishery resources to the State of Alaska. The Corps has determined that compensatory mitigation is required for impacts to 76 acres of wetlands within 500 feet of anadromous waterbodies across 33 watersheds. Other considerations, regardless of the level of watershed impacts, included habitat/wetland segmentation (e.g., Prudhoe Bay), rare/or unique aquatic resources (avoided), critical habitat, impaired waterbodies, etc.

Table 6 Anadromous Waterbody Crossings Wetland Impacts by HUC-12 Watershed

ECOREGION	HUC12	HUC12 NAME	SERVICE AREA	HGM	ANADROMOUS (ACRES)
Northern	190604010103	Putuligayuk River	PRM	FLAT	0.22
				RIVERINE	<0.01
Interior	190803080903	Panguingue Creek	Tanana Bank	FLAT	0.53
				RIVERINE	0.40
	190803080907	Bear Creek	Tanana Bank	FLAT	2.91
				RIVERINE	0.04
				SLOPE	0.02
	190803080908	Nenana River	Tanana Bank	FLAT	0.72
	190803081307	Seventeenmile Slough-Nenana River	Tanana Bank	DEPRESSIONAL	1.16
				FLAT	1.13
				RIVERINE	2.44
	190803090108	West Fork Tolovana River	Tanana Bank	FLAT	1.42

ECOREGION	HUC12	HUC12 NAME	SERVICE AREA	HGM	ANADROMOUS (ACRES)
	190803090903	Hard Luck Creek-Chatanika River	Tanana Bank	DEPRESSIONAL	0.01
				RIVERINE	0.05
	190804040504	Smoothface Mountain-Yukon River	No Service Area	DEPRESSIONAL	0.11
				FLAT	1.52
	190901010503	Nugget Creek-Middle Fork Koyukuk River	No Service Area	DEPRESSIONAL	0.46
				FLAT	0.83
				RIVERINE	2.41
				SLOPE	0.12
	190901010602	Marion Creek	No Service Area	RIVERINE	0.10
	190901010604	Slate Creek	No Service Area	FLAT	0.00
				RIVERINE	0.03
				SLOPE	0.09
	190901020302	Eagle Creek-South Fork Koyukuk River	No Service Area	FLAT	0.42
				FLAT	2.07
				RIVERINE	0.93
				SLOPE	1.16
	190901020403	Outlet Prospect Creek	No Service Area	FLAT	0.95
				RIVERINE	1.42
				SLOPE	0.38
	190901020505	Douglas Creek	No Service Area	FLAT	0.17
				RIVERINE	2.35
				SLOPE	0.54
	190901020507	Grayling Creek-Jim River	No Service Area	DEPRESSIONAL	0.00
				FLAT	1.01
				RIVERINE	0.91
Southcentral	190205020103	Outlet Middle Fork Chulitna River	SuKnik, GLT or another approved provider	FLAT	0.98
				RIVERINE	1.89
				SLOPE	0.07
	190205020204	Outlet East Fork Chulitna River	SuKnik, GLT or another approved provider	RIVERINE	0.22

ECOREGION	HUC12	HUC12 NAME	SERVICE AREA	HGM	ANADROMOUS (ACRES)
	190205020403	Outlet Honolulu Creek	SuKnik, GLT or another approved provider	RIVERINE	0.89
	190205020414	Granite Creek-Chulitna River	SuKnik, GLT or another approved provider	RIVERINE	0.16
	190205020603	Byers Creek	SuKnik, GLT or another approved provider	RIVERINE	0.03
	190205021003	Cygnet Lake-Chulitna River	SuKnik, GLT or another approved provider	DEPRESSIONAL	0.12
				FLAT	1.20
				RIVERINE	1.22
				SLOPE	0.90
	190205050301	Trapper Creek	SuKnik, GLT or another approved provider	RIVERINE	0.78
	190205050304	Rabideux Creek	SuKnik, GLT or another approved provider	DEPRESSIONAL	0.38
				FLAT	1.60
				RIVERINE	3.46
				SLOPE	1.86
	190205050305	Twister Creek-Susitna River	SuKnik, GLT or another approved provider	DEPRESSIONAL	1.18
				FLAT	0.20
				RIVERINE	0.66
				SLOPE	0.27
	190205050306	Goose Creek	SuKnik, GLT or another approved provider	RIVERINE	0.03
	190205050307	Caswell Creek	SuKnik, GLT or another approved provider	FLAT	0.45
				RIVERINE	2.24
	190205050308			DEPRESSIONAL	0.19

ECOREGION	HUC12	HUC12 NAME	SERVICE AREA	HGM	ANADROMOUS (ACRES)
		Sheep Creek Slough-Susitna River	SuKnik, GLT or another approved provider	FLAT	0.28
				RIVERINE	1.49
	190205050505	Lower Little Willow Creek	SuKnik, GLT or another approved provider	DEPRESSIONAL	1.65
				RIVERINE	4.94
	190205051001	196 Mile Creek	SuKnik, GLT or another approved provider	RIVERINE	2.72
	190205051002	Delta Islands-Susitna River	SuKnik, GLT or another approved provider	DEPRESSIONAL	2.71
				RIVERINE	1.07
	190205051206	Butterfly Lake-Little Susitna River	SuKnik, GLT or another approved provider	DEPRESSIONAL	0.97
				FLAT	8.53
				RIVERINE	0.05
	190205051207	Diamond Lake-Little Susitna River	SuKnik, GLT or another approved provider	DEPRESSIONAL	0.47
				RIVERINE	0.10
	190205051302	Cow Lake-Fish Creek	SuKnik, GLT or another approved provider	RIVERINE	0.69
Grand Total					75.68

In total, the Applicant would be required to provide compensatory mitigation to offset unavoidable impacts to 305 acres of wetlands across 40 HUC-12 watersheds.

The Applicant would be required to use a combination of 3rd Party mitigation providers (banks / in-lieu fee) and permittee responsible mitigation (PRM) to offset the unavoidable losses of WOTUS identified by the Corps as requiring compensatory mitigation.

The applicant's mitigation plan, dated September 13, 2018, would provide appropriate and adequate compensatory mitigation necessary to offset unavoidable losses in aquatic functions that would result from impacts to WOTUS, including wetlands, associated with

construction of the proposed project. The applicant proposes purchasing compensatory wetland mitigation bank credits from the Corps approved Tanana Mitigation Bank in the Interior Ecoregion and the Su-Knik Mitigation Bank, Great Land Trust, or another approved provider in Southcentral Ecoregion. For the Northern ecoregion, the applicant is limited to PRM at this time to offset unavoidable losses considering that there are no existing 3rd Party compensatory wetland mitigation providers with an approved service area in this ecoregion. The Applicant explored several potential projects identified by the Alaska Department of Natural Resource, none of which proved to be appropriate or practicable.

North Ecoregion (North Slope)

The ACP comprises several watersheds that are hydrologically connected by nearly contiguous palustrine, lacustrine, and estuarine wetlands. Hydrologic functions across the ACP are connected due to minimal topographic relief. The key functions of ACP wetlands include nutrient cycling, waterfowl habitat, avian nesting and foraging, terrestrial mammal foraging, and carbon sequestration. Considering that watershed boundaries are not distinctly separated on the ACP, compensatory mitigation options can be expanded outside HUC 10 watershed boundaries and still appropriately offset aquatic resource functional losses. Expanding the analysis for compensatory mitigation opportunities outside of the HUC 10 watershed of the project impact area is consistent with the flexibilities identified in the 2018 EPA/DA Memorandum of Agreement.

The Applicant would be required to compensate for 169.7 acres (146.2 debits) of unavoidable impacts to predominately palustrine wetlands. Currently, there are no 3rd party mitigation banks or in-lieu fee (ILF) programs with service areas covering this ecoregion. Therefore, practicable compensatory wetland mitigation is limited to PRM. To date, no appropriate and practicable PRM opportunities, other than preservation, have been identified. Considering the abundance of contiguous homogeneous wetlands on the ACP, preservation is generally a lower priority to offset aquatic resource functional losses.

PRM projects that restore previously degraded areas, critical habitat, altered landscape hydrology, habitat segmentation, and/or improve degraded water quality conditions are environmentally preferable. The Applicant has and will continue to explore opportunities to provide funds to a 3rd party provider (Mitigation Bank or ILF) to execute restoration projects on the ACP. Opportunities currently being explored include the establishment of a wetland mitigation fund administered by a 3rd party provider and/or developing mitigation plans for projects identified on the ADEC's Village Safe Water program. In consideration of the mitigation preference referenced above, the Corps would not allow wetland credit types consisting of preservation to compensate for unavoidable losses to wetlands unless the applicant clearly demonstrates that appropriate aquatic restoration opportunities are not available at the time of proposed implementation.

The proposed preservation parcels are pristine and provide important biological functions that would significantly contribute to the sustainability of the ecological functions of the ACP. The Project components in the Prudhoe Bay region are in an area of concentrated industrial development. Development in Prudhoe Bay and the continual westward

expansion of oil and gas development into Kuparuk, Alpine, Colville River Delta, and the National Petroleum Reserve-Alaska has resulted in cumulative impacts to the functions that ubiquitous wetlands provide across the ACP.

The Corps has determined that protecting central and western ACP wetlands under threat of development through preservation would provide a meaningful offset to the unavoidable losses associated with the proposed project. The specific parcels identified that contain in-kind predominately palustrine wetlands, all of which provide habitat important to species that are listed under the ESA include the following (listed in order of preference):

1. Cape Halkett, owned by Arctic Slope Regional Corporation;
2. A parcel near the Naval Arctic Research Laboratory owned by Ukpeagvik Inupiat Corporation in Utqiagvik, or
3. Land within the Meltwater East region, which abuts the Kuparuk Oil and Gas Development Unit owned by the North Slope Borough.

The preservation parcel(s) would be protected with conservation easements, deed restrictions, transfers of title to a non-profit conservation organization, etc. and include assurances that the supporting hydrology will also be protected in perpetuity.

Interior Ecoregion

The Corps has determined that purchasing in-kind 3rd party mitigation bank or In-lieu Fee credits would appropriately offset unavoidable losses in the Interior Ecoregion. The applicant is required to compensate for 62.41 acres of unavoidable wetland impacts in the Interior Ecoregion through the purchase of mitigation credits from the Tanana Watershed Umbrella Stream and Wetland Mitigation Bank (Tanana Bank) or other 3rd party provider. Debit calculations must be provided and approved by the Corps prior securing the third party credits for the ASAP Project.

Southcentral Ecoregion

The Corps has determined that purchasing in-kind 3rd party mitigation bank or In-lieu Fee credits would appropriately offset unavoidable losses in the Southcentral Ecoregion. The applicant is required to compensate for 54.5 acres of unavoidable wetland impacts in the Southcentral Ecoregion through the purchase of mitigation credits from the SuKnik Wetland Mitigation Bank, or other 3rd Party provider. Debit calculations must be provided and approved by the Corps prior securing the third party credits for the ASAP Project.

Additional information available within the applicant's *Wetlands Compensatory Mitigation Plan*, dated September 13, 2018 (Appendix G to the JROD).

Other Mitigative Actions

The FSEIS included a number of Applicant proposed mitigation measures to reduce or offset impacts that fall outside of the Corps responsibility and generally cannot be practicably controlled by the Corps, such as mitigation for traffic, air quality, and noise impacts.

Some of the mitigation measures are requirements of the land use agency (i.e. ADNR, BLM, NPS) and are addressed by stipulations contained in ROW lease agreements. As such, enforcement of these mitigation measures is the responsibility of pertinent land management agency and not the Corps.

Direct and indirect impacts to special aquatic sites would occur as a result of construction of the Project. These impacts are described in Chapter 4 of the Final FSEIS and summarized in Appendix K, Part 1, Evaluation of Compliance with 404(b)(1) Guidelines and Appendix K, Part 2, Public Interest Review Factor Assessment in this JROD.

Impacts to these functions and values would occur by the direct filling of wetlands with gravel material to construct the Project, excavation of gravel mines, water withdrawal, trenching, construction of ice roads and ice pads, tundra travel, and other operational activities. These activities would result in secondary impacts such as: deposition of dust, development of thermokarsts, and temporary and permanent changes to wetland vegetation and hydrology within the Project area.

Avoidance and minimization measures are described in detail throughout Chapter 4 and Appendix M of the Final FSEIS. In general, wetland impacts would be reduced through minimization of the total wetland acres impacted by routing the pipeline corridor in uplands to the extent practicable and through application of BMPs during construction and operation activities. When possible, scheduling some of the construction activities during frozen ground conditions also helps reduce impacts to WOTUS.

In addition, as described in the Applicant's initial statement on compensatory mitigation, "the Applicant will avoid additional impacts to the Prudhoe Bay watershed by modifying the engineering design of a material site that was partially located in a degraded North Slope watershed (HUC 190604010104). The engineering design would be modified to allow a deeper cut on the adjacent un-impacted watershed, thereby minimizing cumulative impacts to the degraded watershed.

The Applicant designed the GCF pad to align over a large area of relic "tractor tracks" that have severely degraded the permafrost and resulted in altering surface water hydrology along a linear path. By placing gravel over this degraded habitat, the gravel fill will insulate the underlying permafrost and reduce, if not eliminate, additional thaw in the area. The Applicant considers this an avoidance measure by impacting lower quality habitat, thus reducing the overall functional loss in the ACP (AGDC, 2018).

Appendix I4 - Determinations

These determinations are based on consideration of the final Project description and the imposition of Special Conditions in the DA permit (reference JROD Appendix F).

SECTION 176(C) OF THE CLEAN AIR ACT GENERAL CONFORMITY RULE REVIEW

The proposed permit action has been analyzed for conformity applicability pursuant to regulations implementing Section 176(c) of the Clean Air Act. It has been determined that the activities proposed under this permit will not exceed *de minimis* levels of direct or indirect emissions of a criteria pollutant or its precursors and are exempted by 40 CFR Part 93.153. Any later indirect emissions are generally not within the Corps' continuing program responsibility and generally cannot be predictably controlled by the Corps. For these reasons, a conformity determination is not required for this permit action.

The proposed project would involve construction of a pipeline that would laterally extend off the main line into the city of Fairbanks, within a nonattainment area for particulate matter, $PM_{2.5}$. An emissions inventory and general conformity applicability analysis was completed on January 21, 2016 and submitted to the Alaska Department of Environmental Conservation (ADEC). On March 9, 2016, ADEC confirmed that the proposed "project is below the *de minimis* threshold of 100 tons per year and therefore a full general conformity analysis is not required."

U.S. ARMY CORPS OF ENGINEERS TRIBAL CONSULTATION POLICY

This policy provides an outline of the Corps' responsibilities to federally recognized Tribes as well as a framework for consulting with them. The Corps identified 21 federally recognized tribes potentially affected by the Project. The Corps sent multiple letters of notification and inquiry to the 21 tribes offering the opportunity to participate in formal government-to- government consultation, to participate as a cooperating agency, or to simply receive information about the Project. Communication with potentially affected tribal governments continued throughout the course of the Project. Input from Tribes was considered throughout the NEPA, National Historic Preservation Act, and permit evaluation processes. JROD Appendix A includes a record of tribal communication and consultation.

Consultation with Federally recognized Tribes and completion of the process and analysis contained within this document has fulfilled the responsibilities outlined in the Corps' Tribal Consultation Policy. Tribal Consultation on this project will be ongoing for the life of the November 29, 2018, Programmatic Agreement which was developed to satisfy Section 106 of the NHPA.

EXECUTIVE ORDER 11988, FLOODPLAIN MANAGEMENT

☐ This action is not located in a floodplain

☒ The evaluations in this document considered alternatives to locating the Project in the floodplain, and minimizing and compensating for effects on the floodplain.

EXECUTIVE ORDER 12898 ENVIRONMENTAL JUSTICE

In accordance with Title III of the Civil Rights Act of 1964 and Executive Order 12898, it has been determined that the Project will not directly or through contractual or other arrangements, use criteria, methods, or practices that discriminate on the basis of race,

color, or national origin; nor will it disproportionately affect minority or low-income communities.

EXECUTIVE ORDER 13112, INVASIVE SPECIES

☐ There were no invasive species issues involved.

☐ The evaluation in this document included invasive species concerns in the analysis of effects at the Project site and associated compensatory mitigation.

☒ Through special conditions, the permittee will be required to control the introduction and spread of exotic species.

EXECUTIVE ORDER 13302: AMENDING EXECUTIVE ORDER 13212, ACTIONS TO EXPEDITE ENERGY-RELATED PROJECTS:

☐ The Project would not increase the production, transmission, or conservation of energy, or strengthen pipeline safety.

☒ This review was expedited or other actions were taken to the extent permitted by law and regulation to accelerate completion of this energy-related (including pipeline safety) Project while maintaining safety, public health and environmental protections.

EXECUTIVE ORDER 13547, STEWARDSHIP OF THE OCEAN, OUR COASTS, AND THE GREAT LAKES:

☐ Not applicable.

☒ The Project would not adversely affect America's stewardship of the ocean, coasts, or Great Lakes.

☐ The Project would adversely affect America's stewardship of the ocean, coasts, or Great Lakes.

FINDINGS OF COMPLIANCE OR NON-COMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE. (SEC. 230.12 OF THE 404[B][1] GUIDELINES):

☐ The proposed site for discharge of dredged or fill material complies with the Section404(b)(1) guidelines.

☒ The proposed disposal site for discharge or dredged or fill material complies with Section 404(b)(1) guidelines with the inclusion of conditions contained in this JROD.

☐ The proposed disposal site for discharge of dredged or fill material does **not** comply with the Section 404(b)(1) guidelines for the following reasons:

☐ There is a less damaging practicable alternative

☐ The proposed discharge will result in significant degradation of the aquatic ecosystem

☐ The proposed discharge does not include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem.

- Page Intentionally Left Blank -

Appendix J

BLM Supporting Documentation

- Page Intentionally Left Blank -

Appendix J –BLM Supporting Documentation

APPENDIX J1	BLM Selected Design Features, Mitigation Measures, and Best Management Practices and Permit Requirements
APPENDIX J2	BLM Standard Stipulations for Mineral Material Disposal
APPENDIX J3	BLM Standard Stipulations for Mineral Material Sales – Phasing Plan Example
APPENDIX J4	BLM Timber Clearing, Salvage, and Utilization Standards
APPENDIX J5	BLM Revegetation, Restoration, and Reclamation Standards
APPENDIX J6	BLM ANILCA Section 810 Analysis Summary
APPENDIX J7	BLM Related Authorities, Policies, Regulations, and Guidance
APPENDIX J8	BLM's Mitigation Determination
APPENDIX J9	BLM ROW Grant, Associated Authorizations and Requirements

Appendix J1 - BLM Selected Design Features, Mitigation Measures, and Best Management Practices and Permit Requirements

BLM ID#	ID# from SEIS Appendix M	BLM Selected Applicant-Proposed Avoidance, Minimization, Mitigation Measures, and Best Management Practices	Clarification of Mitigation for BLM-administered lands
		SOILS & GEOLOGY	
BLM 1	2	Layout of Material Sites - In areas where a lease is required from State Pipeline Coordinator's Section (SPCS) or a federal grant of right-of-way (ROW) is required from the Bureau of Land Management (BLM), material site boundaries would be shaped in such a manner as to blend with surrounding natural land patterns. Regardless of the layout of material sites, primary emphasis would be placed on prevention of soil erosion and damage to vegetation.	
BLM 2	3	Mitigation for Frost Heave or Thaw Settlement - Frost heave could be mitigated by replacing frost susceptible soil with non-frost susceptible borrow material, by controlling the operational pipe temperature, by applying insulation to control ground freezing, and possibly by providing drainage measures to control moisture migration. Thaw settlement could be mitigated by replacing thaw unstable soils with compact structural fill, by installing thermosyphons or applying insulation to control ground thawing in localized areas, or by controlling the operational pipe temperature. During construction, ice content of soils would be collected at regular intervals to determine a suitable mounding height, as indicated in the Comparative Belowground Designs and Return of Wetlands RFI response (Appendix E, Part IV) in order to determine the appropriate crown height for expected settlement of land over the ditch.	BLM requires additional revegetation and reclamation measures beyond that proposed in Appendix E of the 2018 FSEIS. Alaska Gasline Development Corporation (the Applicant) will be required to submit detailed revegetation and reclamation plans to the BLM Authorized Officer for review and approval per BLM ROW Grant Stipulations. The plans must meet BLM standards for revegetation and reclamation in Appendix J5.
BLM 3	4	Monitoring would be conducted by air, ground, and on foot surveys, through ILI surveys' and through Supervisory Control and Data Acquisition (SCADA). Monitoring and maintenance surveys would be conducted during the dormant period and operational phase. Implement a programmatic maintenance cycle standard of "Monitor, Detect, Correct" to ensure prompt attention and correction for soil erosion and water management issues identified after construction and during operations. Monitoring Curvature Along the proposed pipeline through ILI surveys - The use of a high resolution inertial navigation system (INS) based geometry tool would result in the highest level of survey accuracy. An initial/baseline geometry survey of the proposed pipeline would occur as soon as practicable after construction. Survey-to-survey curvature changes could be used as a basis for estimating the rate of curvature accumulation at any areas of concern. Integrating Security - Effectively integrating security into SCADA requires defining and executing a comprehensive program that addresses all aspects of security, ranging from identifying objectives to day-to-day operation and ongoing auditing for compliance and improvement. Elements of this program are defined in NIST SP 800-82 as: Obtain senior management buy-in. Build and train a cross-functional team. Define charter and scope. Define specific SCADA and control system policies and procedures. Define and inventory SCADA and control system assets. Perform a risk and vulnerability assessment. Define the mitigation controls. The mitigation controls include business continuity planning, disaster recovery planning, configuration management, malicious code detection, intrusion detection system (IDS), and change management. These documented controls would be developed during design and integrated into the SCADA and automation systems. Provide training and raise security awareness for SCADA and control system staff.	
BLM 4	6	Permafrost Impact Mitigation - Minimize impacts to continuous permafrost through the following methods for winter construction: use of ice roads, ice pads, and snow packing; trench depth for the pipeline to at least 6 feet in permafrost ; keep dormant period to two years or less during construction and testing; operate an ambient temperature pipeline, which is below-freezing and protects permafrost between milepost (MP) 0 and MP 168; maintain areas with excessive ponded water in or near the filled trench; employ prompt maintenance staff, as needed. Increase efforts for maintenance during first several years after construction ; stabilize permafrost through revegetation over the settled crown - includes mixtures of annuals and native seed; implement stabilization through revegetation promptly after construction in sensitive areas ; allow native plant recruitment to increase over time. In non-sensitive areas, scarification outside the permanent ROW would occur, which would help to facilitate natural recolonization. After 3 years, if the reclamation standard of 30% basal cover isn't met, additional measures, such as re-seeding and fertilization, would occur. For sensitive areas vulnerable to erosion (sloped areas and Arctic Coastal Plain), re-seeding would occur immediately using the prescribed seed mix in the Revegetation Plan (Appendix E, Part I).	BLM requires additional revegetation and reclamation measures beyond that proposed in Appendix E of the 2018 FSEIS. The Applicant will be required to submit detailed revegetation and reclamation plans to the BLM Authorized Officer for review and approval per BLM ROW Grant Stipulations. The plans must meet BLM standards for revegetation and reclamation in Appendix J5.

BLM ID#	ID# from SEIS Appendix M	BLM Selected Applicant-Proposed Avoidance, Minimization, Mitigation Measures, and Best Management Practices	Clarification of Mitigation for BLM-administered lands
BLM 5	7	Segregation of the Surface Layer - The proposed Project would entail segregating the surface layer (a thin layer that typically consists of a combination of loose surficial herbaceous material consisting of small shrubs, vegetation, and woody debris, overlaying a thin organics layer and weak, compressible mineral soils) and replacing it as the last layer of backfill in the trench only within designated agricultural lands and in select continuous and discontinuous permafrost areas and permafrost free areas (as discussed in the Applicant planning document, Segregation of the Surface Layer [the Applicant, 2017c] and in the Revegetation Plan [Appendix E, Part I]). In most locations along the pipeline trench, the surface layer would not be segregated from subsoils and a subsoil-surface layer mixture would be used as general back-fill. The surface layer would be segregated along approximately one quarter of the pipeline length. Construction in wetland areas of Alaska is commonly conducted when the soils are frozen and able to provide support for construction equipment. The Applicant considers replacement of the surface layer to be impracticable when construction is done in winter, which would affect wetlands areas.	BLM requires additional revegetation and reclamation measures beyond that proposed in Appendix E of the 2018 FSEIS. The Applicant will be required to submit detailed revegetation and reclamation plans to the BLM Authorized Officer for review and approval per BLM ROW Grant Stipulations. The plans must meet BLM standards for revegetation and reclamation in Appendix J5.
BLM 6	8	Restoration and Revegetation - In areas where a lease is required from SPCS or a federal grant of ROW is required from BLM, revegetation of disturbed areas on state/federal land would be conducted as soon as practicable and, if necessary, would be repeated until revegetation is successful, unless otherwise approved by SPCS/BLM. Surface materials (i.e., logs, trees, vegetation, boulders, and soils) taken from disturbed areas would be stockpiled and utilized during restoration unless otherwise approved by SPCS/BLM. Stabilization practices, as determined by the needs for specific sites, would include but shall not be limited to the placement of mat binders, soil binders, rock, or gravel blankets or structures. All disturbed areas of state / federal land would be left in such stabilized condition that erosion in excess of natural rates would be minimized until the practicable restoration and revegetation of the leasehold could be accomplished in a manner that is reasonably satisfactory to SPCS/BLM. Areas on state / federal land disturbed by the Applicant would be restored by the Applicant to the reasonable satisfaction of SPCS/BLM, as stated in writing. Vegetation, overburden, and other materials removed during clearing operations would be disposed of by the Applicant. Upon completion of the restoration on state / federal land, the Applicant would remove all equipment and supplies from the site. Installation of the pipeline would occur in winter using proven design measures, installation practices, and equipment common to other arctic pipelines to facilitate safe installation and prompt revegetation, as indicated in the Comparative Belowground Designs and Return of Wetlands RFI response (Appendix E, Part IV). Prompt revegetation of wetlands and uplands in arctic and interior Alaska would occur by implementing proven ADNR Plant Materials Center revegetation practices and cover standards that have been successfully implemented for other ground disturbed areas in these regions, as indicated in the Comparative Belowground Designs and Return of Wetlands RFI response (Appendix E, Part IV).	BLM requires additional revegetation and reclamation measures beyond that proposed in Appendix E of the 2018 FSEIS. The Applicant will be required to submit detailed revegetation and reclamation plans to the BLM Authorized Officer for review and approval per BLM ROW Grant Stipulations. The plans must meet BLM standards for revegetation and reclamation in Appendix J5.
BLM 7	9	Stabilization of Soils and the Buried Pipe - Use of thaw-stable material where possible. Re-seed, re-vegetate, and, as appropriate, fertilize in areas of continuous and discontinuous permafrost. Use of in-line inspection devices (smart pigs) to regularly detect longitudinal strain, primarily in continuous and discontinuous permafrost potentially related to slumping or heaving to facilitate prompt maintenance response.	
BLM 8	10	Surveillance and Monitoring - In areas where a lease is required from SPCS or federal grant of ROW is required from BLM, a surveillance and monitoring program for the proposed pipeline would be approved by SPCS/BLM prior to start-up of the proposed pipeline. The program shall be designed at a minimum to prevent and mitigate erosion, maintain pipeline integrity, and monitor any pipeline movement that may affect integrity. BLM/SPCS lease stipulations would be used to develop similar policies for other landowners.	
BLM 9	12	Water Management - Implement adequate water management during construction and maintenance phases: Install ditch plugs where appropriate, as determined by environmental engineers. Crown the ditch to allow settlement near to ground level to avoid having the filled trench slump and catch water or avoid runoff erosion. Contour terrain, as needed, to direct water. Maintain natural water flowpaths through the centerline. Utilize culverts, bridges or other infrastructure as determined by civil engineers. Implement a maintenance program to manage water flow and ensure prompt maintenance after conditions are reported.	The Applicant will be required to submit a detailed construction plans for erosion and sedimentation control to the BLM Authorized Officer for review and approval per BLM ROW Grant stipulations.

BLM ID#	ID# from SEIS Appendix M	BLM Selected Applicant-Proposed Avoidance, Minimization, Mitigation Measures, and Best Management Practices	Clarification of Mitigation for BLM-administered lands
BLM 10	169	Establish a Revegetation Plan (Appendix E, Part I) with Alaska Department of Natural Resources (ADNR) Plant Materials Center; revegetate promptly after construction. Where required, re-grade construction disturbances to a condition that blends with the surrounding terrain and surface drainage patterns. Rely upon wind dispersal of seeds from plant species in the area to naturally recolonize the site. Upon completion of seedbed preparation, construction areas would be left unseeded to allow for natural revegetation/recolonization of the site. For areas that do not meet the revegetation criteria (cover and density standard) within the time standard (usually 3 years), seeds would be planted or some form of adaptive management considered.	BLM requires additional revegetation and reclamation measures beyond that proposed in Appendix E of the 2018 FSEIS. The Applicant will be required to submit detailed revegetation and reclamation plans to the BLM Authorized Officer for review and approval per BLM ROW Grant Stipulations. The plans must meet BLM standards for revegetation and reclamation in Appendix J5.
BLM 11	170	Plans for construction, operation, maintenance, and termination: In areas where a lease is required from the SPCS or a federal grant of ROW is required from BLM, the Applicant would submit to the SPCS /BLM for approval the following plans, each of which would cover construction, operation, maintenance, and termination activities: Pipeline trench backfill methods. Disposal of trench spoils (a mixture of surface layer and subsoil) and excess and excavated material. At the completion of operations, aboveground facilities would be removed and stabilized/revegetated to the satisfaction of the landowner. Buried pipeline would be left in the ground, which would have the least harmful impacts to the land.	
BLM 12	171	Excavated Material - In areas where a lease is required from the SPCS or a federal grant of ROW is required from BLM, excess excavated material would be disposed of in accordance with approved construction plans during construction and as approved by the SPCS/BLM during operation, maintenance, and termination of the pipeline. Excavated materials would not be stockpiled in rivers, streams, active floodplains, or wetlands unless approved by the SPCS/BLM regulatory agencies and designated as an appropriate storage or disposal location by the terms of the lease.	Per 43 Code of Federal Regulations (CFRC 2885.13(c), excess excavated material remains the property of the United States. The Applicant will be required to submit a plan addressing excess excavated material to BLM for review and approval BLM ROW Grant stipulations. At a minimum, the plan shall identify proposed stockpile locations, material type, estimated quantities by type of material, and proposed measures to protect stockpiled material from loss due to erosion. The Applicant will mark stockpiles of excess material in a manner approved by BLM in order to clearly distinguish them from materials that will be used for construction of the pipeline. BLM may, at its discretion, dispose of marked excess material stockpiles.
		WATER	
BLM 13	14	Pipeline Temperature - To maintain the existing thermal regime and protect the stability of water resources, the proposed pipeline would remain at or near the ambient soil temperature and would not be chilled or heated for transport.	

BLM 14	15	Stream Flow Regimes & Profiles - Stream characteristics and riparian areas would be restored to preconstruction conditions to the maximum practicable extent. Maintain, to the maximum extent practicable, existing surface water hydrology at waterbody crossings: Prevent discharges that have the potential to adversely affect waterbodies. Stabilize cut slopes immediately when design grade is obtained. Initiate reclamation of disturbed areas as soon as is practicable. Ensure water withdrawals meet federal and state standards and guidelines. Keep construction activities within the pipeline ROW and proposed Project footprint. Perform water crossings in a manner that minimizes effects to water quality, including use of materials that do not introduce sediment or other harmful substances into waters when using isolated open cut. For culvert and bridge installation and maintenance in fish bearing streams, the Applicant would be required to obtain a Fish Habitat Permit from Alaska Department of Fish and Game (ADF&G) and would refer to ADF&G guidance documents for the design and maintenance of stream crossing structures.	In order to address this concern while meeting the intent of the RMP, the following stipulation will be in the grant: All fuel containers, including barrels and propane tanks, shall be marked with the responsible party's name, product type, and dates filled or brought on the lease. In bulk storage or staging areas, a single label is sufficient. No fuel storage shall be allowed within the 100-year floodplain of any lake or stream. All fuel transfer operations and equipment maintenance with the potential to release fluids shall be conducted outside of the l00-year floodplain of any water body, except in portions of spreads where the Holder demonstrates to the Authorized Officer in advance that moving equipment out of the floodplain for fueling or maintenance is impractical or unsafe. In such circumstances, fueling or maintenance with the potential to release fluids in the floodplain shall be conducted with the following risk management measures: a. Position away from water/ice: both the delivering and receiving vessel shall be positioned as far from the waterline or ice line as can be done safely and practically. b. Contain overfills or spills and protect the soil: The space between the delivering and receiving vessel shall be covered with an impermeable containment device with sufficient volume to contain a minimum of 100 gallons of fuel with an additional 100 gallons of freeboard (a rectangular vessel 4 ft. by 8 ft. by 9 in. deep with meets this criteria), or the total volume of the delivering vessel, whichever is less. When adequate snow is present, this may be an impermeable liner placed in a trough created in the snow and supported on the sides with blocking. Alternately, a manufactured containment vessel, commonly known as a "duck pond," may be used, provided it meets the volume requirements.

BLM ID#	ID# from SEIS Appendix M	BLM Selected Applicant-Proposed Avoidance, Minimization, Mitigation Measures, and Best Management Practices	Clarification of Mitigation for BLM-administered lands
			c. Protect the waterline: Lengths of 8" oil-only absorbent boom totaling at least twice the length of the receiving vessel shall be placed between the receiving vessel and the water/ice line, and positioned so that the ends curve away from the water/ice line.
BLM 15	16	General Pipeline Stream Crossing Best Management Practices (BMP) - the Pipeline Stream Crossing Construction Mode Determination, describes 32 BMPs for pipeline stream crossings and include: Locate extra work areas (e.g., fabrication and staging areas) at least 50 feet from water's edge when practical, and no less than 30 feet from the water's edge when approved. Locate fueling and fuel storage at least 100 feet from streams and waterbodies. When conditions require refueling within 100 feet of waterbodies, the Contractor must implement a preapproved spill prevention and cleanup plan. Limit extra work area sizes to that needed to construct the stream crossing. Ensure all established erosion and sediment control measures are implemented across the work area. Store as much instream spoil on the banks as is practical (additional temporary workspace may be required). When placing spoils in the active channel, deposit spoils in long piles oriented parallel to flow to minimize erosion, avoiding areas of highest water velocity. Construct berms or other sediment barriers to prevent saturated spoils on banks from flowing back into the waterbody. If working at a dry crossing, berms would not likely be required unless groundwater and saturated spoils are encountered. Retain a 30-foot buffer from the stream bank of undisturbed vegetation during initial clearing, except where needed, for equipment crossing. Sediment control measures would be in place prior to construction within the 30-foot vegetation buffer. Limit clearing of vegetation between the waterbody edge and extra work areas to the proposed Project ROW.	See clarification on BLM 14. The Applicant will be required to submit a detailed construction plans for stream, river and floodplain crossings, as well as groundwater control, to the BLM Authorized Officer for review and approval per BLM ROW Grant stipulations.
BLM 16	17	General Pipeline Stream Crossing BMPs - (Attachment 12 Continued): Salvage and store vegetation layer to aid in bank reclamation following construction. Grading of stream banks for trenching equipment would be limited to the trench line. Grading of work areas would be directed away from the waterbody to minimize runoff entering the waterbody. Temporary or permanent vehicle crossings may be constructed, as required. Maintain natural stream flow rates at all times. Retain undisturbed native soils (hard plugs) between the stream and overbank trench. These would remain in place during instream excavation to prevent diversion into the open trench. Trench plugs would be removed immediately prior to pipe placement and backfilled once the pipe is in place. Install trench breaker (soft plug) adjacent to waterbody where consolidated soils or organic materials are prone to washing out. If necessary, install soft plugs and dewater trench in a manner that does not cause erosion and inhibits silt-laden water from entering the waterbody. When performing instream blasting, implement blasting methods that minimize overall shockwave, deploy air bubble curtains to dampen shockwave, limit blasting to times of least environmental/biological impact, displace fish from blast area using approved methods, use confined explosives, and avoid using ammonium nitrate based explosives. Install approved instream sediment controls, such as sediment mats or geotextile blankets, as necessary. Complete fabrication (welding, coating, weighting) and testing of instream pipe string well in advance of completing instream trenching activities. Utilize "push-pull" or "float" techniques to place pipe in trench whenever conditions allow. Place pipe in trench and backfill immediately. Restore stream channel to approximate preconstruction profile using clean gravel or native materials for the upper 1 foot of backfill. In areas where a lease is required from SPCS or federal grant of ROW from BLM, no blasting would be done underwater or within one-quarter mile of streams or lakes with identified sensitive wildlife habitat without approval.	

BLM ID#	ID# from SEIS Appendix M	BLM Selected Applicant-Proposed Avoidance, Minimization, Mitigation Measures, and Best Management Practices	Clarification of Mitigation for BLM-administered lands
BLM 17	18	Backfilling generally consists of replacing the excavated material, however, clean gravel may be used as backfill when excavated materials increase potential downstream sedimentation, increase scour potential, or do not provide sufficient groundwater flow around the pipe. Where surface layer material has been segregated, in the case of an armor layer overlying fine grain materials, subsurface material would be replaced in the stratified order it was removed. Prior to backfilling, the trench would be dewatered as necessary. The pump intake shall be suspended above the trench bottom and water discharged over a well vegetated upland area with appropriate energy dissipation; splash pup, splash plate, plastic liner, non-woven sediment filter bag, or straw bale dewatering structure. Dewatering activities would be performed such that no silt-laden water is discharged to the stream. Backfill from the center of the stream towards the bank to direct silt-laden water toward the plugs where it could be pumped and discharged. Lower bucket into water before releasing backfill. It is the Contractor's responsibility to meet the necessary water quality standards and requirements set forth by regulatory agencies. No backfill crown would be placed in the waterway. Ensure that the channel profile and gradient are returned to preconstruction conditions. Ensure backfill is well compacted on approach slopes and stream banks. Stabilize banks and install temporary sediment barriers within 24 hours of completing instream construction. For isolated trenching, restore channel geometry and stabilize banks prior to returning flow to the watercourse. Grade banks back to preconstruction contours when practical, or to an approved stable angle of repose. All instream work would comply with construction timing windows and conditions permitted by the appropriate regulatory agencies and applicable permits. Ideally, all instream work would be completed within 24 hours on minor streams and 48 hours on intermediate and major waterways when conditions allow. Vegetative stabilization techniques are preferred where feasible. If soil and/or flow conditions dictate use of riprap or non-native materials (e.g., geogrids) for bank stabilization their placement must comply with authorizing agencies. Install permanent erosion and sedimentation control measures, including revegetation of riparian areas. Clean-up water crossing work areas immediately following backfill and erosion control installation. When winter clean-up is impacted by frozen spoils complete rough clean-up prior to breakup and final clean-up after breakup.	The Applicant will be responsible for compliance, including compliance by their contractors and subcontractors, with all terms and conditions of the ROW Grant, for all aspects of work conducted during the construction, operations, maintenance and termination of the pipeline and related facilities. Responsibility for compliance may not be delegated to contractors or subcontractors. The Applicant will be required to submit detailed construction plans for erosion and sedimentation control to the BLM Authorized Officer for review and approval per BLM ROW Grant stipulations.
BLM 18	19	Restoring Stream Characteristics and Riparian Area - Following construction, stream characteristics and riparian areas would be restored to preconstruction conditions to the maximum practicable extent as described below by: • Salvaging and storing the vegetation layer to aid in bank reclamation following construction. • Stabilizing cut slopes immediately when design grade is obtained and installing temporary sediment barriers within 24 hours of completing instream construction. • Ensuring backfill is well compacted on approach slopes and stream banks. • Using vegetative stabilization technique where feasible unless soil and/or flow conditions dictate use of riprap or non-native materials (e.g., geogrids) for bank stabilization. Immediately restoring stream channel to approximate preconstruction profile using clean gravel or native materials for the upper one foot of backfill.	
BLM 19	20	Minimize the Number of River and Stream Crossings – • Use existing bridges where feasible. • Use horizontal directional drilling (HDD) or other trenchless technology to minimize disturbance to water bodies. • Perform water crossings in a manner that minimizes effects on water quality. • Use materials for dam construction that do not introduce sediment or other harmful substances into waters when using the open-cut isolation method. • Use materials for the flume pipe system that do not introduce sediment or other harmful substances into waters when using the open-cut isolation method. • Position flume pipe system discharges to prevent erosion or scouring. • Use temporary bridges for transportation as practicable.	
BLM 20	21	• Sediment Control Measures - At waterbody crossings, the Applicant would install sediment control measures prior to and during construction and maintain the exiting surface water hydrology and bank stability to the maximum extent practicable at waterbody crossings.	

BLM ID#	ID# from SEIS Appendix M	BLM Selected Applicant-Proposed Avoidance, Minimization, Mitigation Measures, and Best Management Practices	Clarification of Mitigation for BLM-administered lands
BLM 21	23	Chemicals - In areas where a lease is required from SPCS or where a federal grant of ROW is required form BLM, the Applicant would use only non-persistent and immobile types of pesticides, herbicides, preservatives, and other chemicals. Each chemical to be used and its application constraint would be approved by SPCS or the Authorized Officer (BLM) prior to use. The use of pesticides and herbicides are regulated by the Alaska Department of Environmental Conservation's (ADEC) Environmental Health Division through 18 Alaska Administrative Code (AAC) 90 and may require a permit.	The use of herbicides and chemicals for treatment of non-native invasive species on BLM-administered land is governed by what has been analyzed in the annually updated *Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (BLM, 2007b).* The Applicant will be required to submit Hazardous Materials, Substance Management, Pesticides, Herbicides, Preservatives, and Other Chemicals Plans to the BLM Authorized Officer for review and approval per BLM ROW Grant Stipulations.
BLM 22	24	Disturbance of Natural Waters - In areas where a lease is required from SPCS or a federal grant of ROW is required from BLM, all activities of the Applicant in connection with the proposed pipeline that may create new lakes, drain existing lakes, significantly divert natural drainage and surface runoff, permanently alter stream or groundwater hydrology, or disturb significant areas of streambeds are prohibited unless such activities and necessary mitigation measures are approved by SPCS / BLM. The temperature of natural surface water or groundwater would not be significantly changed by the proposed pipeline or by any construction, maintenance, operation, or termination related activities so as to adversely affect the natural surface water or groundwater, unless approved by SPCS / BLM.	
BLM 23	25	Erosion and Sedimentation - In areas where a grant is required from SPCS/BLM, erosion control measures would be maintained to limit induced and accelerated erosion, limit sediment production and transport, and lessen the possibility of forming new drainage channels during construction, operation, maintenance, and termination of the proposed pipeline.	
BLM 24	26	Pollution Control – • In areas where a grant is required from SPCS/BLM, in the construction, operation, maintenance, and termination of the proposed pipeline, the Applicant would perform its activities in accordance with applicable air and water quality standards and related facility siting standards and plans. Mobile ground equipment would not be operated in or on lakes, streams, or rivers on state/federal land unless approved by SPCS/BLM Authorized Officer. Refueling of excavation equipment would take place at least 100 feet from any surface waterbody as a mitigation measure. • Implement a preapproved Spill Prevention, Control, and Countermeasure (SPCC) Plan, as required by 40 CFR 112 to prevent discharges of oil to waters of the U.S. The Applicant has committed to avoiding the known contaminated site areas described in Chapter 3 and any newly discovered contamination would be reported to the ADEC in accordance with their reporting requirements and handled in a manner to avoid transport of contaminated materials.	See clarification on BLM 14.
BLM 25	27	• Purchase of Materials - In areas where a grant is required from SPCS/BLM, gravel and other construction materials would not be taken from streambeds, riverbeds, lakeshores, or outlet of lakes, unless the taking is approved by SPCS Authorized Officer.	
BLM 26	154	Monitoring and Maintenance – • The gas volume, flow, and pipe integrity would be monitored using an ILI program, block valves, and maintenance and response bases. Water quality monitoring would be conducted, as required by the state water quality standards. Water quality and turbidity monitoring would be conducted, as required by the Alaska Pollutant Discharge Elimination System (APDES) permit.	
BLM 27	198	• Minimum required depth of cover at rivers and streams would be the greater of 5 feet or 120 percent of maximum scour.	
BLM 28	199	The Applicant would avoid construction activities in close proximity to drinking water wells and would adjust the location of construction activities within the ROW where necessary and practicable.	

BLM ID#	ID# from SEIS Appendix M	BLM Selected Applicant-Proposed Avoidance, Minimization, Mitigation Measures, and Best Management Practices	Clarification of Mitigation for BLM-administered lands
		VEGETATION	
BLM 29	29	Management of Invasive Plants - the Applicant would develop a framework for preventing spatial dispersal of invasive terrestrial and aquatic plants, which could result from transporting invasives through access road construction and use or bringing gear from a contaminated waterbody to another. Considerations would include seed sources, preventative measures, and monitoring and eradication procedures. Before any construction activities, any equipment brought in from outside of Alaska would be thoroughly decontaminated upon entering Alaska; any equipment stored in Alaska would be likewise decontaminated before any construction activities. Aquatic invasives would be controlled by decontaminating all equipment and gear used by personnel (including boots, waders, etc.) between watersheds to ensure invasive species are not inadvertently spread between work sites along the proposed Project route. Contractors would be responsible for decontaminating their own equipment.	The use of herbicides and chemicals for treatment of non-native invasive species on BLM-administered land is governed by what has been analyzed in the annually updated *Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (BLM, 2007b).* The Applicant will be required to submit Hazardous Materials, Substance Management, Pesticides, Herbicides, Preservatives, and Other Chemicals Plans to the BLM Authorized Officer for review and approval per BLM ROW Grant Stipulations.
BLM 30	30	Revegetation Management - the Applicant would consult with US BLM and follow Alaska Department of Natural Resources' Plant Materials Center Revegetation Manual for Alaska. The proposed Project's Revegetation Plan stipulates seed mixes for different geographic areas, seed application methods, and application rates (if any) for fertilizers.	The Applicant will be required to submit detailed revegetation and reclamation plans to the BLM Authorized Officer for review and approval per BLM ROW Grant Stipulations. The plans must meet BLM standards for revegetation and reclamation in Appendix J5.
BLM 31	33	Crowning - The slope over the crown is critical to stabilizing soils and directing ponding, thereby mitigating some erosion and drainage impacts. The remaining spoil material not used for backfilling and crowning would be feathered and blended across the construction corridor, creating a roughened surface to capture precipitation, decrease erosion, and provide safe sites for plant establishment.	The Applicant will be required to submit detailed erosion and sedimentation control plans, as well as revegetation and reclamation plans, to the BLM Authorized Officer for review and approval per BLM ROW Grant stipulations.
BLM 32	35	Ditch Excavation - Construction scheduling is the most appropriate way of limiting thaw of open-ditch segments. To the extent possible, thaw-unstable soils would be excavated during winter seasons. In all cases, durations of open-ditch construction activities would be minimized. After trenching, pipe lowering in, and backfilling any compacted areas would be tracked to mitigate the compaction effects of the excavator and associated traffic, graded to facilitate drainage, covered with any available growth media (surface layer material), and scarified to allow natural revegetation by native plants. Fertilization and/or seeding would occur in sensitive and erosive areas immediately, other areas would be allowed to revegetate naturally. If the reclamation standard of 30% cover over a 3-year period does not occur, then additional revegetation efforts would commence, per the Revegetation Plan (Appendix E, Part I).	The Applicant will be required to submit detailed trenching and backfill plans, as well as revegetation plans, to the BLM Authorized Officer for review and approval per BLM ROW Grant stipulations. Revegetation standards for BLM administered lands are defined Appendix J5.

BLM ID#	ID# from SEIS Appendix M	BLM Selected Applicant-Proposed Avoidance, Minimization, Mitigation Measures, and Best Management Practices	Clarification of Mitigation for BLM-administered lands
BLM 33	36	Dust Suppression - The proposed Project would perform dust suppression using water, if necessary. The proposed Project area would be monitored for fugitive dust generation during construction. Abatement of fugitive dust would be required on the construction areas associated with the Gas Conditioning Facility and the pipeline ROW or on access roads when a visible plume of dust with an estimated opacity exceeding 20 percent (objects partially obscured) extends more than 300 feet from the source. Proposed Project contractors would be responsible for controlling dust using measures such as applying dust suppressants (e.g., water), and in some cases, reducing vehicle speeds. • Use only proposed Project approved roads for access. Paved access roads would be kept free of mud and soil that may track onto the road surface from the construction ROW through the use of gravel access pads and/or equivalent. If soil is transported onto a public road surface or other paved area, including parking lots, by construction equipment and vehicles, it would be removed as soon as practical from the road by shoveling or sweeping, and would be transported back to a designated sediment control disposal area within the construction ROW. Road washing, if necessary, would only be allowed after the soil has been scraped from the paved road surface. • Where needed, reduce vehicle speeds on unpaved roads; speed limits may be set on unpaved roads. • Clean up track-out and/or carry-out areas at paved road access points. • Ensure that all haul truck cargo compartments are maintained so as to minimize spills and loss of materials. Cover haul loads of open body trucks where applicable. • Apply water to affected unpaved roads, unpaved haul/access roads, and staging areas when in use and when appropriate. Water for fugitive dust control purposes would be obtained as necessary through permits or purchase contracts with owners of valid existing water rights. These approvals would be acquired prior to construction. • When appropriate and as needed, apply approved dust suppressant such as a water/magnesium chloride mixture or calcium chloride. The use of magnesium chloride would be restricted in sensitive vegetative areas, where only water or alternative dust suppressants would be considered. • Apply water to active construction areas as needed. Areas should be pre-watered and soils maintained in a stabilized condition where support equipment and vehicles would operate. Water-disturbed soils would form a crust, reducing the potential for dust creation. • Control water spray so that over-spraying and pooling would be avoided to the extent possible. Where roads are paved, no dust mitigation may be necessary.	The Applicant will be required to submit a detailed Dust Abatement Plan to the BLM Authorized Officer for review and approval per BLM ROW Grant stipulations.
BLM 34	37	• Earthwork/Re-contouring - Re-contouring would be done in a way to emphasize the use of existing drainage patterns and landform types to blend with and be compatible with the surrounding landscape to the extent practicable (*e.g.,* where vertical cuts or other features cannot be physically re-contoured to the original contours due to factors such as blasting or the natural angle of repose of the native fill material after it has been excavated). Re-contouring disturbed areas would be done with site complexity in mind. Generally, revegetation of disturbed areas is planned for long-term stabilization.	
BLM 35	40	Site De-Compaction - In areas that have been compacted as a result of summer construction activities and require de-compaction to facilitate revegetation, the areas would be ripped to mitigate the compaction effects of the traffic, equipment use, storage, or from other construction-related activities and other use. Site de-compaction is not intended for use in areas that would be constructed during the winter (*i.e.*, on the Arctic Coastal Plain). Identified areas would be ripped to a minimum depth of 8 to 20 inches (20 to 50 centimeters) prior to surface soil replacement. The equipment used to rip the soil should be operated along the contours to minimize soil erosion and facilitate soil-water retention to aid revegetation. For sloped sites, ripping along the contour would intercept runoff as it flows downslope. Revegetation actions would be performed as soon as practicable after site compaction has been alleviated. Fertilization and/or seeding would occur in sensitive and erosive areas immediately, other areas would be allowed to revegetate naturally. If the reclamation standard of 30% cover over a 3-year period does not occur, then additional revegetation efforts would commence, per the Revegetation Plan.	The Applicant will be required to submit a detailed revegetation and reclamation plan to the BLM Authorized Office for review and approval per ROW Grant stipulations. Revegetation and reclamation standards for BLM administered lands are defined in Appendix J5.
BLM 36	41	Workpad Construction - Granular workpads would be utilized for areas scheduled for summer construction. In wetlands overlaying thaw-unstable permafrost, the surface layer under the workpad would not be removed, as it would be detrimental to the thermal stability of the underlying permafrost. The workpad would be left in place after construction. For workpads not required for O&M, any compacted areas of the workpad would be ripped to mitigate the compaction effects of traffic, graded to facilitate drainage, covered with any available growth media (surface layer material) and scarified to allow natural revegetation by native plants. Fertilization and/or seeding would occur in sensitive and erosive areas immediately, other areas would be allowed to revegetate naturally. If the reclamation standard of 30% cover over a 3-year period does not occur, then additional revegetation efforts would commence, per the Revegetation Plan.	The Applicant will be required to submit a detailed revegetation and reclamation plan to the BLM Authorized Officer for review and approval per BLM ROW Grant stipulations. Revegetation and reclamation standards for BLM administered lands are defined in Appendix J5.

BLM ID#	ID# from SEIS Appendix M	BLM Selected Applicant-Proposed Avoidance, Minimization, Mitigation Measures, and Best Management Practices	Clarification of Mitigation for BLM-administered lands
BLM 37	42	Timber Clearing, Salvage, and Utilization - In areas where a lease is required from SPCS or a federal grant of ROW is required from BLM, prior to initiation of clearing operations on state / federal land, the Applicant would provide SPCS/BLM with an estimate of the amount of merchantable timber, if any, which would be cut, remobilized, or destroyed in the construction and maintenance of the proposed pipeline, and would pay in advance of construction or maintenance activity, and would pay in advance the sum of money SPCS/BLM determines to be the full stumpage value of the timber to be cut, removed, or destroyed. The Applicant would provide an opportunity for residents and local communities to utilize the salvaged timber. All debris resulting from clearing operations and construction that may block stream flow, delay fish passage, contribute to flood damage, or result in a streambed scour or erosion would be removed. Logs would not be skidded or yarded across any watercourse without approval. No log storage would be located within three hundred feet of any watercourse on state / federal land except with approval from SPCS/BLM.	The Applicant will be required to submit a detailed timber clearing, salvage, and utilization plans to the BLM Authorized Officer for review per BLM ROW Grant stipulations. BLM requirements for Timber Clearing, Salvage and Utilization are identified in Appendix J4.
BLM 38	43	Vegetation Clearing - For riparian vegetation clearing, vegetation would be cut off at ground level to leave the existing root systems in place to provide streambank stability. In riparian areas, the pulling of tree stumps and rooting for grading activities would be limited to the area directly over the trench line. Riparian vegetation would be restored with native plant species where conditions allow (*e.g.,* riparian species planting is only successful where enough water is present).	BLM requires the use of native riparian species indigenous to the disturbed riparian areas. The Applicant will be required to submit a detailed plans for pipeline trench backfill methods, restoration and revegetation of disturbed areas including stream, river, and flood plain crossings, to the BLM Authorized Officer for review and approval per BLM ROW Grant stipulations.
BLM 39	172	Implementation of the Revegetation Plan (Appendix E, Part I), which was developed by ADNR's PMC using the following resources: • The Alaska Coastal Revegetation and Erosion Control Guide (Wright and Czapla, 2013); • Interior Alaska Revegetation & Erosion Control Guide (Czapla and Wright, 2012); • Strategic Plan for Invasive Weed and Agricultural Pest Management and Prevention In Alaska (ADNR, 2016); • Native Plant Revegetation Manual for Denali National Park and Preserve (Densmore et al., 2000); and National Park Service (NPS) Invasive Plant Management Plan.	BLM requires additional revegetation and reclamation measures beyond that proposed in Appendix E of the 2018 FSEIS. The Applicant will be required to submit a detailed revegetation and reclamation plan to the BLM Authorized Officer for review and approval per BLM ROW Grant stipulations. Revegetation and reclamation standards for BLM administered lands are defined in Appendix J5.
BLM 40	173	Site-specific rehabilitation and revegetation measures determined in the plan: • Soil de-compaction methods; • Erosion control and slope stabilization methods; • Seed species composition and application rates; • Seed application methods (hydroseeding, aerial distribution, or hand methods) • Fertilizer and/or mulch requirements, composition, and application rates; • Long-term vegetation maintenance and monitoring requirements; and • Identification of additional site treatment options if initial revegetation efforts are unsuccessful.	BLM requires additional revegetation and reclamation measures beyond that proposed in Appendix E of the 2018 FSEIS. The Applicant will be required to submit detailed revegetation and reclamation plans to the BLM Authorized Officer for review and approval per BLM ROW Grant Stipulations. The plans must meet BLM standards for revegetation and reclamation in Appendix J5.
		WETLANDS	
BLM 41	52	Minimizing Ground Disturbance - Proposed pipeline construction across wetlands would be scheduled during the winter to the maximum extent practicable and existing bridges or HDD /other trenchless technology would be used, as appropriate.	
BLM 42	53	Avoid and Minimize Ground-disturbing Activity in Wetlands - Limit grading wetlands to the maximum extent practicable. When possible, locate permanent facilities outside of wetlands. Maintain existing hydrologic systems. Use existing bridges or HDD / other trenchless technology where practicable. Designate areas within the proposed Project footprint that would require the use of mats; these would be identified as matted regions. Use mats or other types of mitigation during non-winter construction to prevent rutting. Rubber mats are planned for areas in which wetlands are short distances across, non-permafrost, and flat; inundated palustrine wetlands are the likely areas where mats would be used. Mats help distribute loads across a wide surface and reduce compaction of the underlying vegetation and soils. This helps to preserve non-permafrost wetlands by limiting long-term damage. Mats are helpful in preserving stream bank vegetation at some erosion-prone areas in permafrost regions.	

BLM ID#	ID# from SEIS Appendix M	BLM Selected Applicant-Proposed Avoidance, Minimization, Mitigation Measures, and Best Management Practices	Clarification of Mitigation for BLM-administered lands
BLM 43	56	Wetland Hydrology and Trenching - To avoid a "French-drain effect" in wetlands that are trenched for the proposed pipeline, trench breakers would be installed in the trench to stop water from flowing along the trench. In discontinuous permafrost areas, the trench breakers would be installed just outside the wetland area to keep wetland water from moving outside of the wetland. In continuous permafrost areas, the trench breakers stay in place because the bottom of the trench stays frozen, as noted in the Applicant's geothermal modeling reports. The trench breakers would be water resistant and stable through the use of material designed to resist water movement (sand bags, bentonite, non-toxic spray foam, etc.) so they would not be able to be penetrated by water, eroded or moved. The Applicant's thermal modeling also shows that areas near the bottom of the trench would be frozen year round, adding additional stability.	
BLM 44	160	Over Excavate and Replace Thaw Unstable Material - This technique may be a viable method in some locations; the material would be excavated and removed, and foreign material imported, requiring the mining and importation of additional select fill material to backfill the removed material. This technique could be employed in areas where very high displacement strains in near surface soils are evident, such as massive ice in a near surface strata but below the active layer.	The Applicant will be required to submit detailed construction plans for trenching and backfill methods to the BLM Authorized Officer for review and approval, per BLM ROW Grant stipulations.
BLM 45	159	Ditch Plugs and Thermosiphons - the Applicant intends to institute a comprehensive monitoring program and would employ several mitigative measures to offset and minimize indirect impacts to wetlands, including a revegetation program that allows for the recolonization of the ROW by native species in non-sensitive areas and the immediate revegetation of the ROW through re-seeding in sensitive areas (the Applicant, 2016e). The program would employ continual detection and field maintenance activities (the Applicant, 2016b,e) and the use of thermosyphons or ditch plugs (the Applicant, 2016b and the Applicant, 2016c). Ditch plugs made from blocks of native sod, bentonite, or other appropriate material would be used south of MP 175 during construction. Thermosyphons would be used in select areas of discontinuous permafrost where greater permafrost stability near the surface is required; field monitoring crews observing issues such as slumping or reports of suspected thaw by in-line inspection may lead to thermosyphon placement. Thermosiphons are passive heat pipes designed for installation in select locations along the edge of the ROW to provide a thermal curtain and limit impact (the Applicant 2016b,c). Thermosyphons have been used historically for areas along the Trans-Alaska Pipeline System (TAPS) ROW and for other projects, such as the Alpine HDD crossing of the Colville River. Additional ditch plugs could be used where newly identified water management efforts are required. In rare instances, where thaw or slumping are identified around permanent facilities that cannot be moved *(e.g.*, block valves) and where a power supply is available, a stationary active refrigeration unit may be employed.	The Applicant will be required to submit detailed construction and reclamation plans, including an invasive species prevention and management plan, to the BLM Authorized Officer for review and approval per BLM ROW Grant stipulations.
BLM 46	158	Re-routing within the ROW - In some cases, the field conditions encountered might be very site specific and limited. In this case, potential reroute of the ROW pad within the lateral limits of the construction ROW, could limit expected disturbance.	
BLM 47	157	Localized Active Refrigeration and Insolation - This measure would be considered in "extraordinary and specific conditions," such as a mechanically driven equipment that would refrigerate sections of the ground around permanent facilities where a power supply is available (*e.g.*, use of a design similar to TAPS Pump 1 brine system). Workpad insulation would also be considered.	
BLM 48	174	Surface-leveling is one possible form of intervention/mitigation that could be employed should the ROW need to be elevated from a settlement condition during operations. New backfill material is placed in the area to be re-leveled. Care must be employed, however, to ensure that the surface characteristics are not adversely affected to further advance thaw progression. Additional revegetation measures would occur on the newly disturbed areas.	
		WILDLIFE	
BLM 49	58	Food and Waste Storage Mitigation Measure - Store food waste and other associated waste in containers until transferred for disposal at an approved disposal site. Strictly prohibit employees from directly feeding animals, throwing food to animals, or improperly disposing of food wastes. Transfer sanitary waste from bathrooms, sewage sludge, and kitchen associated garbage on a regular basis to ensure control of attractants. Identify kitchen grease for treatment as spoilable waste.	
BLM 50	59	Eagle and Migratory Bird Protection - Bald and golden eagles and their nests are protected under the Bald and Golden Eagle Protection Act. The Applicant would work with federal and state agencies to employ appropriate mitigation measures to avoid or minimize impacts to eagles and comply with existing regulations. Clearing and grubbing would occur in accordance with the recommended times described in the U.S. Fish and Wildlife Service's (USFWS) *Timing Recommendations for Land Disturbance & Vegetation Clearing* guidance and would avoid disturbance or destruction of migratory bird nests (USFWS, 2017). The Applicant would work with federal and state agencies to employ appropriate mitigation measures to avoid or minimize impacts to eagles and comply with existing regulations.	

BLM ID#	ID# from SEIS Appendix M	BLM Selected Applicant-Proposed Avoidance, Minimization, Mitigation Measures, and Best Management Practices	Clarification of Mitigation for BLM-administered lands
BLM 51	61	General Wildlife Habitat - Avoid locating pipeline facilities in sensitive wildlife habitats to the maximum extent practicable by: In areas where a lease is required from SPCS/or federal grant of ROW from BLM, the proposed pipeline would be maintained to avoid significant alteration of big-game movement patterns. SPCS/BLM may require additional measures to mitigate impacts to big-game movement. The Applicant would coordinate with USFWS regarding any activity that has the potential to disturb polar bears. Prior to starting proposed pipeline activities, the Applicant would obtain the locations of known brown bear dens from ADF&G to avoid both human/bear interactions and disturbance of bear dens. Develop systems or mechanisms to facilitate escape of wildlife from the pipeline trench in the event wildlife becomes trapped. Construction activities would be scheduled to avoid effects during sensitive periods in the life cycle of wildlife to the extent practicable, including scheduling excavation activities during times of the year when major movements across the ROW occur (i.e., migrations). Construction and operational activities would be avoided or minimized to the extent practicable during sensitive periods in life cycles such as moose and caribou calving, lambing season, bear denning, raptor nesting, and nesting migratory birds.	
BLM 52	62	Human and Wildlife Interactions - Ensure construction camp operations and pipeline facility construction activities comply with measures that avoid attracting wildlife. Adopt motor vehicle and aircraft procedures that minimize disturbances to wildlife. Identify and then avoid or minimize situations where wildlife may be killed in defense of life or property.	
BLM 53	63	Material Sites - Avoid placement of source material sites near raptor cliff nesting habitat, or remove source material outside the breeding season when adults are not in the area. The location of material sites would be in the vicinity of existing transportation routes or utility corridors. Material sites would be permitted by the federal, state, and local government agencies, and require wildlife mitigation measures.	
BLM 54	64	Non-native Species - Minimize the spread or introduction of non-native invasive plants through standard measures such as cleaning and inspection of equipment and revegetating all areas of ground disturbance as soon as possible after construction. Barges entering the proposed Project area as part of the sealift would be cleaned according to federal and state protocols in order to mitigate against the potential spread of non-native species.	
BLM 55	68	Zones of Restricted Activity - In areas requiring a lease from SPCS and federal grant of ROW from BLM , during periods of wildlife breeding, nesting, lambing, or calving activity, and during major migrations of wildlife, the Applicant's activities on state / federal land may be restricted by SPCS/BLM with written notice. From time to time, SPCS/BLM would furnish the Applicant with a list of areas where such actions may be required, together with anticipated dates of restriction. During periods of fish spawning, rearing, and migration, the Applicant's activities on state / federal land may be restricted by SPCS / BLM with written notice, and the coordinator would furnish the Applicant with a list of areas where such actions may be required, together with anticipated dates of restriction.	
BLM 56	175	Revegetate and reclaim all areas of ground disturbance as soon as possible after disturbance is complete to minimize impacts to wildlife habitat. The Revegetation Plan (Appendix E, Part I) would guide the revegetation of all areas of ground disturbance.	The Applicant will be required to submit detailed construction plans for trenching and backfill methods to the BLM Authorized Officer for review and approval, per BLM ROW Grant stipulations.
BLM 57	176	Minimize vehicle and aircraft traffic to minimize disturbances to wildlife, where possible.	
BLM 58		Minimize the duration of open-ditch construction activities to mitigate the risk of animal entrapment in an open ditch, and develop systems or mechanisms to facilitate escape of wildlife from the pipeline trench in the event wildlife becomes trapped.	
BLM 59	26	Pollution Control - the Applicant would perform its activities in accordance with applicable air and water quality standards and related facility siting standards and plans. In areas where a lease is required from the SPCS or a federal grant of ROW is required from BLM, mobile ground equipment would not be operated in or on lakes, streams, or rivers on state/federal land unless approved by SPCS/BLM. Refueling of excavation equipment would take place at least 100 feet from any surface waterbody. The Applicant would implement a preapproved SPCC Plan, as required by 40 CFR 112 to prevent discharges of oil to waters of the U.S.	
BLM 60	16	Locate fueling and fuel storage at least 100 feet from streams and waterbodies. When conditions require refueling within 100 feet of waterbodies, the contractor must implement a preapproved SPCC Plan.	See clarification on BLM 14
BLM 61	133	Where requested by the landowner, public access to the ROW would be limited for recreation or hunting by blocking entry areas with large boulders, berms, or fencing.	
BLM 62	177	The buried pipeline would be designed to minimize changes to the thermal stability of the surrounding soil and water, and any associated waterbodies, which would in turn protect important bird habitat.	

BLM ID#	ID# from SEIS Appendix M	BLM Selected Applicant-Proposed Avoidance, Minimization, Mitigation Measures, and Best Management Practices	Clarification of Mitigation for BLM-administered lands
		FISH	
BLM 63	70	Title 16 Permits - Temporary or permanent culverts in fish streams would require when permanent access roads cross fish-bearing streams. Title 16 permits from ADF&G would be in place and are required to maintain fish passage. Ice road construction across fish-bearing rivers and streams would also require a Title 16 Permit. These permits generally require mitigation measures and the use of Best Management Practices to minimize impacts to fishery resources.	
BLM 64	71	Blasting - ADF&G would apply Blasting Standards stipulations to both anadromous and resident fish stream crossings, as required by AS 16.	The Applicant will be required to submit detailed blasting plans to the BLM Authorized Officer for review and approval per BLM ROW Grant stipulations.
BLM 65	73	Fisheries Contaminant Prevention - No freeze depressants would be discharged into any streams. To the maximum extent practicable, material storage, refueling activities, fueling, and related liquid storage areas would be located at least 100 feet from the bank of a fish stream.	
BLM 66	74	Waterbody Crossing Methods - Open-cut isolation methods using flumes would only be used in waterbodies with flows that would not exceed the capacity of the flume. Open-cut isolation crossings using pumps would only be used for stream crossings where pumps could adequately transfer streamflow volumes around the work area and there are no concerns about sensitive species passage. For open-cut isolation methods, appropriate fish screening to minimize entrapment of fishes would be used. Stream simulation culverts, at least as wide as the crossing site, would be used at all road crossings too small to feasibly construct a bridge, in accordance with ADF&G consultation.	
BLM 67	75	Fishway Required and Protection of Fish and Game Statues - The Applicant would comply with the requirements of Alaska Statutes (Alaska Statute (AS) §16.05.841, Fishway Required, and AS §16.05.871, Protection of Fish and Game) regarding proposed Project-related winter ice-bridge crossings and summer ford crossings of all anadromous and resident fish streams. If necessary for winter ice-bridge crossings, natural ice thickness could be augmented (through snow removal and water application to increase ice thickness, or other techniques) if site-specific conditions, including water depth, are suitable for a crossing that would protect fish habitat and maintain fish passage. Maintain, to the maximum extent practicable, existing temperature and stream hydrologic regimes at fish stream crossings.	
BLM 68	76	HDD Drilling - Stream crossings using HDD would have the entry and exit workspaces set back at least 50 feet from the waterbody to reduce the risk of drilling mud entering the stream. HDD drilling mud and slurry would be stored away from the waterbody in tanks, behind earthen berms, or by other methods that would prevent it from flowing off the work area. HDD activities would be continually monitored to immediately detect if any inadvertent release of drilling mud has occurred. After installation of the proposed pipeline, the HDD drilling mud would be disposed of according to applicable regulations	
BLM 69	80	Erosion Control - To minimize erosion after the design grade is obtained, cut slopes would be stabilized immediately, and stream banks would be returned to as close to pre-construction conditions as possible. The Applicant would collaborate with ADF&G to apply appropriate in-stream bank erosion structures to provide post-construction bank stability and minimize erosion. Bank and bed scour protection would be installed after the proposed pipeline is installed, as part of the trench backfilling. To protect stream banks and beds from scour erosion, site specific BMPs would be implemented based on scour and erosion potential at each site. Routine inspections would be used to identify areas of erosion, exposed pipeline, and nearby construction activities, to allow for early identification of bank stability problems and minimization of the potential for continuing environmental effects during pipeline operation.	
BLM 70	81	Fish Passage - In areas where a lease is required from SPCS or federal grant of ROW from BLM, all proposed pipeline activities would be conducted as to assure free passage and movement of fish in streams designated by SPCS/BLM, in consultation with ADF&G. Temporary blockages of fish necessitated by in stream activities would be approved by ADF&G. Pump intakes would be screened to prevent harm to fish and screening specifications approved by SPCS/BLM. When abandoned, water diversion structures would be removed or plugged and stabilized unless otherwise approved by SPCS/BLM. If material sites are approved adjacent to or in certain lakes, rivers, or streams, SPCS/BLM may require the Applicant to construct levees, berms, or other suitable means to protect fish and fish passage and to prevent siltation of streams or lakes.	
BLM 71	82	Fish Spawning Beds, Rearing Areas, and Overwintering Areas - In areas where a lease is required from SPCS or a federal grant of ROW is required from BLM, the Applicant would protect fish spawning beds, rearing areas, and overwintering areas from sediment where soil material is expected to be suspended in water as a result of proposed pipeline activities . Settling basins or other sediment control structures would be constructed and maintained to intercept sediment before it reaches rivers, streams, or lakes. The Applicant would comply with site-specific terms and conditions imposed by SPCS/BLM to protect fish spawning beds, rearing areas, and overwintering areas, and overwintering areas from the effects of proposed pipeline activities. Damage caused by the Applicant's proposed pipeline activities would be repaired to the reasonable satisfaction of SPCS/BLM. The Applicant would avoid disturbance to fish spawning beds, rearing areas, and overwintering areas designated by SPCS/BLM. However, where disturbances could not be avoided, proposed modifications and appropriate mitigation measures would be designed by the Applicant and approved by SPCS/BLM. Consult with ADF&G to avoid disturbance and sedimentation to fish spawning beds, rearing areas, and overwintering areas.	

BLM ID#	ID# from SEIS Appendix M	BLM Selected Applicant-Proposed Avoidance, Minimization, Mitigation Measures, and Best Management Practices	Clarification of Mitigation for BLM-administered lands
BLM 72	85	Material Extraction - One material site location was requested by ADF&G to provide a launch location for a boat ramp. Acute temporary impacts to hydrology and fish habitat would be mitigated by scalping rather than digging deep holes, unless otherwise authorized by ADF&G.	
BLM 73	86	Material Mining - Outside of the North Slope, material sites would not be developed in riparian areas and floodplains providing habitat for EFH species, where possible. On the North Slope, the Sagavanirktok River floodplain is the only riverine material site being considered by the proposed Project. The Applicant has worked with ADF&G on the possibility of developing sites on the Sagavanirktok River. There is existing access to these sites where material has been previously impacted. If allowed, development here would only occur under the strict guidance of ADF&G and ADNR; if permitted, the proposed Project would follow all mitigative measures required by these overseeing agencies to protect riparian areas and fish habitat. Material sites located in floodplains should not result in fish access habitats where entrapment and desiccation would likely occur. All floodplain material sites would be sloped and day-lighted to allow fish to leave the site. Any material removal and gravel mining from dewatered gravel bars of large river systems should avoid mining in flowing waters, active channels and hyporheic zones of these rivers. All gravel mining below the ordinary high water level of any fish bearing rivers would be coordinated with ADF&G and would comply with all ADF&G permit conditions and stipulations to protect EFH. Monitor turbidity for in water activities during critical fish life history stages and cease operations if turbidity exceeds predetermined threshold levels. Restore natural contours and use native vegetation to stabilize and restore habitat function to the extent practicable. Monitor the site for an appropriate time to evaluate performance and implement corrective measures if necessary. Minimize the aerial extent of ground disturbance (*e.g.*, through phasing of operations) and stabilize disturbed lands to reduce erosion.	
BLM 74	92	**Stream Bank Protection** - During construction, every effort should be made to minimize impacts to the active floodplain and channel, thereby reducing the level of site reclamation. • To mitigate potential impacts to the proposed pipeline and restore local hydraulic conditions and habitat, bank restoration and protection would be required for trenching modes. • All stream banks should be restored to as near pre-construction conditions as possible. The stream bank elevation should be re-established to tie into existing grade. If practicable, stream banks would be stabilized and temporary sediment barriers installed within 24 hours of completing the pipeline crossing. • Ensure that erosion and sediment control measures are implemented and functional until long-term bank stabilization has been established. In thaw unstable soils where permafrost and ice lenses persist, incorporate thermal barriers as quickly as possible to inhibit thermal erosion and seepage into the proposed pipeline ROW. • Stream crossing design would not rely on bank armoring or river training works to maintain proposed pipeline integrity without substantive reasoning, such as impractical overbank construction, presence of adjacent facilities, or environmental concerns. • If conditions dictate (e.g., excessively steep, unstable banks or excessive flow velocities), engineered bank protection may be required. All engineered bank protection should be designed by the proposed Project Engineer in consultation with a qualified fluvial geomorphologist and/or qualified fish biologist. • Natural materials, with a preference toward bio-engineered techniques would be implemented in engineered structures wherever feasible for stream bank stabilization following a stream cut.	The Applicant will be required to submit detailed pipeline construction, operations and maintenance plans relating to stream crossings, stream bank protection, and erosion and sediment control, to the BLM Authorized Officer for review and approval per BLM ROW Grant stipulations.
BLM 75	94	**Construction Mitigation to Fisheries Impacts –** • Each water crossing of a fish stream would require a Fish Habitat Permit from the ADF&G. The Applicant would comply with site-specific ADF&G permit stipulations designed to protect fish and fish habitat. • In-stream pipeline construction would be completed in one-to-three days from initiation. • Necessary in-water activities would be scheduled when the fewest species/least-vulnerable life stages of federally managed species would be present.	
BLM 76	96	• **Wastewater Discharge** - Wastewater discharge locations would be planned at locations that avoid waterbodies and during periods that minimize potential impacts to fishery resources. Hydrostatic testing would occur in a manner that eliminates the potential for freeze depressants to be inadvertently discharged into a fish-bearing waterbody, as none would be used.	
BLM 77	97	**Waterbody Crossing** - Waterbody crossings would be accomplished using several different crossing techniques including bridges, culverts, HDD, and open trenching. For all fish bearing waterbodies, ADF&G would require a Fish Habitat Permit approving the crossing type. The permit would include stipulations specific to each individual crossing.	
BLM 78	100	**Winter Water Withdrawal** - Screens would be used on withdrawal intakes to minimize fish uptake; appropriate federal and state guidelines would be followed to determine screen sizes.	

BLM ID#	ID# from SEIS Appendix M	BLM Selected Applicant-Proposed Avoidance, Minimization, Mitigation Measures, and Best Management Practices	Clarification of Mitigation for BLM-administered lands
BLM 79	102	**Management of Fishery Impacts –** • Activity schedules would be coordinated with ADF&G to minimize impacts to fisheries resources. • A Fish Habitat Permit from ADF&G may be required for any blasting operations that occur either in or near the banks of a fish-bearing waterbody, as determined by AS 16 jurisdiction. • To minimize potential effects on fishery resources, construction activities would comply with all ADEC water quality regulations. • ADF&G and fisheries scientists would be consulted on installation of access road culverts and bridges, West Dock impacts, and proposed pipeline stream crossings. The Applicant would be required to obtain a Fish Habitat Permit from ADF&G and would refer to ADF&G guidance documents for the design and maintenance of stream crossing structures.	
BLM 80	178	• Logging near streams: Remove all debris that may block stream flow, delay fish passage, contribute to flood damage, or result in a streambed scour or erosion. Logs would not be skidded across any watercourse without approval. No log storage within 300 feet of any watercourse except with approval from the SPCS.	BLM requirements for Timber Clearing, Salvage and Utilization are identified in Appendix DD. The Applicant will be required to submit a detailed timber clearing, salvage, and utilization plans to the BLM Authorized Officer for review and approval per BLM ROW Grant stipulations.
BLM 81	179	Minimize the effects of sedimentation on fish habitat. Use methods such as the construction of settling ponds and curtains to control sediment transport.	
BLM 82	180	Avoid constructing crossings where redds (nests of fish eggs) are present; implement standard BMPs to ensure protection of any downstream habitats.	
BLM 83	181	Timing, location and mode of stream crossings would be selected, to the degree practicable, as determined by the Applicant, to minimize impacts to fish and fish habitat.	
BLM 84	194	Site material sites with input from ADF&G, where appropriate; duration of disruption of surface water flows would be minimized	
		THREATENED AND ENDANGERED SPECIES	
BLM 85	155	• **Lighting** - During final design stages of the proposed Project, the Applicant would coordinate with USFWS with regards to birds and lighting, while taking into account the lighting safety requirements for operators.	
BLM 86		The Applicant would have an approved SPCC Plan before construction. The SPCC Plan would be developed in accordance with all pertinent regulations and would follow BMPs. The SPCC Plan would identify material handling procedures and storage requirements and outline the actions to reduce spill potential.	
		LAND USE	
BLM 87	122	**Land Ownership** - A highway use agreement would be in place prior to construction, and would be an agreement between the Applicant and Alaska Department of Transportation & Public Facilities (ADOT&PF) for how impact to infrastructure caused by construction would be mitigated.	
BLM 88	123	**Maintenance Access** - In areas where a lease is required from SPCS or federal grant of ROW is required from BLM, the Applicant would provide and maintain access roads and airstrips, the number and location of which shall be approved by SPCS/BLM, to ensure that the Applicant's maintenance crews and representatives would have continued access.	
BLM 89	124	**Off ROW Traffic** - In areas where a lease is required from SPCS or a federal grant of ROW is required from BLM, the Applicant would not operate mobile ground equipment off of the leased area, access roads, highways, or authorized areas, unless approved by SPCS/BLM or when necessary to prevent harm to any person.	
BLM 90	125	**Public Access** - In areas where a lease is required from SPCS or a federal grant of ROW is required from BLM, the Applicant would regulate or temporarily prohibit public access and vehicular traffic on roads on public land, which are not managed or owned by the Alaska Department of Transportation and Public Facilities, as required for activities in the immediate vicinity of the proposed pipeline and related facilities. The Applicant would provide appropriate warnings, flagging, barricades, and other safety measures when the Applicant is regulating public areas. The Applicant would make provisions for suitable permanent crossings for the public where the ROW crosses existing roads, foot trails, winter trails, easements, or other right of way, unless otherwise authorized by SPCS/BLM.	The Applicant will be required to submit a Public Access Plan inclusive of construction and operational periods to the BLM Authorized Officer for review and approval per BLM ROW Grant stipulations.

BLM ID#	ID# from SEIS Appendix M	BLM Selected Applicant-Proposed Avoidance, Minimization, Mitigation Measures, and Best Management Practices	Clarification of Mitigation for BLM-administered lands
BLM 91	126	**Public Improvements** - In areas where a lease is required from SPCS or a federal grant of ROW is required from BLM, the Applicant would protect existing telephone and other transmission lines, roads, trails, fences, ditches, and like improvements during construction, operation, maintenance, and termination of the proposed pipeline. Any damages caused by the Applicant to public utilities and/or improvements would be promptly repaired by the Applicant to a condition which is reasonably satisfactory to SPCS/BLM.	
BLM 92	127	**Reduce Unintended Public Access -** Where requested by the landowner, limit public access to the ROW for recreation or hunting by blocking entry areas with large boulders, berms, or fencing.	
BLM 93	128	**Surveillance and Monitoring** - In areas where a lease is required from SPCS or a federal grant of ROW is required from BLM, a surveillance and monitoring program for the proposed pipeline would be approved by SPCS/BLM prior to start-up of the proposed pipeline. The program shall be designed at a minimum to protect public and private property.	
BLM 94	129	**Waste Management** - In areas where a lease is required from SPCS or a federal grant of ROW is required from BLM, All waste generated in construction, operation, maintenance, and termination of the proposed pipeline would be removed or otherwise disposed of according to all local, state, and federal laws, and in a manner reasonably acceptable to SPCS/BLM.	
BLM 95	130	**ADEC Contaminated Sites -** the Applicant has committed to avoiding the known contaminated site areas described in Chapter 3 and any newly discovered contamination would be reported to the ADEC in accordance with their reporting requirements and handled in a manner to avoid transport of contaminated materials.	
BLM 96	122	Prior to construction, the Applicant would enter into a comprehensive agreement with ADOT&PF for the use of highways and other facilities under the jurisdiction of ADOT&PF.	
BLM 97	184	Where a lease is required from SPCS or a federal grant of ROW is required form BLM, the creation of any permanent obstruction to the passage of small craft in streams is prohibited, unless otherwise approved by the SPCS/BLM.	
BLM 98	185	After construction is complete, with the concurrence of the Applicant, the SPCS/BLM may designate areas of the Leasehold to which the public shall have free and unrestricted access.	The Applicant will be required to submit a Public Access Plan inclusive of construction and operational periods to the BLM Authorized Officer for review and approval per BLM ROW Grant stipulations.
BLM 99	195	For road crossings where the proposed pipeline cannot be installed by HDD, a trench would be excavated. In such cases, a temporary bypass or bridge would be built to minimize the effects to traffic flow.	
		RECREATION	
BLM 100	133	**Reduce Unintended Public Access** - Where requested by the landowner, limit public accessing to ROW for recreation or hunting by blocking entry areas with large boulders, berms, or fencing.	
BLM 101	135	**Recreation Impact Mitigations -** the Applicant would implement the following mitigation measures that address the effects on tourism and recreations use areas: • Retain existing public access routes and uses • Minimize activities in areas with tourist-related facilities during high use periods to the extent practicable • Minimize activities in areas with public recreation facilities during high use periods to the extent practical • Minimize creating new public vehicular access to remote areas • Minimize impacts to the existing natural landscape to the extent practicable • Schedule preconstruction work to minimize activity during peak periods of tourism and recreation • Conduct early and continuing consultation with the public, tourism, and recreation businesses • Collocate with existing and planned transportation and utility system where practicable Explore potential for enhanced recreation opportunities such as trails with local communities and landowners	
		VISUAL	

BLM ID#	ID# from SEIS Appendix M	BLM Selected Applicant-Proposed Avoidance, Minimization, Mitigation Measures, and Best Management Practices	Clarification of Mitigation for BLM-administered lands
BLM 102	136	**Visual Impacts to Property and Environmental Sites -** Mitigation measures include; providing minimum offsets, and possibly fencing of significant environmental resources, limit or minimize the permanent ROW, but ensure adequate size to accommodate operations, maintenance, and future expansion, limit the construction ROW, application of trenchless construction methods in certain areas.	
BLM 103	**137**	**Visual Impact Mitigations** - These measures would include: • Minimize the Construction of new permanent access roads by using snow-ice roads during construction • Restore the construction zone in a manner that facilitates reestablishment of the adjacent natural vegetation • Use root balls, salvaged native plant materials, and the surface layer removed from the construction footprint for redistribution on disturbed areas where feasible. The surface layer would not be segregated from subsoils in most locations. • Maintain a screening of existing natural vegetation when the proposed pipeline is offset from a highway • Use existing disturbed areas to the maximum extent practicable for temporary construction activities such as construction camps, material stockpiling, pipe jointing, and pipe bending • Minimize locating pipeline facilities, new material sites, and construction material stockpiling in places with special visual resource values that would be visible to the public • Blend the pipeline system into the natural setting to the extent practicable when crossing places with high visual resource value • Use revegetation species that are appropriate for the general area • Re-grade construction disturbances to a condition that blends with the surrounding terrain and surface drainage patterns Monitor reclaimed, disturbed construction areas and take remedial action where expected revegetation success is not achieved	
BLM 104	162	• For temporary and permanent facilities, use the minimum lighting intensity necessary to ensure safety, use localized task lighting, and incorporate measures (such as diffusers, lenses, and shielding) to reduce nighttime glare, light radiation, and backscatter into the sky.	The Applicant will be required to submit a plan to reduce and minimize impacts from light fixtures and facilities during construction, operations and maintenance phases of pipeline activities to the BLM for review and approval per BLM ROW Grant stipulations.
BLM 105	163	For permanent aboveground facilities, select paint colors that blend into the background, including different shades of green, brown, or grey.	
		SOCIOECONOMICS	
BLM 106	138	**Socioeconomic Impact Mitigations** - the Applicant proposes to implement the following mitigation measures to address the effects on socioeconomics: • Time construction activities to minimize impacts to high-use tourist and local recreation seasons (e.g., wildlife viewing, hunting, snow machining, and dogsledding) • Time construction activities to minimize impacts to local business (i.e., avoid summer and fall construction in recreational and tourist areas) • Develop and implement traffic control plans to minimize negative impacts to local businesses by blocking access during construction • Identify and promote work opportunities for local residents Develop training programs for local residents so that they could be employed during construction and O&M	
BLM 107	164	• Avoid locating construction support facilities (*e.g.,* construction camps) in places with special visual resource values that would be observable to the general public, which would reduce the visual impact of these facilities and any associated impacts on private property value (UASCE, 2012a).	
		SUBSISTENCE	
BLM 108	142	**Hunting, Fishing, Trapping, and Camping** - In areas where a lease is required from SPCS or a federal grant of ROW is required from BLM, with respect to the Applicant's agent, employees, contractors, and the contractors' employees, the Applicant would prohibit hunting, trapping, shooting, and camping within the leased area. The agents, employees, contractors of the Applicant would not use proposed Project equipment, including transportation to and from the job site, for the purpose of hunting, fishing, shooting, and trapping.	

BLM ID#	ID# from SEIS Appendix M	BLM Selected Applicant-Proposed Avoidance, Minimization, Mitigation Measures, and Best Management Practices	Clarification of Mitigation for BLM-administered lands
BLM 109	143	**Subsistence Activity Impact Mitigations** - These include: • Identify locations and times when subsistence activities occur, and minimize work during these times and in these areas to the maximum extent practicable • Schedule work (e.g., blasting) to avoid conflict with subsistence activities when possible Notify workers that subsistence activities are ongoing in the area and direct them to avoid activities that may affect the activities (e.g., not removing trap line markers)	
BLM 110	144	• **Construction Mitigation to Subsistence Impacts -** Time construction activities to minimize impacts to subsistence activities where possible. The Applicant would work with communities to discuss additional mitigation for barge traffic during subsistence timeframes.	
BLM 111	187	**Biological Assessment Mitigation Measure** - the Applicant would consult with potentially affected communities and appropriate subsistence user organizations to discuss potential conflicts with subsistence marine mammal hunting caused by the location, timing, and methods of proposed operations and support activities (the Applicant, 2017b). Additionally, the Alaska Stand Alone Gas Pipeline (ASAP) Biological Assessment is provided as Appendix N, Part II.	
		PUBLIC HEALTH	
BLM 112	145	**Surveillance and Monitoring -** In areas where a lease is required from SPCS or a federal grant of ROW is required from BLM, a surveillance and monitoring program for the proposed pipeline would be approved by SPCS/BLM prior to start-up of the proposed pipeline. The program shall be designed at a minimum to provide for and protect public health and safety.	
BLM 113	202	**Hazards and Incidents -** In areas where a lease is required from SPCS or federal grant of ROW is required from BLM, the Applicant would take all measures necessary to protect the health and safety of all persons affected by its activities performed in connection with the construction, operation, maintenance, or termination of the proposed pipeline, and shall immediately abate any health or safety hazards. The Applicant would immediately notify SPCS/BLM of all serious accidents which occur in connection with such activities.	
BLM 114	165	**Pesticides, Herbicides, Preservatives, and Other Chemicals** - In areas where a lease is required from the SPCS or a federal grant of ROW is required from BLM, the Applicant would use only non-persistent and immobile types of pesticides, herbicides, preservatives, and other chemicals. Each chemical to be used and its application constraint would be approved by the SPCS/BLM prior to use. Avoid or minimize construction and operational activities during sensitive periods in life cycles such as calving, denning, nesting, and migration. The use of pesticides and herbicides are regulated by ADEC's Environmental Health Division through 18 AAC 90 and may require a permit.	
BLM 115	166	**Public Access** - In areas where a lease is required from the SPCS or a federal grant of ROW is required by BLM, the Applicant would regulate or temporarily prohibit public access and vehicular traffic on roads on state land, which are not managed or owned by the ADOT&PF, as required for activities in the immediate vicinity of the pipeline and related facilities. The Applicant would provide appropriate warnings, flagging, barricades, and other safety measures when the Applicant is regulating public areas. The Applicant would make provisions for suitable permanent crossings for the public, where the leasehold or access roads cross existing roads, foot trails, winter trails, easements, or other ROW, unless otherwise authorized by the SPCS/BLM. Pipeline activities shall not interfere with the public's free and unrestricted access to and upon the Leasehold, except that, with the SPCS/BLM approval, regulate or prohibit access, including vehicular traffic, to and upon the Leasehold to the extent necessary to facilitate pipeline activities, maintain pipeline integrity, or to protect the public and wildlife from hazards associated with pipeline activities. After construction is complete, with the concurrence of the Applicant, the SPCS/BLM may designate areas of the Leasehold to which the public shall have free and unrestricted access.	The Applicant will be required to submit a Public Access Plan inclusive of construction and operational periods to the BLM Authorized Officer for review and approval per BLM ROW Grant stipulations.
BLM 116	167	**Off-ROW Traffic** - In areas where a lease is required from the SPCS or a federal grant of ROW is required by BLM, the Applicant would not operate mobile ground equipment off of the leased area, access roads, state highways, or authorized areas, unless approved by the SPCS/BLM or when necessary to prevent harm to any person.	
BLM 117	168	**Fire Hazards** - In areas where a lease is required from the SPCS or a federal grant of ROW is required by BLM, the Applicant would promptly notify the SPCS of any fires on, or which may threaten any portion of the pipeline and shall take all measures necessary for the prevention and suppression of fires in accordance with applicable law. Use of open fires in connection with the pipeline activities is prohibited on state land unless approved by the SPCS/BLM and performed in accordance with state law.	

BLM ID#	ID# from SEIS Appendix M	BLM Selected Applicant-Proposed Avoidance, Minimization, Mitigation Measures, and Best Management Practices	Clarification of Mitigation for BLM-administered lands
		AIR QUALITY, CLIMATE CHANGE, AND GHGs	
BLM 118	146	**Management of Air Quality Impacts** - Include the following: • Implement BMPs during construction activities to mitigate fugitive dust and reduce particulate matter emissions • Use best available control technology (BACT) for combustion equipment to mitigate nitrogen oxides (NOx) and carbon monoxide (CO) emissions • Use ultra-low sulfur diesel fuel for construction equipment and non-natural gas combustion equipment (to mitigate sulfur dioxide [SO_2] emissions), particulate matter emissions and volatile organic compound (VOC) emissions • Operate all combustion equipment in accordance with manufacturer's specifications to mitigate NOx, CO, VOC, and particulate emissions resulting from incomplete combustion Maintain emissions control equipment in accordance with manufacturer's specifications to mitigate emissions and maintain emission control efficiency	
BLM 119	188	At locations were a ROW lease from SPCS or a federal grant of ROW from BLM applies, the Applicant would operate all facilities and devices used in connection with the proposed pipeline so as to avoid or minimize air pollution and ice fog. Facilities and devices that cannot be prevented from producing ice fog would be located so as not to interfere with airfields, communities, or roads.	
BLM 120		**Dust Suppression –** Follow the ASAP Fugitive Dust Control Plan	
		RELIABILITY & SAFETY	
BLM 121	148	**Monitoring Potential Frost Heave** - During design the frost heave potential along the alignment would be evaluated using the available route alignment data combined with the line pipe capacities and advanced engineering simulation methodology to explore the potential interaction between the soil subsurface and the pipe during its operational life. To address the differential values along the route, soil displacements and resistance values would be estimated using the landform characteristics along the route derived from the proposed Project geo-database. Periodic monitoring would identify locations that are of concern with respect to the pipe structural integrity.	
BLM 122	149	**Pipeline Design Mitigation Measures** - For the pipeline route segments where the estimated heave potential may exceed the ability of the pipe to withstand the imposed displacement, a number of mitigation options could be employed to reduce the potential for deleterious movement including: • Reroute within the alignment corridor to a non-frost-susceptible terrain unit, if available and investigate the subsurface of the suspect terrain segment more closely so as to reduce the conservatism inherent in the station to station approach. • Insulate the pipe ditch to reduce the heat flux through the frost-susceptible soil and increase the pipe wall thickness to increase the resistance of the pipe to ditch displacements, as well as increasing the ability of the pipe to withstand higher displacements. • Over-excavate the frost-susceptible soil beneath the buried pipeline and replace with non-frost-susceptible soils. • Excavate soils with high uplift resistance above the pipe springline and replace with soils with low uplift resistance. • Elevate the pipeline aboveground, placing it in an embankment. Elevating the pipe would reduce or eliminate the heat extracted from the ground and elevate the pipeline aboveground, placing it on overhead supports. Elevating the pipe would eliminate the heat extracted from the ground and uncouple the pipe from the soil resistance. Heat trace the soil underneath the pipe to counteract frost penetration and emplace stand-alone heat pipes to freeze the soil quickly, reducing the ability of the frost-susceptible soil to cause large soil volume changes.	
BLM 123	151	• **Fire Prevention and Suppression** - In areas where a lease is required from SPCS or a federal grant of ROW is required from BLM, the Applicant would promptly notify SPCS/BLM of any fires on, or which may threaten any portion of the proposed pipeline and shall take all measures necessary to appropriate for the prevention and suppression of fires in accordance with applicable law. Use of open fires in connection with pipeline activities is prohibited on public lands unless approved by SPCS / BLM and performed in accordance with state or federal law.	

BLM ID#	ID# from SEIS Appendix M	BLM Selected Applicant-Proposed Avoidance, Minimization, Mitigation Measures, and Best Management Practices	Clarification of Mitigation for BLM-administered lands
		NOISE	
BLM 124	190	Maintain all construction equipment in accordance with manufacturer's specifications.	
BLM 125	191	Implement mitigation measures to minimize construction impacts on recreation and tourism. These measures include: • Restrict access (e.g., the Applicant would prohibit hunting, trapping, shooting, and camping in areas where a lease is required from the SPCS); • Minimize or shut down activities in areas with tourist-related facilities during high-use periods (for the Denali National Park & Preserve (NPP) Commercial Area, the area would be shut down to summer tourism at the time, so work would continue 24 hours per day next to the highway to complete as soon as possible – construction noise is expected to be masked by the highway traffic noise); • Minimize activities in areas with public recreation facilities during high-use periods; • Minimize creating new public vehicular access to remote areas; • Schedule preconstruction work to minimize activity during peak periods of tourism and recreation; and • Conduct early and continuing consultation with the public, tourism, and recreation businesses.	
BLM 126	192	• Where requested by the landowner, limit public access to ROW for recreation or hunting by blocking entry areas with large boulders, berms, or fencing.	
		ALL RESOURCES	
BLM 127	153	SPCS ROW Lease Stipulations/BLM Grant of ROW Stipulations (Draft) - Stipulations are applicable to locations where the proposed Project area crosses state-owned or federally owned land (Note: the State ROW lease applies to State lands, except Mental Health Trust, University and Railroad land; the federal grant applies to federal land except Denali NPP land (not proposed) and trust land (allotments). The Applicant has worked with BLM to develop the federal grant of ROW with similar draft stipulations as the SPCS ROW lease. The Applicant would use these stipulations as the basis for operations processes and procedures which would be used throughout the proposed Project area.	

		BLM ADOPTED REGULATORY AGENCY RECOMMENDED MITIGATION MEASURES (FSEIS APPENDIX MIII)	CLARIFICATION OF MITIGATION FOR BLM-ADMINISTERED LANDS
BLM 128		The SWPPP must include a description of temporary and permanent stabilization practices for the site, including a schedule of when the practices will be implemented. The SWPPP must document shutdown and startup activities for projects that are not completed during the winter or summer construction season. The SWPPP must also document (1) the anticipated dates of fall freeze-up and spring thaw, (2) activities leading up to and at fall freeze-up, (3) activities leading up to and at spring thaw, and (4) activities to re-establish control measures prior to and immediately after spring thaw and fall freeze up.	
BLM 129		Stabilization of disturbed areas must, at a minimum, be initiated immediately whenever any clearing, grading, excavating, or other earth disturbing activities have permanently ceased on any portion of the site or temporarily ceased on any portion of the site and will not resume for a period exceeding: Seven (7) calendar days for those areas of the state with a mean annual precipitation of forty (40) inches or greater; or Fourteen (14) calendar days for those areas of the state with a mean annual precipitation less than forty (40) inches.	
BLM 130		Final Stabilization and Terminating Construction Storm Water Authorizations: To eliminate a site or terminate authorization for construction storm water coverage under the GP AKG320000, the permittee must achieve final stabilization for the affected area of coverage. Final Stabilization includes: a) a uniform (e.g., evenly distributed, without large bare areas) perennial vegetative cover with a density of 70 percent of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures, or b) equivalent non vegetative permanent stabilization measures have been employed including but not limited to riprap, gabions, porous backfill per ADOT&PF Specification 703-2.10, railroad ballast or sub-ballast, ditch lining per ADOT&PF Specification 610-2.01, or geotextiles, or fill material with low erodibility as determined by an engineer familiar with the site and documented in the SWPPP).	
BLM 131		Stabilization of disturbed areas must, at a minimum, be initiated immediately whenever any clearing, grading, excavating, or other earth disturbing activities have permanently ceased on any portion of the site or temporarily ceased on any portion of the site and will not resume for a period exceeding: Seven (7) calendar days for those areas of the state with a mean annual precipitation of forty (40) inches or greater; or Fourteen (14) calendar days for those areas of the state with a mean annual precipitation less than forty (40) inches.	
BLM 132		Alternative access should be provided around temporarily blocked public access routes and at locations and periods when free and unrestricted access upon public land is temporarily restricted, particularly along RS2477 easements, section-line easements, and 17(b) easements. There should also be a clear and defined public process that addresses long-term public access beyond the pipeline construction period (i.e., temporarily prohibited access).	The Applicant will be required to submit a Public Access Plan inclusive of construction, operations, maintenance and termination phases to the BLM Authorized Officer for review and approval per BLM ROW Grant stipulations.
BLM 133		In addition to temporary alternate access for 17(b) easements, alternate access should be provided at locations and periods when public use of RS2477 easements and section-line easements is temporarily restricted.	The Applicant will be required to submit a Public Access Plan inclusive of construction, operations, maintenance and termination phases to the BLM Authorized Officer for review and approval per BLM ROW Grant stipulations.
BLM 134		If clearing of vegetation occurs on BLM-managed lands within the Central Yukon Field Office during the USFWS's regional time periods for avoidance, standard BLM permit requirements necessitate a nest search within a few days prior to the clearing.	
BLM 135		Include in the wetland mitigation package a monitoring and an adaptive management plan that contains corrective actions should mitigation efforts not meet success criteria.	
BLM 136		Include specific fugitive dust control measures, such as speed limits and frequency of watering during non-winter months, which will be implemented to achieve control limits.	
BLM 137		Include on-site mitigation to reduce potential impacts to drinking water along the proposed pipeline route. Avoid construction in close proximity to private drinking water wells to the maximum extent practicable by making any available adjustments to trench location within the ROW.	
BLM 138		Include compensation for any unavoidable impacts to quantity or quality of drinking water (e.g., drilling a new drinking water well if needed).	
BLM 139		(1) Waterway crossings should be designed, constructed, and installed according to the Anadromous Salmonid Passage Facility Design (National Marine Fisheries Service [NMFS], 2011), (2) bridges and culverts span waterways to not restrict adequate fish passage and to retain full access to spawning areas where streams are braided, and (3) all crossings should be based on site-specific information, such as anadromy, seasonal instream flows and peak discharge, and flood plain regime (50-year to 100-year flood events)	

		BLM ADOPTED REGULATORY AGENCY RECOMMENDED MITIGATION MEASURES (FSEIS APPENDIX MIII)	CLARIFICATION OF MITIGATION FOR BLM-ADMINISTERED LANDS
BLM 140		Use a generally accepted timeline of five years for achieving 70% coverage in the Intermontaine Boreal and Alaska Range Transition Ecoregions.	The Applicant will be required to submit detailed revegetation and reclamation plans to the BLM Authorized Officer for review and approval per BLM ROW Grant Stipulations. The plans must meet BLM standards for revegetation and reclamation in Appendix J5.
BLM 141		Include considering fish and wildlife habitat needs in all reclamation work and provide new beneficial habitat in areas where the original habitat type cannot be fully restored.	
BLM 142		The pipeline shall be buried in the meander belt of the floodplain at the same elevation as the depth under the river or stream (e.g., at least 4 feet or 120% of the expected maximum scour depth elevation), and include the same scour protection measures as under the stream or river bed.	
BLM 143		Natural drainage patterns shall be maintained to the extent practicable by the installation of culverts or bridges in sufficient number and size under access roads and trails to prevent ponding, diversion, or concentrated runoff that would result in adverse impacts to adjacent wetlands and other fish and wildlife habitats.	
BLM 144		The boundaries of all construction areas shall be staked or flagged prior to construction to prevent inadvertent encroachment outside the permitted construction area. No fill, equipment or construction materials shall be stockpiled or stored on wetlands that do not have authorization from the Department of the Army for those activities.	
BLM 145		To minimize wildlife entanglement and plastic debris pollution, erosion and sediment control products shall be plastic-free, such as netting manufactured from 100% biodegradable, nonplastic materials like jute, sisal, or coir fiber.	
BLM 146		All disturbed, stockpile, and fill areas shall be stabilized to prevent erosion. Increased water turbidity and accumulation of sediment in drainages, sloughs, and other wetlands shall be evidence of insufficient stabilization.	
BLM 147		NPS wishes to maintain year-round public access to NPS lands to the extent safely possible during the construction phase. Backpackers, mushers and skiers enter the eastern portion of the park from the Dalton Hwy in all seasons from a variety of locations, including the following four primary access points: Kuyuktuuvuk Creek, Trembley Creek, Nolan Road near Wiseman (Milepost 188), and Galbraith Lake (Milepost 274). See attachments 3, 4, and 5 for reference. NPS proposes the following mitigations to maintain safe public access during the construction phase: • Plan construction activities to ensure at least some of the above primary access points from the Haul Road remain open at any one time. • Development of a good calendar, posted on a well-maintained website hosted by the project proponent, detailing where work is occurring and which access points are open/closed. Project should be planned to assure that there will be no long-term change in access to any of the above four primary points once the line is buried.	
BLM 148		Remove and properly store the organic soil layer (e.g., tundra sod blocks and salvaging the organic layer, ~15-30 centimeters uppermost layer containing seeds, plant propagules, roots, organic matter, and soil microbes) before trenching to facilitate reestablishing vegetation in a more timely manner.	The Applicant will be required to submit detailed revegetation and reclamation plans to the BLM Authorized Officer for review and approval per BLM ROW Grant Stipulations. The plans must meet BLM standards for revegetation and reclamation in Appendix J5.

		MITIGATION MEASURES NOT ADOPTED BY THE BLM	RATIONALE FOR NOT ADOPTING
BLM 149	FSEIS Appendix M Part III	When new access roads/airstrips are created on public land, consult with ADF&G when considering whether to allow for possible public access for hunting, particularly in areas with under-utilized wildlife populations.	This mitigation would have no effect, as BLM-managed lands are already accessible to the public. The BLM ROW grant would be for non-exclusive use of the ROW except at limited sites where access may be restricted to protect public safety and maintain operational integrity of the pipeline system.
BLM 150	FSEIS Appendix M Part III	Specify the time frame of restoration rather than using open-ended language, such as "as soon as practicable."	The Applicant will be required to submit detailed revegetation and reclamation plans to the BLM Authorized Officer for review and approval per BLM ROW Grant Stipulations. The plans must meet BLM standards for revegetation and reclamation in Appendix J5.
BLM 151	FSEIS Appendix M Part III	A large number of applicant-proposed design features, mitigation measures, best management practices, and Project management plans listed in the Draft SEIS contain the language, "In areas where a lease is required from the State Pipeline Coordinator's Section" or a federal grant of ROW is required from BLM ... " These measures generally represent a best management approach that we recommend using to the maximum extent possible along the entire pipeline route, while acknowledging the outstanding need to complete coordination with private landowners.	This mitigation specifically applies to portions of the ROW where BLM has no land management authority.
BLM 152	FSEIS Appendix M Part III	Surveillance/monitoring parameters (i.e., which health outcomes, who monitors them, etc.) should be presented with proposed mitigations and BMPs.	This mitigation is not within BLM jurisdiction. Does not affect resources on Federal lands
BLM 153	FSEIS Appendix M Part III	Include BMPs to address potential impacts to migratory birds from marine vessels; including small fuel releases from leaking and wrecked vessels and the release of rats (and other non-native rodents).	This mitigation is not within BLM Jurisdiction.
BLM 154	FSEIS Appendix M Part III	To avoid and minimize impacts to wetlands to the extent practicable, the pipeline should be elevated on vertical support members in the Arctic Tundra ecoregion, and other areas where thaw-unstable permafrost exists.	BLM has determined there could be potential significant impacts to caribou from an elevated pipeline (per Alaska National Interest Lands Conservation Act [ANILCA] 810 analysis) and therefore considers this mitigation is not practicable.
BLM 155	FSEIS Appendix M Part III	The pipeline shall be elevated on Vertical Support Members (VSMs) from mile post 0 to at least beyond the area of extensive ice-rich, saturated soils containing a high density of oriented thaw lakes on the Arctic Coastal Plain. The VSMs should also be used to elevate the pipeline in extensive areas of thaw-unstable permafrost and in areas of continuous and discontinuous permafrost where inadvertent thermokarst could alter the natural drainage pattern along the pipeline.	BLM has determined there could be potential significant impacts to caribou from an elevated pipeline (per ANILCA 810 analysis) and therefore considers this mitigation is not practicable.
BLM 156	FSEIS Appendix M Part III	Material sites shall be reclaimed in accordance with a plan approved by the Corps of Engineers in consultation with the Service. Reclamation shall be accomplished within 3 years on any portion of the material site that has been inactive (abandoned) for 3 years, or where the material source is no longer practical or economically feasible to extract.	Mineral material disposal and reclamation on BLM-managed lands are regulated under 43 CFR 3600.
BLM 157	FSEIS Appendix M Part III	If open water is created at a material site in the Intermontaine Boreal or Alaska Range Transition Ecoregion, then reclamation shall include: 1) constructing a littoral zone at least 20 feet wide (shallow underwater shelf along the bank with slopes averaging less than 10H: 1V); 2) constructing an irregular shoreline with bays and spits; and 3) spreading two-to-four inches of separately stockpiled organic overburden on the littoral zone and shoreline to enhance revegetation. At least a 25 foot wide buffer of native vegetation should also be established around the excavation perimeter to help filter sediment and pollutants before they enter the water.	Material site reclamation is covered by Agency Recommended Measure (FSEIS Appendix M Part III, Comment Code MIT_15) on reclamation and habitat.

		MITIGATION MEASURES NOT ADOPTED BY THE BLM	RATIONALE FOR NOT ADOPTING
BLM 158	FSEIS Appendix M Part III	If open water is created at a material site in the Arctic Tundra Ecoregion, then reclamation shall include: 1) salvaging the active organic topsoil layer (12 to 18 inches) overlaying the footprint of the cell and stockpile on an adjacent ice pad/pad; 2) removing the remaining inorganic/mineral overburden from the cell and stockpile separately from the organic topsoil on an adjacent ice pad/pad; 3) placing a berm of inorganic overburden around the outside edge of the cell as insulation to prevent thermokarsting and erosion of the cell sidewalls, and as a safety precaution; 4) instructing side slopes of the cell no steeper than 2H:1V (preferably 3H:1V); 5) placing the inorganic/mineral overburden back into the cell when mining is complete to create 3H:1V side slopes if possible; 6) using the organic topsoil to stabilize the top edges of the side slopes of the mined cell, to reclaim the adjacent tundra disturbed by mining operations, and/or to use in other reclamation sites; 7) keeping the berm surrounding the pit in place as a safety precaution until the pit has completely filled with water, at which point the berm can be removed (e.g., pushed into the water-filled pit).	Mineral material disposal and reclamation on BLM-managed lands are regulated under 43 CFR 3600. Surface layer materials are segregated and stockpiled for BLM mineral material sales in accordance with terms and conditions of mineral material sale permit.
BLM 159	FSEIS Appendix M Part III	A final mitigation plan shall be approved by the Corps of Engineers in consultation with the Service before work commences in waters of the U.S., including wetlands. Unavoidable direct, indirect, and temporal (>3 years) Project impacts to wetlands shall be compensated with at least equal-functioning wetlands.	This mitigation is outside of BLM jurisdiction. For any plan required by the U.S. Army Corps of Engineers (USACE), the BLM ROW stipulations require the holder to have all other Federal State and local permits and approvals prior to a Notice To Proceed from the Authorized Officer.
BLM 160	FSEIS Appendix M Part III	At least a 25 foot wide buffer of native vegetation should also be established around the excavation perimeter to help filter sediment and pollutants before they enter the water.	This is a portion of another mitigation measure (BLM 157) that is not adopted by BLM.

Appendix J2 - BLM Standard Stipulations for Mineral Material Disposal Central Yukon Field Office

Note: These standard stipulations apply to development, operation, and reclamation of mines for common variety minerals (rock, sand, and gravel)

Administrative Stipulations

1. The permittee shall provide a detailed mining and reclamation plan to the Bureau of Land Management (BLM) for approval at least 90 days prior to beginning any mining operations.
   a. The mining and reclamation plan shall address all applicable items in the attached *Mineral Materials Mining and Reclamation Plan Proposal.*

2. The permittee shall provide copies of the following documentation to BLM **prior to** beginning any mining operations:
   a. Written certification, signed by the permittee's authorized representative, that all persons working at the site, including employees of the permittee, its contractors, or subcontractors, have received a copy of these stipulations and a copy of the enclosed Alaska Department of Environmental Conservation (ADEC) Spill Response Placard, and have been briefed on their responsibility to comply with them.
   b. A certified site-specific Spill Prevention Control and Countermeasures Plan (SPCCP) or BLM-approved Spill Contingency Plan (SCP), as applicable. See stipulations 22 and 23 for more information.
   c. A copy of the relevant approved Storm Water Pollution Prevention Plan (SWPPP), if applicable, or a written statement of the reasons a SWPPP is not applicable.
   d. A copy of the relevant Clean Water Act Section 404 permit, if applicable, or a written statement of the reasons a 404 permit is not applicable.
   e. A copy of the relevant Alaska Department of Fish and Game Fish Habitat permit, if applicable, or a written statement of the reasons it is not applicable.
   f. A copy of any other applicable permit required by State or Federal law or regulation.

3. The permittee will require that their employees, their contractors, and subcontractors follow all applicable federal, state, and local laws and regulations related to environmental protection and protection of cultural resources. If another agency issues a citation or notice of violation, BLM will also issue a notice of noncompliance for failure to comply with this stipulation.

4. The permittee will require that copies of the material sale contract or free use permit, as applicable, including the stipulations, and all other applicable

permits from other State or Federal agencies, are on site and available for reference by the operators and review by the BLM at any time when personnel are working on site. Electronic availability satisfied this requirement.

5. The permittee will ensure that copies of all relevant monitoring plan records are available on-site for review by the BLM at any time when personnel are working on site. Electronic availability satisfied this requirement.

6. The permittee will notify BLM at the beginning and the end of active mining operations.

7. The permittee shall provide a report to BLM of the volume and type(s) of material produced from the site no later than December 31 of each calendar year.

Working Footprint

8. The permittee will ensure that work does not expand outside of the permitted material site boundary.

9. The permittee will ensure that a 50-foot undisturbed buffer is maintained along boundaries with other land owners when applicable, with the exception of the pipeline corridor and access roads when they cross land boundaries.

10. The permittee will develop permitted mineral material sites sequentially in cells (See attached example phasing diagram) in accordance with the Project schedule.
    a. A disturbed cell will be reclaimed prior to or concurrent with opening a new area.
    b. Exceptions to allow for thawing of permafrost may be granted at the discretion of the authorized officer

11. The permittee shall ensure that buffer zones are not disturbed, except by designated crossings.
    a. Operation of equipment, placement of overburden or mined material, or storage/placement of any equipment and supplies will not be allowed in any buffer zones identified in the mining and reclamation plan, specified in the Decision Record for this authorization, or required in these stipulations
    b. See stipulations 9 and 46 for mandatory buffer zones.

Technology and Practices

12. The permittee will not use the site for storage of materials or supplies not related to the production of mineral materials from the site.

a. Storage of materials or supplies not related to the production of mineral materials, including culverts, bridge railings, calcium chloride, or other road maintenance supplies, is outside the scope of this authorization.

b. The permittee may request separate authorization to store such materials on public lands, if needed.

13. The permittee will not use the site for secondary or value-added production processes not related to the production of mineral materials from this site.

a. Operation of hot-batch plants, asphalt production, cement production, fabrication of components for off-site use, and similar activities not related to the production of mineral materials is outside the scope of this authorization.

b. The permittee may request separate authorization to conduct such activities on public lands, if needed.

c. The permittee will ensure that no minerals originating outside the permitted mineral material sites are imported to the pemitted mineral material sites.

14. The permittee will conduct activities under this authorization using equipment, devices, and practices that are able to achieve compliance with these stipulations and all applicable State or Federal laws and regulations. Use of inadequate, insufficient, or inappropriate equipment, devices, or practices will not constitute justification for failure to comply with these stipulations or applicable State or Federal law and regulations.

15. The permittee will ensure that overburden, topsoil, and vegetation are stockpiled separately in a manner that prevents loss through erosion, preserves them for use in reclamation, and does not impede access to usable mineral materials, unless otherwise approved by the Authorized Officer.

16. The permittee will slope work pit sides to prevent erosion and provide for the safety of humans and animals. Slopes along pit sides and inactive faces shall be no greater than 3:1.

17. The permittee shall maintain site stabilization measures and measures to control erosion, sedimentation, and storm water in proper working order throughout the term of the authorization, including during periods of temporary closure or inactivity.

18. The permittee will keep areas of operation in a safe, neat, and sanitary condition at all times.

19. The permittee will not restrict access to public lands during periods of inactivity, unless BLM directs that a gate to the site be closed and locked.

20. The permittee will implement dust abatement (i.e. graveling, watering) measures when deemed necessary by the permittee, their contractor, or subcontractor, or when directed by a BLM representative.

Management of Hazardous Materials, including Petroleum, Oils, and Lubricants (POL)

21. Prior to beginning operations, the permittee shall provide to BLM a certified, site-specific SPCCP in accordance with 40 Code of Federal Regulations (CFR) 112. If no SPCCP is required under 40 CFR 112, the permittee shall submit an SCP for BLM approval, describing measures that will be taken to prevent and respond to hazardous materials spills, including POL spills.

22. The permittee will conduct all operations pursuant to this authorization in compliance with the certified SPCCP or BLM-approved SCP, as applicable.

23. The permittee will transport, store, and transfer hazardous materials, including POLs, in a manner that prevents release to the environment.

    The permittee will prevent spills and release of hazardous materials, and will store hazardous materials containers, including POL containers, within secondary containment.

24. The permittee will implement spill containment measures during transfer of hazardous materials, including POLs, from one container to another, including equipment refueling. At a minimum, a “duck pond” or similar catchment will be placed under the point of delivery to catch spills, splashes, or overfills.

25. The permittee will require drip basins to be placed under all parked vehicles or heavy equipment that is known to leak fluids, and all parked equipment that will be unattended for more than 8 hours.

26. The permittee will maintain spill containment devices, including “duck ponds,” liners, and vehicle drip pans in good working condition at all times. Spill containment devices that are punctured, torn, or worn beyond serviceability will be replaced immediately upon discovery of the unserviceable condition.

27. At all permitted mineral material sites, the permittee will ensure that no fuel storage or refueling of equipment occurs within the flood plain of a stream or lake, unless otherwise approved in the mining plan.

28. The permittee will label hazardous materials storage containers 55 gallons or greater in size, including POL containers, with the following information: Permittee’s/contractor’s name, contents of the container (name of the product that you put in the container, if not in the original container from the manufacturer), and date the product was purchased/put in the container if it is not in its original container (e.g. Northern Guides, Diesel Fuel, 17 May 2009).

29. Equipment repair on site is allowed on the basis of the necessity to operate equipment on the site. The permittee will conduct equipment repair with the potential to release fluids over an impermeable liner sufficient to prevent fluid migration to the environment.

30. The permittee will ensure that all hazardous material spills, including POL spills, are contained and cleaned up as soon as the release is identified.

31. The permittee will ensure that all hazardous material spills, including POL spills, are reported to the ADEC in accordance with State of Alaska laws and regulations. (See ADEC Spill Response Placard)

32. The permittee will notify the BLM authorized officer within 48 hours of any hazardous material spill, including POL spills in excess of 10 gallons, on public lands and will provide the ADEC spill report number to the BLM.

Waste Management

33. The permittee will ensure that no garbage or solid waste is buried on public lands, unless in an ADEC approved waste disposal facility.

34. The permittee will ensure that only solid waste combustibles that originate from on-site are incinerated, and that they are incinerated in a contained and controlled manner.

    a. Solid waste combustibles are materials that can be reasonably expected to reduce to ash when burned.

    b. Rubber, tires, plastic, styrofoam, metal, aerosol cans, or any other materials that, when burned, emit volatile chemicals, leave unburned solids, or are likely to explode, are not considered solid waste combustibles and may not be incinerated on public lands.

    c. No waste from offsite will be brought on site for incineration.

35. The permittee will ensure that incineration of garbage, if conducted, is in compliance with Alaska Division of Forestry Burn Barrel Specifications. These specifications can be found at: https://dnr.alaska.gov/burn/specifications.

36. The permittee will ensure that all solid waste and garbage, including incinerated ash, is removed from public lands and disposed of in an ADEC approved waste disposal facility. No solid waste is to remain on site for more than 90 days.

37. The permittee will ensure that portable toilets are used for human waste disposal, and that they are regularly maintained. The disposal of human waste is not authorized on public land, unless a pit privy is explicitly authorized in the Decision Record for this authorization.

38. The permittee will ensure that all human waste and gray water management is in compliance with relevant State of Alaska regulations.

Reclamation

39. The permittee will consult with BLM to develop the fertilizer and seed mixture to be used when reclaiming any area within the permitted material site boundary.

40. The permittee will meet with BLM staff at the end of the life cycle of the mine, prior to final reclamation, to define final configuration of the mine.

41. The permittee will ensure that reclamation is conducted in accordance with the approved reclamation plan. Deviations or modifications to the approved reclamation plan must be approved in writing by the BLM authorized officer prior to execution.

Soil, Water, and Air Resources Protection

42. The permittee will divert surface water flow around the excavated pit, to protect the water quality of the area.

43. The permittee will use appropriate erosion, sediment, and storm water control measures to achieve compliance with applicable State and Federal laws and regulations, including State of Alaska water quality standards.

44. The permittee will maintain a 100-foot undisturbed buffer along any lakes or creeks that flow through upland pits.

    a. Any approved temporary access road that bisect the buffer area will be rehabilitated at the close of mining by revegetating the crossing with plant species and densities similar to those in the undisturbed buffer for at least 100 feet from the bank-full elevation.

    b. Temporary access roads in buffers originally void of vegetation will be scarified to a minimum depth of 8 inches during final reclamation.

45. Instream and floodplain gravel scraping is prohibited unless explicitly authorized in the Decision Record for this authorization.

Cultural Resources Protection

The permittee will comply with requirements in the Programmatic Agreement (PA) developed for this Project and signed in December 2018.

Wildlife Resources Protection

46. The permittee will make a good faith effort to conduct work in such a manner as to avoid or minimize impacts to migratory birds as follows.
    a. The primary mechanism to avoid and minimize impacts is to conduct work that may impact migratory birds outside of the nesting season (May1-July 15 south of Atigun Pass; June 1 – July 31 North of Atigun Pass).
    b. The U.S. Fish and Wildlife Service provides guidance on dates to avoid vegetation clearing at: https://www.fws.gov/alaska/fisheries/fieldoffice/anchorage/pdf/USFWS%20Timing%20Recommendations%20for%20Land%20Disturbance%20&%20Vegetation%20Clearing.pdf.

47. The permittee will ensure that no vertical or near-vertical faces that may encourage bank swallow nesting are left on any slope, including on stockpiles.
    a. If bank swallows establish nests, the permittee will ensure that the face is not disturbed until after young are fledged or the nests are naturally vacated.

48. The permittee will ensure that garbage, groceries, or other wildlife attractants are kept secured while awaiting their use, removal, or incineration.
    a. Use of bear-proof containers or elevated caches is strongly recommended as a means to comply with this stipulation.

49. Permittee will ensure that their employees, contractors, and subcontractors do not directly and intentionally harass or feed wildlife. The threshold for harassment is causing an animal to alter its behavior.

50. In addition to State reporting requirements, the permittee will notify the BLM authorized officer within 30 days if a state-managed game animal is killed in defense of life or property in accordance with Article 9-5 Alaska Administrative Code 92.410 of the State of Alaska Game Regulations.

Vegetative Resources Protection

51. The permittee will ensure that no surface-disturbing activities are conducted in areas where the BLM has identified BLM listed sensitive plants occurring. If sensitie plant species are known to occur near the permitted area, or are found in the permitted area, the permittee will consult with the Authorized Officer to determine potential mitigation such as avoidance or transplant.

52. The permittee will comply with the approved Project invasive plant and animal species control plan.

Visual Resources Protection

53. The permittee will ensure that equipment used in association with this authorization is kept hidden from view from the Dalton Highway to the extent feasible.

54. The permittee will ensure that fixed structures and facilities that are visible from any point on the Dalton Highway, including fuel storage tanks and office facilities, are painted covert green, shadow gray, or a similar color, unless another color is specified in the Project-specific stipulations.

Fire Management

55. The federal government is not responsible for protection of the permittee's, contractor's, or subcontractor's structures, equipment, or personal property from wildfire.

56. The permittee, their contractors and/or subcontractors will be held financially responsible for any action or activity that results in a wildfire. Costs associated with wildfire include, but are not limited to, damage to natural resources and costs associated with suppression action taken on the fire.

Table J2-1: Non-Native Invasive Species of Concern (BLM Alaska) – December 2017*

Invasive Plant Species Name	Invasive Plant Common Name
Gypsophila paniculata	baby's breath
Vicia cracca	bird vetch
Aegopodium podagraria	bishop's goutweed
Fallopia convolvulus	black bindweed
Galeopsis tetrahit	brittlestem hempnettle
Hieracium lachenalii	common hawkweed
Verbascum thapsus	common mullein
Rumex acetosella	common sheep sorrel
Holcus lanatus	common velvetgrass
Ranunculus repens	creeping buttercup
Cirsium arvense	creeping thistle
Linaria dalmatica	Dalmatian toadflax
Nanozostera japonica	dwarf eelgrass
Sorbus aucuparia	European mountain ash
Convolvulus arvensis	field bindweed
Brassica rapa	field mustard
Hordeum jubatum	foxtail barley
Alchemilla monticola	hairy lady's mantle
Alchemilla mollis	lady's mantle
Alopecurus pratensis	meadow foxtail
Crepis tectorum	narrowleaf hawksbeard
Hieracium umbellatum	narrowleaf hawkweed
Dactylis glomerata	Orchardgrass
Lolium perenne	perennial ryegrass
Digitalis purpurea	purple foxglove
Poa trivialis	rough bluegrass
Elymus sibiricus	Siberian wildrye
Galeopsis bifida	splitlip hempnettle
Poa pratensis ssp. irrigata	spreading bluegrass
Hypericum perforatum	St. Johnswort
Potentilla recta	sulphur cinquefoil
Ranunculus acris	tall buttercup
Phleum pratense	Timothy
Myosotis scorpioides	true forget-me-not

Invasive Plant Species Name	Invasive Plant Common Name
Melilotus alba	white sweetclover
Vicia villosa	winter vetch
Tragopogon dubius	yellow salsify

- Identified non-native invasive species (NNIS) of Concern may be amended at the discretion of the BLM authorized officer.

Mineral Materials Mining and Reclamation Plan Proposal

While there is no requirement to use this form to apply for a mineral material mining authorization, all of the relevant information identified here is required for a mining plan to be determined complete.

NOTE 1: Applicants should contact BLM to request separate authorization for the following activities, which are outside the scope of activities authorized under a mineral material mining plan:

- Establishment and operation of camps on public lands for commercial purposes.
- Storage of materials or supplies not related to the production of mineral materials, including culverts, bridge railings, calcium chloride, or other road maintenance supplies.
- Secondary or value-added production processes, including operation of hot-batch plants, asphalt production, cement production, fabrication of components for off-site use, and similar activities not related to the production of mineral materials.

NOTE 2: Applicants will be required to provide a copy of the following documentation prior to beginning operations.

- The relevant approved SWPPP
- A certified SPCCP if required by 40 CFR 112, or an SPC subject to BLM approval.

Providing those, even in draft form, as part of this mining plan will help expedite the analysis and approval.

Applicants will also be required to provide a copy of any other permits required by applicable State or Federal regulation (e.g., a Clean Water Act Section 404 permit, an Alaska Department of Fish and Game Fish Habitat Permit, etc.) **prior to** beginning operations. Thus, they are encouraged to pursue those with the relevant agency concurrently with this application.

Mining Plan

- ☐ Project Name
- ☐ Prepared By
- ☐ Date

Operator Information

- ☐ Operator Name
- ☐ Mailing Address
- ☐ Phone Numbers (Office, Cell, and FAX)
- ☐ Point of contact

Permittee Information (if different than operator information)

- ☐ Permittee(s) Name
- ☐ Mailing Address
- ☐ Phone Numbers (Office, Cell, and FAX)
- ☐ Point of contact

General Plan Information

- ☐ Mineral Material type(s) to be mined
- ☐ Quantity per Year to be mined (cubic yards)
- ☐ Total quantity to be mined

General schedule of operations from start through closure:

- ☐ Proposed date for mobilization to site
- ☐ Proposed date for start of mining
- ☐ Estimated date for end of mining
- ☐ Estimated date for beginning of reclamation
- ☐ Estimated date for completion of reclamation
- ☐ Estimated date(s) for period(s) of temporary or seasonal closure
- ☐ Other relevant milestone date estimates (e.g., planned change of mining method, etc.)

DESCRIPTION OF OPERATIONS:

Location

- ☐ Legal Description: (Township, Range, section(s), quarter section(s))
- ☐ Highway milepost
- ☐ Site name (if known)
- ☐ Are non-native invasive plant species present at the site? (if known).

Equipment and Devices:

- ☐ Provide a list or description of all equipment and devices that will be used in the operations and the purpose/use for each.

Operating Practices

- ☐ Type of action/operation proposed (open pit, quarry, etc.)
- ☐ Mining methods or techniques proposed (dozer scraping, excavator, drag line, blasting, etc.)
- ☐ Estimated dimensions of excavation/workings (length, width, depth)
- ☐ Description of processing/washing/crushing/sorting to be conducted on site
- ☐ If water-based processes are proposed (washing), a detailed description of the water management plan, including water source, flow control, settling, and discharge rates and locations.
- ☐ Estimated average daily production (cubic yards)
- ☐ Estimated depth of overburden above usable materials
- ☐ Estimated maximum volume of material stockpiles
- ☐ Estimated volume of material stockpiles at completion of mining
- ☐ Estimated total surface disturbance (acres); include mining area, access, berms, stockpiles, fuel yards, sanitation facilities, etc.
- ☐ Description of overburden stockpiling (location, methods to prevent loss from erosion)
- ☐ Description of dust control practices
- ☐ Proposed daily hours of operation

Reclamation Plan

- ☐ Description of proposed reclamation practices and methods
  - Regrading and reshaping to conform with adjacent landforms
  - Placement of growth medium and establishment of self-sustaining revegetation
  - Measures to control erosion, landslides, and water runoff
- ☐ General reclamation schedule, from start to finish
- ☐ Description of final pit configuration (reference diagrams)
- ☐ Reclamation practices for roads/access features
- ☐ Post-reclamation disposition of access features (reclaimed, left for future access to the pit, etc.)

Monitoring Plan

A monitoring plan must be designed to demonstrate compliance with the approved plan of operations and other Federal and State environmental laws and regulations, provide early detection of potential problems, and supply information that will assist in directing corrective actions should they become necessary. Examples of monitoring programs which may be relevant to a given operation include water quality, air quality (dust control), slope stability, revegetation progress (during reclamation), noise levels (if near visitor

services facilities), and wildlife mortality. Monitoring plans may incorporate existing State and/or other Federal monitoring requirements to avoid duplication. However, the submitted monitoring plan needs to include copies of and clearly reference these other plans.

Where applicable, the monitoring plan must include details on:

- ☐ type and location of monitoring devices
- ☐ sampling parameters and frequency
- ☐ analytical methods
- ☐ reporting procedures
- ☐ procedures to respond to adverse monitoring results.

Interim Management Plan

The interim management plan describes management of the Project area during periods of temporary and seasonal closures to prevent unnecessary or undue degradation.

The interim management plan must include, where applicable, the following:

- ☐ measures to stabilize excavations and workings
- ☐ measures to isolate or control toxic or deleterious materials (e.g., if hazardous materials, including POLs, are left on site).
- ☐ provisions for the secure storage or removal of equipment, supplies and structures;
- ☐ measures to maintain the Project area in a safe and clean condition;
- ☐ plans for monitoring site conditions during periods of non-operation;
- ☐ a schedule of anticipated periods of temporary closure during which you would implement the interim management plan

Description of Support Facilities:

- ☐ Office and administrative facilities
  - Description of structures and locations (reference Project maps)
- ☐ Sanitation needs
  - human waste management methods (port-a-john, etc.)
  - cleaning and maintenance schedule
- ☐ Public Safety Considerations
  - Proposed fencing, barriers, or barricades and the need/purpose for each
  - Proposed signage and the need/purpose for each
  - Description of any other proposed public safety features or devices
- ☐ Trash and Solid Waste Management
  - Methods for interim secure storage of garbage generated on site
  - Schedule for incineration of solid waste combustibles
  - Schedule for backhaul of non-combustible waste
  - Description of burning/incineration facilities
- ☐ SWPPP or other water management plans:
  - Proposed means of storm water diversion around workings

- Diversion ditches and discharge locations in case water is produced during mining operations
- Sediment and erosion control methods and devices
- Schedule for inspection and maintenance of sediment and erosion control devices
- Location of any planned water discharge
- Water needs and uses
- Water sources, including and methods and rates of water extraction or transfer

☐ Access
- Location(s) of each proposed road (reference Project maps)
- Road type for each proposed road (haul, light vehicle, access, etc.)
- Road maintenance methods and schedules
- Proposed upgrades to existing roads
- The location of reasonable public passage or access routes through or around the area to adjacent public lands

☐ Hazardous materials, including, but not limited to, POLs and explosives
- SPCCP or SCP, as applicable
- Location of all Hazardous Materials storage (reference Project maps)
- Location of refueling areas
- Blasting plan, if applicable

Project Maps and Diagrams

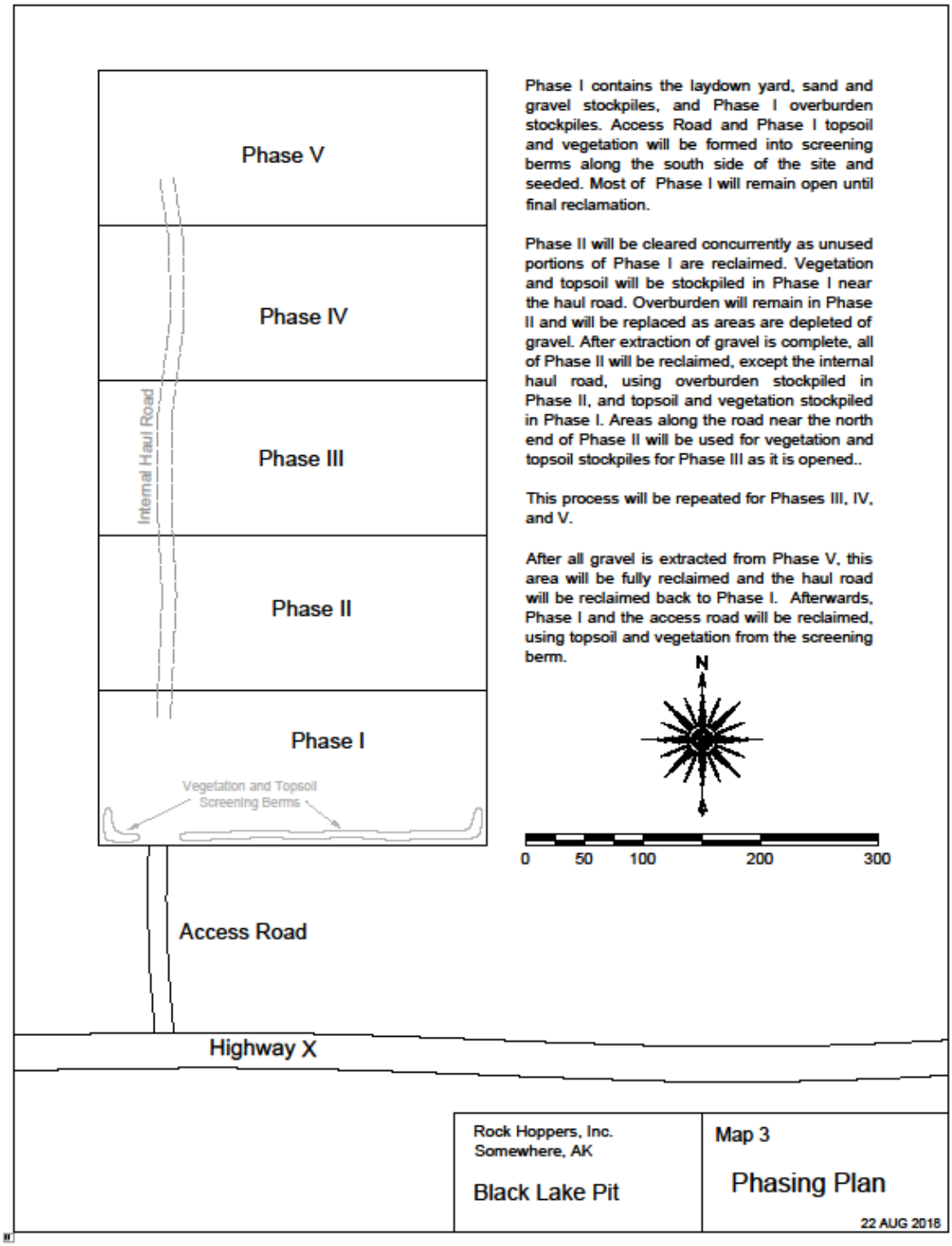
☐ Maps must be at an appropriate scale and of sufficient detail for BLM to discern the locations of:
- Excavation boundaries
- Types and location of material stockpiles
- Phasing Plan (see attached example)
- Processing facilities
- Overburden areas
- Administrative facilities (office structures, etc.)
- Equipment storage areas
- Maintenance facilities and/or location
- Refueling areas
- Fuel storage
- All water bodies within the intended disturbance area
- Access features
- Public safety devices, including proposed fences, barricades, and signage.

☐ Diagrams
- pre-mining cross sections
- post mining cross sections
- post-reclamation cross sections

The BLM may require additional, site-specific information when resource status or conditions warrant.

Appendix J3 - BLM Standard Stipulations for Mineral Material Sales – Phasing Plan Example

This diagram depicts the BLM required mineral materials construction phasing protocol.



Appendix J4 - BLM Timber Clearing, Salvage, and Utilization Standards

All woody vegetation 5 inches in diameter at breast height or larger shall be classified as timber. By industry convention, diameter at breast height is the diameter outside bark measured 4.5 feet above ground level. This convention will be the standard for determining timber size for this Project.

No timber or woody vegetation may be removed until after a permit/authorization to proceed is issued.

The Holder shall ensure that removal of timber and other woody vegetation is limited to only that necessary to facilitate activities authorized in the Grant of Right-of-Way (ROW).

The Holder shall ensure that vegetation remains undisturbed for 300 feet on either side of streams where construction methods allow (e.g., streams where horizontal boring is utilized).

The Holder shall ensure that timber and woody debris are managed to minimize risks to public safety, avoid fire fuel hazards, and minimize risks of insect and disease infestation:

a. Tree tops shall be lopped to lie flat
b. No trees shall be left lodged into other trees.
c. Trees that will not be removed may not be damaged.
d. Brush and woody debris shall either be scattered flat and away from standing trees to avoid creation of fuel ladders and insect habitat, or be chipped and broadcast as sparsely as possible across the disturbed area.
e. If the Holder identifies any trees that will not be removed for the purposes of this authorization and that, due to condition and location, may pose a risk to public safety, the Holder will notify the BLM authorized officer within 5 business days.

The Holder shall ensure that the entire bole of all timber removed for Project purposes is salvaged for use, from a maximum 6 inch high stump to a maximum 4 inch diameter top.

a. If safety concerns prevent full utilization (defined above) of timber, the Holder shall consult with the BLM authorized officer for acceptable alternatives.
b. If, after consultation with the Holder, BLM identifies and marks trees to be left for wildlife habitat or other purposes, the Holder shall ensure that such marked trees are not disturbed by any activities carried out under the Grant of ROW.

The Holder may make decked wood available to Alaska residents, churches, hospitals, charitable institutions, governmental units, or nonprofit organizations, for free if they so choose.

a. Timber made available under this stipulation shall be limbed and stacked in orderly decks in locations readily accessible to the public.

b. When timber is made available under this stipulation, the Holder shall make reasonable and timely efforts to inform local residents of the availability and location.

The Holder shall ensure that all decked timber is removed from public lands within 1 year from the date of harvest.

a. The Holder may request separate authorization to store timber on public lands after 1 year if desired. However, such authorization is discretionary, and may be denied if the decked timber is judged to be deteriorating such that it will be in an unusable condition before the end of the requested authorization period, if the Holder's management of the deck is not in compliance with these stipulations at the time of the request, or if the authorized officer determines that the authorization is not in the public interest.

The Holder will ensure that cut timber left on public lands for more than 90 days is limbed and decked in an orderly fashion.

The Holder will ensure that skidding, yarding, and decking are managed to minimize environmental impacts.

a. The Holder will ensure that, to the extent feasible, landings and deck sites are placed on firm, dry sites with good drainage and as far from water as possible. In no circumstances may landings or log decks be placed within 300 feet of a perennial water body.
b. The Holder will ensure that appropriate erosion and sediment control practices are implemented and regularly maintained to prevent erosion and minimize sediment transport to water bodies or drainages from skid trails, landings, and decks.
c. The Holder will ensure that log decks are placed such that they do not obstruct access to public lands, including Trans-Alaska Pipeline System access, and do not interfere with safety or maintenance activities on any public road.
d. The Holder will ensure that revegetation of skid trails, landings, and deck sites is conducted in accordance with timelines prescribed in the BLM-approved revegetation plan.
e. The Holder will ensure that no logs are skidded across open water (non-frozen) streams.
f. The Holder will ensure that timber felled within 300 feet of a perennial water body is lifted clear of the ground and moved beyond 300 feet from the water body before being skidded.
g. The Holder will ensure that, to the extent feasible, skidding is conducted across slopes rather than up or down slopes.
h. The Holder will ensure that, to the extent feasible, route selection and directional felling are used to minimize the need for skidding in wetlands, highly erodible soils, or on slopes steeper than 15 percent.

The Holder will ensure that all activities under this authorization are conducted using equipment, devices, and practices that are able to achieve compliance with these stipulations and all relevant State or Federal laws and regulations. Use of inadequate, insufficient, or inappropriate equipment, devices, or practices will not constitute justification for failure to comply.

The Holder shall ensure that site stabilization measures and measures to control erosion, sedimentation, and storm water are maintained in proper working order throughout the term of the authorization, including during periods of temporary closure

No debris resulting from clearing operations may be placed in streams unless approved by the Authorized Officer.

Appendix J5 - BLM Revegetation, Restoration, and Reclamation Standards

BLM revegetation, restoration, and reclamation are described here in Appendix J, Part 5. The Alaska Gasline Development Corporation (Applicant) will be required to submit detailed revegetation, restoration and reclamation plans to the BLM Authorized Officer for review and approval prior to receiving a Notice to Proceed, per BLM ROW Grant stipulations. These plans need to address all segments of the pipeline and ancillary facilities, and be in conformance with the BLM requirements described here within, unless otherwise approved by the Authorized Officer.

BLM preferred methods for revegetation, restoration and reclamation are listed below. Any exceptions to these standards must be included in the Revegetation, Restoration and Reclamation plan and approved by the Authorized Officer. BLM revegetation and reclamation requirements are different than those described in the 2018 Final Supplemental Environmental Impact Statement (FSEIS) Appendix E. Appendix E does not meet BLM requirements regarding segregation of the soil surface layer and the associated pipeline trenching methodology. Appendix E lacks reference to specific erosion control media, crowning, monitoring, and as written would make it difficult for BLM to conduct compliance monitoring along the ROW. Therefore, BLM revegetation, restoration, and reclamation standards are defined here within.

BLM requires the segregation and retention of topsoil, sometimes also referred to as the soil surface layer excavated for the Project. This includes not only the organic surface layer but also the mineral soil layers (Horizons A, B, C etc.) below the surface organic layer. Removed soil will be used as cover that is placed back on the right-of-way including in and over the pipeline trench to form a slight crown over the buried pipeline to reduce water ponding and encourage physical and thermal stability.

BLM requires reclamation of disturbed sites as soon as practicable after the soil disturbance activity is completed. While the term “reclamation” is typically used to describe activities that occur after a project is no longer needed, such as with mining or mineral extraction activities, or a temporary facility installation, for this Project and other authorized ground disturbing activities BLM uses the term “reclamation” to describe activities that aim to restore and revegetate wildlife habitat by the replacement soil and organic materials back onto the disturbed ground as soon as possible after the disturbance activity occurs. “Reclamation” for this Project would involve activities that promote vegetation growth/regrowth and soil stabilization immediately after the installation of the pipeline and associated ancillary facilities during all phases of this Project: Construction, operations and maintenance, and ultimately the termination of the pipeline.

Restoration, Revegetation and Reclamation Requirements

- To facilitate the Applicant’s proposed revegetation and reclamation plan approval (per BLM ROW Grant Stipulations), a general description of vegetation and soil baseline conditions in the BLM ROW area before disturbance or modified pipeline

activity will be provided by the Applicant. Activities shall be conducted so as to avoid or minimize disturbance to vegetation to the extent practicable.

- Revegetation of disturbed areas on Federal Land shall be conducted as soon as practicable and, if necessary, shall be repeated until meets the below criteria which reflects current BLM policy, unless otherwise approved by the Authorized Officer. Specifically, after trenching, pipe lowering in, and backfilling, compacted areas will be treated to mitigate the compaction effects of the excavator and associated traffic, graded to facilitate drainage, covered with available growth media, and scarified to allow natural revegetation by native plants. Fertilization and/or seeding will occur if the interim reclamation standard of 30% cover over a three-year period does not occur. All other restoration shall be completed as soon as possible.
- Areas of permafrost, especially thaw-sensitive permafrost, require the insulative properties of vegetation to remain in a frozen state. The soil surface layer should be salvaged in all permafrost areas to minimize thermokarsting, erosion issues, water management problems, and general permafrost thaw. If organic matter cannot be saved, erosion control measures shall be used to ensure slope stability and adequate water management until that time at which vegetation becomes established. When gravel workpads or gravel access roads are constructed over vegetation on BLM lands, permafrost protection requirements will not apply.
- Matting will be used in areas in which wetlands are short distances across, non-permafrost, inundated, and flat. Due to the uneven nature of frozen ground, mats are typically used in summer conditions for safety reasons and typically in inundated wetlands where they can settle into the softer soil creating a more level work surface. Matting or other erosion control media shall be used in areas of ice rich permafrost. Other surface disturbing activities have shown the necessity of erosion control media in permafrost regions.
- Salvaging the surface layer is intended to occur in permafrost areas where underlying soils are thaw-stable, pipeline construction is planned for summer, ROW preparation mode is grading (e.g. cut/fill), and cross slope and/or the longitudinal slope is less than or equal to 2 percent; where slopes range from 2 to 20 percent, the cut area only will be salvaged (AGDC, 2017a). Where underlying permafrost soils are thaw-sensitive, pipeline construction is planned for summer, and cross slope and/or longitudinal slope is greater than 10 percent, the surface layer will be segregated from the area to be excavated only (AGDC, 2017a). In non-permafrost areas, salvaging the surface layer will occur where pipeline construction is planned for summer, ROW preparation mode is grading or cut/fill, and cross slope and/or longitudinal slope is less than or equal to 2 percent; where slopes range from 2 to 20 percent, the cut area only will be salvaged (A, 2017a). This will result in additional mileage where the surface layer will be salvaged for future use in ROW stabilization.
- Reclamation shall be conducted at the earliest feasible time. The operator shall reclaim the area disturbed, by taking reasonable measures to prevent or control on-site and off-site damage of the Federal lands.
- Reclamation shall include, but shall not be limited to:

- Saving of topsoil for final application after reshaping of disturbed areas have been completed;
- Measures to control erosion, landslides, and water runoff;
- Measures to isolate, remove, or control toxic materials;
- Reshaping the area disturbed, application of the topsoil, and revegetation of disturbed areas, where reasonably practicable; and
- Rehabilitation of fisheries and wildlife habitat. When reclamation of the disturbed area has been completed, the Authorized Officer shall be notified so that an inspection of the area can be made.

Successful Revegetation shall be defined as follows:

1) For areas outside the 100-year floodplain of a stream, revegetation shall be deemed successful when it has achieved 70 percent or greater average foliar cover of native species, and no invasive species above baseline levels, and an upward trend after at least two growing seasons of growth. In areas that will be repeatedly accessed after ground disturbance revegetation may occur using reseeding with native grass seed.
2) For areas within the 100-year floodplain of a stream, revegetation shall be determined successful when the reclaimed area has at least 50 percent of the original total aerial cover in the ground cover (< 0.5 meters), understory (0.5 to 5 meters), and canopy (> 5 meters) categories, 50 percent of the aerial cover contributed by riparian vegetation only, and similar dominant woody species composition as regional reference conditions.
3) In cases where PHMSA requirements prohibit maintaining these standards, alternative measures for achieving desired condition of vegetation and riparian area stability and function will be subject to Authorized Officer approval.
4) Surface materials taken from disturbed areas shall be stockpiled in a manner that prevents loss through erosion. The surface materials will be utilized during restoration unless otherwise approved by the Authorized Officer.
5) Stabilization practices, as determined by the needs for specific sites, shall include but shall not be limited to the placement of mat binders, soil binders, rock, or gravel blankets or structures. Erosion control measures will be carefully selected, their efficacy monitored, and adjusted as needed.
6) All disturbed areas of Federal Land shall be left in such stabilized condition that erosion in excess of natural rates shall be minimized until the practicable Restoration and Revegetation of the ROW can be accomplished in a manner that is reasonably satisfactory to the Authorized Officer.
7) Areas on Federal Land disturbed by the Holder shall be restored by the Holder to the reasonable satisfaction of the Authorized Officer as stated in writing.

8) Vegetation, overburden, and other materials removed during clearing operations and not needed for project construction shall be disposed of by the Permit Holder in a manner approved by the Authorized Officer.

9) Upon completion of Restoration on Federal Land, the Holder shall remove all non-permanent equipment and supplies from the site.

Appendix J6 - BLM ANILCA Section 810 Analysis Summary

The Alaska National Interest Lands Conservation Act (ANILCA) Section 810(a) requires that an evaluation of subsistence uses and needs should be completed for any federal determination to "withdraw, reserve, lease, or otherwise permit the use, occupancy or disposition of public lands." As such, an evaluation of potential impacts to subsistence under ANILCA Section 810(a) must be completed for the FSEIS because the Project requires a BLM ROW grant for the natural gas pipeline's proposed crossing of federally managed lands. BLM conducted the required ANILCA Section 810 analysis for the FSEIS. ANILCA requires that this evaluation include findings on three specific issues:

1. The effect of use, occupancy, or disposition on subsistence uses and needs;
2. The availability of other lands for the purposes sought to be achieved; and,
3. Other alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes (16 USC Section 3120(a)).

As required by the ANILCA § 810, an analysis of subsistence impacts was published in Appendix N of the 2012 FEIS for the Alaska Stand Alone Gas Pipeline (ASAP). The following findings were made:

1. Under the proposed action, impacts to the abundance and availability of subsistence resources would not result in a significant reduction in subsistence uses, and
2. Analysis of the cumulative case determined that reasonably foreseeable developments associated with the proposed action may result in a significant restriction to subsistence uses for communities of the North Slope. Reduction in the availability of substance resources due to changes in animal movements was the primary concern.

ANILCA Notice and Hearings

In accordance with ANILCA, 16 USC § 3120(a) (1), hearings were held in Barrow, Nuiqsut, Kaktovik, Anaktuvuk Pass, and Wiseman in fall, 2012.

Subsequent to the publication of the 2012 FEIS, significant changes were made to the proposed pipeline route and design. These changes necessitated additional analysis of environmental impacts, which are described in the June 2018 FSEIS. This ANILCA § 810 Evaluation focuses on the changes described in the FSEIS as well as changes in subsistence resources and resource uses in the vicinity of the Project area.

Table J6-1. Federally Qualified Subsistence Communities Potentially Affected by the Proposed Action.

North Slope Region	Interior Region	Tanana Region	Southcentral Region
Barrow	Wiseman	Tanana	Cantwell
Nuiqsut	Coldfoot	Minto	Trapper Creek
Kaktovik	Evansville	Nenana	Talkeetna
Anaktuvuk Pass	Bettles	Healy	Susitna
	Alatna	Anderson	
	Allakaket		
	Rampart		
	Stevens Village		
	Beaver		

Alternative 1 – Proposed Action – Summary of Findings

Alternative 1 (Proposed Action) would not result in a significant restriction of subsistence uses.

Under the Proposed Action, the Applicant would construct, operate, and maintain the following:

1. Gas conditioning facility near Prudhoe Bay,
2. Approximately 733 miles of 36-inch diameter buried natural gas transmission pipeline,
3. Approximately 34 miles of 12-inch diameter buried natural gas lateral pipeline,
4. 40 mainline and 1 lateral block valves,
5. 5 pig launcher and/or receiver facilities, and,
6. Other permanent facilities.

The pipeline system would be designed to transport natural gas that would be accessible to and useable by urban centers, government entities, and natural resource development projects. Analysis of the Proposed Action considers the effects of construction, operation, and maintenance of these facilities to subsistence resources and uses.

Alternative 2 –Summary of Findings

The BLM has found that Alternative 2 (Aboveground Pipe) may significantly restrict subsistence uses. The BLM undertook the notice and hearing procedures required by ANILCA § 810(a)(1) and (2) in conjunction with release of the Draft Supplemental Environmental Impact Statement (USACE, 2017) in order to solicit public comment from the potentially affected communities and subsistence users.

Cumulative Case - Findings

The evaluation of other alternatives under Alternative 1 (Proposed Action) would apply to the Cumulative Case. The Cumulative Case would not result in a significant reduction in subsistence uses. This finding applies to the communities listed in Table L6-1.

The Proposed Activity will involve the Minimum Amount of Public Lands Necessary to Accomplish the Purposes of Such Use, Occupancy or Other Disposition

Alternatives that would reduce or eliminate the use of public lands needed for subsistence purposes include Alternative 3 (No Action). Section 2.4 in the FSEIS, Alternatives Considered but Eliminated from Detailed Analysis, discusses other alternatives that were considered that involve less federal public lands, but were eliminated from analysis due to economic or technological disadvantages, lack of feasibility, or because they did not meet the purpose of the proposed action.

Reasonable Steps will be taken to Minimize Adverse Impacts upon Subsistence Uses and Resources Resulting from Such Actions

The Applicant identified 5 mitigation measures in the 2012 FEIS and 2 additional measures in the 2018 FSEIS to address impacts to subsistence during construction and/or operation:

1. Identify locations and times when subsistence activities occur [with input and involvement by local residents], and minimize work during these times and in these areas to the maximum extent practicable;
2. Schedule work to avoid conflict with subsistence activities when possible;
3. Notify workers that subsistence activities are ongoing in the area and direct them to avoid actions that may affect the activities (e.g. not removing trapline markers, etc.);
4. Coordinate with whaling groups and agencies to employ appropriate mitigation measures to avoid and minimize disturbance of noise and vessel traffic to subsistence species and activities;
5. Avoid and minimize impacts on whale movements, and avoid conflicts with whalers;
6. Consult with potentially affected communities and appropriate subsistence user organizations to discuss potential conflicts with subsistence marine mammal hunting; and
7. Prohibit [employees and subcontractors from] hunting, trapping, shooting, and camping within the leased [ROW] area.

This ANILCA § 810 Evaluation assumes that these mitigation measures will be fully implemented during all phases of construction and operation.

The BLM has determined that, after consideration of all alternatives, subsistence evaluations, and public hearings, a significant restriction of subsistence uses is necessary consistent with sound management principles for the utilization of BLM-managed land. The selected alternative will involve the minimal amount of public lands necessary to accomplish the purpose and need. Reasonable steps, delineated in the FSEIS, have and will be taken to minimize the adverse impacts upon subsistence uses and resources arising from this action.

The BLM authorizes ROWs to fulfill its responsibilities under the authority of Section 28 of the Mineral Leasing Act of 1920 (MLA), as amended. The Applicant filed a ROW application with the BLM for the proposed Project across federal lands. The BLM is responsible for providing a ROW across federal lands for the proposed natural gas pipeline, while providing protections for specific habitat, resources and uses. Therefore, the BLM finds that issuance of a ROW for this action would be necessary and consistent with sound principles for the utilization of public lands. Given these steps, the BLM has determined that the proposed action includes all reasonable steps to minimize adverse impacts on subsistence uses and resources.

Appendix J7 - BLM Related Authorities, Policies, Regulations, and Guidance

The BLM statutory authorities to implement the actions identified in this Joint Record of Decision are pursuant to the following regulatory frameworks:

- The National Environmental Policy Act and the Council on Environmental Quality regulations (40 CFR 1508.15) provide for the BLM to be a cooperating agency because the BLM has "jurisdiction by law" as a land manager in the proposed area of effect. In addition, BLM has "special expertise" regarding environmental issues, specifically in the matter of subsistence issues as they relate to the Applicant proposal.
- Under the Alaska Native Claims Settlement Act, BLM is responsible for consultation with Native corporations on selected lands prior to granting a ROW and for transfer of federal lands to Native corporations and villages.
- Under the FLPMA, the Secretary of the Interior has broad authority to regulate the use, occupancy, and development of public lands[1] and to take whatever action is required to prevent unnecessary or undue degradation of public lands (43 USC 1732). In accordance with the FLPMA, BLM manages its Alaska lands and their uses to ensure healthy and productive ecosystems. Section 302 of the FLPMA (43 USC 1732) provides the general authority for BLM to manage the use, occupancy, and development of federal public lands under the principles of multiple use and sustained yield, in accordance with the land use plans that BLM develops under FLPMA. Section 304 of FLPMA (43 USC 1734) and the Independent Offices Appropriation Act of 1952 (31 USC 9701) authorize the U.S. Government to collect fees and to require reimbursement of its costs.
- The BLM has reviewed the Project proposal, as described in the June 2018 FSEIS, for the natural gas pipeline construction, operation, maintenance, monitoring, and termination (dismantlement, removal and remediation) where BLM-managed land and resources are involved. The proposed Project route (including crossing the Yukon River) intersects BLM lands managed under the guidance of the Utility Corridor, and Central Yukon, Ring of Fire, and East Alaska Resource Management Plans (RMP). The BLM has determined that the Project proposal is consistent with the RMPs, the MLA, the direction in BLM Policy Manual 2884 – Applying for an MLA Grant or Temporary Use Permit, and the BLM Alaska Statewide Land Health Standards.
- Under Section 28 of the MLA (30 USC 185) and under 43 CFR 2881.11, BLM has the authority to issue ROW grants for oil or natural gas pipelines or related facilities to cross federal lands under BLM jurisdiction or the jurisdiction of two or more federal agencies, except land in the National Park System, land held in trust for Indians, or land within the Outer Continental Shelf. The Applicant would need to obtain a ROW grant and temporary use permits from BLM for crossing lands

[1] Public lands means any lands and interest in lands owned by the United States and administered by the Secretary of the Interior through BLM without regard to how the United States acquired ownership, except lands held for the benefit of Indians, Aleuts, and Eskimos.

managed by BLM or the Department of Defense. The Applicant has submitted an application with BLM for a ROW across federal lands. In addition, Section 28(p) of the MLA, 30 USC 185(p), requires BLM to consider the co-location of rights-of-way to the extent practicable in order to minimize adverse environmental impacts.

- The Denali National Park & Preserve (NPP) Route variation is not relevant to BLM's decision in this Joint Record of Decision because lands in national parks are excluded from the ROW authority of Section 28 of the MLA and because the route segment outside the Park that would be bypassed by the Denali NPP Variation (from approximately milepost 536 to 543) does not include federal lands and thus would not be subject to a BLM ROW grant under Alternative 1.
- Title VIII of the ANILCA establishes procedures for federal agencies to evaluate impacts on subsistence uses and needs, and means to reduce or eliminate such impacts (16 USC 3120).
- Section 906(l) of the ANILCA (48 USC note prec. 21) established interim provisions for federal agencies to grant ROWs on lands selected by, or granted, or conveyed to the State of Alaska under Section 6 of the Alaska Statehood Act (Public Law 85-508, 72 Stat. 340-43). Because there are lands in the proposed ROW corridor that have been selected by the State of Alaska but have not yet been conveyed, BLM responds to ROW applications under the BLM federal regulatory guidance as other BLM-managed lands.
- Pursuant to the National Historic Trail Systems Act BLM is the statutorily designated federal administrator for the Iditarod National Historic Trail, managed according to the Iditarod National Historic Trail Comprehensive Management Plan (BLM, 1986a), and according to a 1987 Memorandum of Agreement between the State of Alaska and BLM, in which the State of Alaska agreed to manage the portion of the Iditarod National Historic Trail (INHT) located on state lands in a manner that protects the historic values of the trail (BLM, 1987).
- Pursuant to the Alaska Native Claims Settlement Act 17(b) Easement Management Handbook (IM AK 2007-037), BLM will review the required public easement and access plan which will address public safety and access to public land in the vicinity of the pipeline ROW and associated ancillary facilities.
- Pursuant to 43 CFR 3601.3, BLM's authority to dispose of sand, gravel, and other mineral and vegetative materials that are not subject to mineral leasing or location under the mining laws is the Act of July 31, 1947, as amended (30 USC 601 et seq.), commonly referred to as the Materials Act. This authority applies to sale and free use of these materials.
- The BLM will require the development of an Invasive Species Prevention and Management Plan (ISPMP) pursuant to the BLM Alaska Invasive Species Management Policy (IM AK-2010-001) and the BLM Programmatic EIS for 17 Western States (2016 ROD PEIS). The ISPMP will be adaptive by design to accommodate new information, such as new NNIS identification, treatment, monitoring tools, technology, and policy. BLM supports a landscape-management approach across landowner boundaries for addressing NNIS prevention and

management in the natural gas pipeline ROW, and associated activities. The development of outreach, education, and training for the Applicants staff and contractors, the use of Early Detection and Rapid Response, Best Management Practices, and Hazard Analysis Critical Control Point protocol in the required ISPMP are consistent with BLM Alaska requirements for preventing the introduction and spread of NNIS. Regulatory authority for BLM management of NNIS is derived from:

- Executive Order 13112, Invasive Species 1999, which directs BLM to "prevent the introduction of invasive species and provide for their control and to minimize economic, ecological and human health impacts that invasive species cause;"
- The FLPMA, which directs BLM to take any action necessary to prevent unnecessary and/or undue degradation of public lands and authorizes the BLM to enter into cooperative agreements; and
- The Federal Noxious Weed Act of 1974, as amended by Sec. 15, Management of Undesirable Plants on Federal Lands, 1990 (Public Law 93-629), which authorizes the BLM to "cooperate with other Federal and State agencies, and others in carrying out operations or measures to eradicate, suppress, control or prevent or retard the spread of any noxious weed."

Appendix J8 - BLM'S Mitigation Determination

As required by Corps' regulations, any impacted waters of the U.S. on BLM-managed lands in the ROW corridor is factored into the overall compensatory mitigation plan. The ROW development involves impacts to wetlands. The Corps' special conditions listed in Appendix F of the Joint Record of Decision (JROD) include mitigation to off-set unavoidable impacts to waters of the U.S. BLM is not requiring any compensatory mitigation from the Applicant.

The BLM has selected Design Features, Mitigation Measures, and Best Management Practices and Permit Requirements described in the 2018 FSEIS Appendix M to avoid, minimize, or reduce impacts identified in the environmental analysis. These BLM-selected Design Features, Mitigation Measures, Best Management Practices and Permit Requirements will apply only to lands under BLM jurisdiction and authority (BLM managed lands) and are described in Appendix J, of this JROD. While some of these mitigating measures provide general guidance and expectations for the Project as a whole, they will be further defined and clarified in the BLM ROW Grant offer to the Applicant as they apply specifically to BLM-managed lands. The BLM ROW Grant stipulations are additional terms and conditions that must be complied with for all activities involved with the natural gas pipeline construction, operation, maintenance, and termination on BLM managed lands, within the parameters of the 2018 FSEIS.

Appendix J9 - BLM ROW Grant, Associated Authorizations and Requirements

BLM ROW Grant

The BLM is required to respond to the ROW Grant application from the Applicant, pursuant to Section 28 of the MLA (30 USC 185), and 43 CFR 2881.11, for the natural gas pipelines and related ancillary facilities that would impact federal lands under BLM jurisdiction. The BLM jurisdiction for this Project is limited to BLM-managed lands in the proposed pipeline corridor, staging areas, access roads, or other related infrastructure, involving 6,337 acres and 229 miles of BLM-managed lands. BLM lands impacted by the proposed Project are shown in Table J9-1 below.

The BLM has reviewed the proposed ROW action pursuant to the National Environmental Policy Act and other applicable federal laws and regulations, including the Endangered Species Act and the National Historic Preservation Act.

Pursuant to this JROD BLM will make a ROW grant offer to the Applicant for the natural gas pipeline. Upon the Applicant's written acceptance of the ROW grant terms and conditions, and submittal of rental payment, BLM will issue a decision to grant the ROW. Detailed plans for all aspects of the pipeline activities will be submitted to BLM for review and approval by the Authorized Officer prior to issuing a Notice to Proceed according to terms, conditions, and stipulations outlined in an ROW Grant issued to the Applicant. The ROW Grant will also specify requirements for Bonding and Liability, reporting, public safety and access, protection of environmental and cultural resources, and the sale of material (gravel, rock, etc.) and merchantable timber necessary for all pipeline activities on BLM-managed land. The ROW Grant term would be for 30 years. Prior to the 30-year grant termination date, the ROW Grant could be renewed.

The BLM would offer a ROW Grant to the Applicant for the construction, operation, maintenance, and termination of the proposed 36-inch mainline and the 12-inch buried lateral connector natural gas pipeline system, and related ancillary facilities. There would be a 120 foot-wide temporary construction corridor, and a 53-foot-wide operational corridor for the mainline pipeline ROW. The lateral connector to Fairbanks would involve a 100-foot wide construction corridor, and a 30-foot wide operational corridor.

The Applicant will be required to comply with the BLM-selected mitigating measures from FSEIS Appendix M. The BLM-selected mitigating measures are listed and clarified in Appendix J, Part 1 of this JROD, and will be further defined in the ROW Grant stipulations. None of these mitigation measures are compensatory mitigation as BLM does not require compensatory mitigation. Design features, best management practices, and mitigating measures not selected by BLM for inclusion are either out of the BLM's jurisdiction, not consistent with BLM resource management plans and/or policies, or would go beyond what BLM considers reasonable, practicable, and appropriate to prevent undue and unnecessary degradation to public lands.

Table J9-1 Miles and Acres of BLM-Managed Lands Impacted *

ASAP 733-mile Mainline – Alternative 1 Miles and Acres of BLM-Managed Lands Impacted *					
	Temporary Construction Corridor and Ancillary Facilities [a] (Acres)		Permanent Operational Corridor and Ancillary Facilities [a] (Acres)		Approximate Length (miles)
	120-foot Construction ROW [b]	Ancillary Facilities [c]	53-foot ROW [d]	Ancillary Facilities [e]	
	3,682	2,652	1,465	2,361	228
Total	**6,334**		**3,826**		**228**

ASAP 30-mile Lateral Fairbanks Connector – Alternative 1 Miles and Acres of BLM-Managed Lands Impacted *					
	Temporary Construction Corridor and Ancillary Facilities [a] (Acres)		Permanent Operational Corridor and Ancillary Facilities [a] (Acres)		Approximate Length (miles)
	100-foot Construction ROW [b]	Ancillary Facilities [c]	30-foot ROW [d]	Ancillary Facilities [e]	
	4	0	1	0	1
Total	**4**		**1**		**1**

ASAP 763-mile Pipeline System (Mainline and Lateral Connector) – Alternative 1 Miles and Acres of BLM-Managed Lands Impacted *					
	Temporary Construction Corridor and Ancillary Facilities [a] (Acres)		Permanent Operational Corridor and Ancillary Facilities [a] (Acres)		Approximate Length (miles)
	100-foot Construction ROW [b]	Ancillary Facilities [c]	30-foot ROW [d]	Ancillary Facilities [e]	
	3,686 [b]	2,652 [c]	1,465 [d]	2,361 [e]	
Total	**6,337**		**3,826**		**229**

*** All figures are rounded up to the nearest whole number**

[a] Includes all features and all acreage from the Project footprint on BLM lands. Includes entire footprint, including vegetation clearing areas on BLM-managed land. Estimated acres may be overestimated due to overlapping components.

[b] Includes Project features associated with the ROW construction on BLM lands.

[c] Includes gravel and ice access roads, temporary workspace, facility pads, camps, pipe storage yards, and material sites on BLM lands.

[d] Represents a Permanent Operational corridor width around the alignment on BLM lands.

[e] Includes Project features that will be used during Operations, including facilities, material sites, and gravel access roads on BLM lands.

Material Sites

Material (gravel, sand, rock) from BLM-managed lands necessary for the construction and operations of the ASAP pipeline will be administered under separate Material Site authorizations. These material sites and sales will be done in accordance with stipulations and requirements for resource protection outlined in standard stipulations required by BLM for mineral material sales, as well as in accordance with BLM-issued ROW grant stipulations.

All mineral material sales associated with the construction, operations, maintenance, and termination of the Project will be required to meet the conditions of the BLM Standard Stipulations for Mineral Material Sales, displayed in Appendix J, Part 2, and the accompanying Standard Stipulations for Mineral Material Sales 2018 Phasing Plan Example displayed in Appendix J, Part 3. Detailed plans for each mineral material sale site will be submitted to the BLM for review and approval prior to the issuance of each permit for the mineral material site occupancy and use.

Timber Sale and Salvage

Removal of merchantable timber necessary for the Project construction and operations on BLM-managed land will be sold to the Applicant at fair market value via BLM Timber Sale. These timber sales will have stipulations and requirements for resource protection per BLM requirements in accordance with Appendix J, Part 4 as well as in accordance with the Utility Corridor Resource Management Plan and in accordance with the BLM-issued ROW Grant stipulations. These timber sale and salvage stipulations were developed from what the BLM considers to be industry standard in Alaska.

Water Extraction Sites

The following table lists the 10 approved water extraction sites on or accessed via BLM-managed land. Any additional water extraction sites on or accessed via BLM managed land will would need additional analysis and approval.

Table J9-2 Water Extraction Sites

Water Extraction Type	Water Source	Land Owner	Longitude	Latitude	Acres
Camp	Well	BLM	-149.482864	68.455927	0
Hydrostatic Test	Deitrich River	BLM	-149.740336	68.010070	0
Camp	Well	BLM	-149.738175	67.680980	0
Camp	Well	BLM	-150.646626	66.821148	0
Hydrostatic Test	Prospect Creek/Jim River	BLM	-150.668240	66.778263	0
Hydrostatic Test	North Fork Bonanza Creek	BLM	-150.647462	66.682522	0
Hydrostatic Test	Kanuti River	BLM	-150.627266	66.441387	0
Hydrostatic Test	Ray River	BLM	-150.130388	66.028374	0
Camp	Well	BLM	-149.830596	65.919805	0
HDD and Hydrostatic Test	Yukon River	BLM	-149.741444	65.882733	0

Public Access and ANCSA 17(b) Public Easements

A Federal ROW across public lands does not prohibit members of the public from accessing and enjoying those public lands. The non-exclusive nature of the ROW means that public have access to the lands except where it is appropriate to restrict access to either protect public safety or maintain operational integrity of the pipeline system. BLM has determined that public access will be allowed in the ASAP ROW except for areas approved for restricted access, necessary for protecting public safety or maintaining operational integrity of the pipeline system. Restricted areas will be identified in detailed Project construction plans provided to the BLM Authorized Officer for review and approval, prior to any Notice to Proceed, according to the ROW grant stipulations.

The Applicant will be required to develop a public easement and access plan that describes what actions they will take to provide for continued public access to public lands. This public easement and access plan needs to provide for the avoidance of any potential public access conflicts during all aspects of the pipeline construction and associated ancillary facilities development, operations, maintenance, and termination.

ANCSA 17(b) public easements are rights reserved to the United States. They take the form of 60-foot wide roads, 25- and 50-foot wide trails, and one-acre sites for short-term uses. These rights are reserved when the BLM conveys land to a Native corporation under the ANCSA. The following ANCSA 17(b) public easements are located in the ASAP ROW corridor and/or ancillary facilities associated with the Project:

Table J9-3 Public Access and ANCSA 17(b) Public Easements

USGS Quad	Count	EIN	MTRS
ANCHORAGE C-8	1	12a C5	SEC 14, T17N, R4W, SM
ANCHORAGE C-8	2	12b C5	SEC 14, T17N, R4W, SM
HEALY A-5	3	100 C4	SEC 28, T19S, R9W, FM
HEALY B-4	4	15 C5, L	SEC 1, T17S, R7W, FM
HEALY B-5	5	30 C2	SEC 21, T18S, R8W, FM
HEALY B-5	6	3a C5, L	SEC 22, T19S, R9W, FM
HEALY B-5	6	3a C5, L	SEC 23, T19S, R9W, FM
HEALY B-5	7	6b C5, L	SEC 15, T19S, R9W, FM
HEALY C-4	8	16 C5,L	SEC 25, T16S, R7W, FM
HEALY C-4	9	17a, L	SEC 31, T15S, R6W, FM
HEALY C-4	9	17a, L	SEC 31, T15S, R6W, FM
HEALY C-4	10	21 L	SEC 8, T15S, R6W, FM
TYONEK C-1	11	4 C5	SEC 14, T17N, R5W, SM
TYONEK C-1	11	4 C5	SEC 9, T17N, R5W, SM
TYONEK C-1	11	4 C5	SEC 4, T17N, R5W, SM

- Page Intentionally Left Blank -

Appendix K

References

- Page Intentionally Left Blank -

REFERENCES

ABR, Inc. Environmental Research & Services (ABR, Inc.) and BP Exploration [Alaska] Inc. (BPXA). 2013. Rehabilitation report for Washington Creek (K8A) trenching test site, Interior Alaska. Prepared by ABR, Inc.-Environmental Research & Services, Fairbanks, Alaska, and BP Exploration [Alaska] Inc., Environmental Studies Group: Anchorage, AK. March 15, 2013.

Arctic Climate Impact Assessment (ACIA). 2004. Impacts of a warming Arctic: Arctic Climate Impact Assessment. ACIA Overview report. Cambridge, United Kingdom: Cambridge University Press. 140 p.

Alaska Department of Environmental Conservation (ADEC). 2016. Alaska Administrative Code, Title 18, Chapter 70, Water Quality Standards. Revised: April 8, 2012. Website: https://dec.alaska.gov/water/water-quality/standards/. Accessed: November 13, 2018.

Alaska Department of Fish and Game (ADF&G). 1985. Alaska Habitat Management Guide: Southcentral Region, Reference Maps. ADF&G Division of Habitat: Juneau, AK. Available through the Alaska Resources Library and Information Services. Website: http://www.adfg.alaska.gov/index.cfm?adfg=maps.habitatmanagement. Accessed: November 13, 2018.

Alaska Department of Fish and Game (ADF&G). 1986a. Alaska Habitat Management Guide: Arctic Region, Map Atlas. Available through the Alaska Resources Library and Information Services. ADF&G Division of Habitat: Juneau, AK. 31 p. Website: http://www.adfg.alaska.gov/index.cfm?adfg=maps.habitatmanagement. Accessed: November 13, 2018.

Alaska Department of Fish and Game (ADF&G). 1986b. Alaska Habitat Management Guide: Western and Interior Regions, Map Atlas. Available through the Alaska Resources Library and Information Services. ADF&G Division of Habitat: Juneau, AK. 31 p. Website: http://www.adfg.alaska.gov/index.cfm?adfg=maps.habitatmanagement. Accessed: November 13, 2018.

Alaska Department of Fish and Game (ADF&G). 1986c. Alaska Habitat Management Guide. Guidelines for the Protection of Wildlife and Their Habitat and on Human Use. ADF&G, Division of Habitat: Juneau, AK. ADF&G Division of Habitat: Juneau, AK. 31 p. Website: http://www.adfg.alaska.gov/index.cfm?adfg=maps.habitatmanagement. Accessed: November 13, 2018.

Alaska Department of Fish and Game (ADF&G). 2008. Wolf. Alaska Wildlife Notebook Series, B. Stephenson and R. Boertje. Revised by R. Boertje 1994. ADF&G Division of Wildlife Conservation. Digital fact sheet. Website: http://www.adfg.alaska.gov/static/education/wns/wolf.pdf. Accessed: November 13, 2018.

Alaska Department of Fish and Game (ADF&G). 2013. Trapper Questionnaire: Statewide Annual Report, 1 July 2012-30 June 2013. T. Schumacher, coordinator. Wildlife Management Report #ADF&G/DWC/WMR-2013-5. ADF&G Division of Wildlife Conservation: Juneau, AK. 66 p. Website: http://www.adfg.alaska.gov/index.cfm?adfg=trapping.reports. Accessed: November 13, 2018.

Alaska Department of Natural Resources (ADNR). 2009. Alaska's Outdoor Legacy: Statewide Comprehensive Outdoor Recreation Plan (SCORP), 2009 – 2014. ADNR Division of Parks and Outdoor Recreation. July. 198 p. Website: https://www.recpro.org/assets/Library/SCORPs/ak_scorp_2009.pdf. Accessed: November 13, 2018.

Alaska Department of Natural Resources (ADNR). 2016. Strategic Plan for Invasive Weed and Agricultural Pest Management and Prevention in Alaska, 2011 to 2016. ADNR Division of Agriculture. January. Website: http://plants.alaska.gov/invasives/pdf/Strategic_Plan_for_Invasive_Weed_Management_Alaska.pdf. Accessed November 2018.

Alaska Department of Natural Resources (ADNR). 2017. Well Log Tracking System (WELTS). ADNR Division of Oil and Gas: Anchorage, AK. Website: https://dnr.alaska.gov/welts/#show-welts-intro-template. Accessed November 2018.

Alaska Department of Transportation & Public Facilities (ADOT&PF). 2009. Documenting best management practices for cutslopes in ice-rich permafrost. Prepared by: Ted S. Vinson, Ph.D., P.E., and Robert L. McHattie, P.E., May 2009. ADOT&PF Research & Technology Transfer. Publication #FHWA-AK-RD-09-01. 66 p. Website: https://trid.trb.org/view/1458122. Accessed: November 2018.

Alaska Gasline Development Corporation (AGDC). 2011. Alaska Stand Alone Pipeline Plan of Development – Revision 1. March 2011. 144 p.

Alaska Gasline Development Corporation (AGDC). 2012. Response to Request for Information: Wetland Acreage Impacts for Temporary Extra Work Space (TEWS) and Access Roads. May 21, 2012.

Alaska Gasline Development Corporation (AGDC). 2014. Alaska Stand Alone Pipeline (ASAP) Environmental Evaluation Document, #001-C-GRD-W-0055. October 17, 2014. 1,762 p. Website: http://asapgas.agdc.us/pdfs/documents/eed2014/ASAP-EED_full_report.pdf. Accessed: November 2018.

Alaska Gasline Development Corporation (AGDC). 2015. Screening for Port and Dock Site Selection, Dredge Material Disposal and Offload Methodology. May.

Alaska Gasline Development Corporation (AGDC). 2016a. Alaska Stand Alone Pipeline/ASAP Project – Joint Application for Permit Revised. January 13, 2016.

Alaska Gasline Development Corporation (AGDC). 2016b. Hydrostatic Test Water Usage. May 4, 2016.

Alaska Gasline Development Corporation (AGDC). 2016c. Horizontal Directional Drill Water Usage. May 4, 2016.

Alaska Gasline Development Corporation (AGDC). 2016d. Alaska Stand Alone Pipeline. Pipeline design and installation questions and considerations – Response Matrix. April 1, 2016.

Alaska Gasline Development Corporation (AGDC). 2016e. Alaska Stand Alone Pipeline/ASAP Project – Environmental Evaluation Document. 001-C-22-GRD-W-0055. July 15, 2016. Website: http://asapgas.agdc.us/documents.html.

Alaska Gasline Development Corporation (AGDC). 2016f. Alaska Stand Alone Pipeline/ASAP Project – West Dock Dredge and Disposal Plan. ASAP-22-PLN-WWW-DOC-00004. July 12, 2016.

Alaska Gasline Development Corporation (AGDC). 2017a. Effect of climate warming on expected long-term thaw depths on the ASAP Right-of-Way, Alaska Stand-Alone Pipeline Project. March 1, 2017.

Alaska Gasline Development Corporation (AGDC). 2017b. Request for Information #505 from AGDC received on December 15, 2017.

Alaska Gasline Development Corporation (AGDC). 2017c. Segregation of the Surface Layer. November 16, 2017. ASAP-22-YPW-ENV-DOC-00001.

Alaska Gasline Development Corporation (AGDC). 2018. Alaska Stand Alone Pipeline / ASAP Project. Draft Cultural Resource Management Plan. ASAP-22-PLN-ENV-DOC-00002. January 19, 2018.

Bureau of Land Management (BLM). 1986. The Central Yukon Resource Management Plan Record of Decision. 89 p. BLM-AK-PT-86-031-1610-026. Fairbanks District Office, September 26, 1986. Website: https://eplanning.blm.gov/epl-front-office/projects/nepa/74261/123960/151116/Central_Yukon_Plan.pdf. Accessed November 2018.

Bureau of Land Management (BLM). 1987. Memorandum of Agreement between State of Alaska and Bureau of Land Management, U.S. Department of the Interior Concerning the Iditarod National Historic Trail. AK-974-MU8-INHT-03. November 1987.

Bureau of Land Management (BLM). 1989. The Utility Corridor Proposed Resource Management Plan and Final Environmental Impact Statement. BLM-AK-PT90-002-1610-060. Arctic District. September 27, 1989. Website: https://eplanning.blm.gov/epl-front-office/projects/lup/35315/44183/47566/Utility_Corridor_PRMP_FEIS_final_web.pdf. Accessed November 2018.

Bureau of Land Management (BLM). 2007a. East Alaska Resource Management Plan Record of Decision. September 7, 2007. Website: https://eplanning.blm.gov/epl-front-office/projects/lup/66965/83535/100163/Record_of_Decision_and_Approved_Plan.pdf Accessed November 2018.

Bureau of Land Management (BLM). 2007b. Final vegetation treatments using herbicides on Bureau of Land Management Lands in 17 Western States, Programmatic Environmental Impact Statement. BLM/WO/GI-07/009+6711; DOI-BLM-WO-WO2100-2007-002-EIS. September 2007. https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=103592. Website: Accessed: November 2018.

Bureau of Land Management (BLM). 2008. Ring of Fire Resource Management Plan, Record of Decision. Anchorage Field Office. March 3, 2008. BLM/AK/PL-08/013+1610+010, Website: https://eplanning.blm.gov/epl-front-office/projects/lup/66969/84102/100707/Ring_of_Fire_Record_of_Decision.pdf. Accessed: November 2018.

Bureau of Land Management (BLM). 2016. Final Programmatic Environmental Impact Statement for Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States. BLM/WO/PL-15/005+6711. DOI-BLM-WO-WO2100-2012-0002-EIS. August 2016. Website: https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=103601. Accessed: November 2018.

Bureau of Ocean Energy Management (BOEM). 2010. Continuation of the Arctic Nearshore Impact Monitoring in the Development Area (cANIMIDA): Synthesis, 1999 – 2007. Alaska Outer Continental Shelf Region, Anchorage, AK. December. Final Report: OCS Study BOEMRE #2010-032. Contract No. M03PC00014, Duxbury, MA: Neff & Associates LLC and Battelle Memorial Institute. 337 p. Website: https://www.boem.gov/BOEM-Newsroom/Library/Publications/2010/2010_032.aspx. Accessed: November 2018.

Brown, J. S., J. H. Trefry, L. L. Cook, and P. D. Boehm. 2005. ANIMIDA Task 2: Hydrocarbon and metal characterization of sediments, bivalves and amphipods in the ANIMIDA Study MMS #2010-024. Final report to DOI, MMS. Alaska Outer Continental Shelf Region: Anchorage, AK. 212 p.

Center for Watershed Protection. 2016. Center for Watershed Protection Annual Report. K. Cappiella, Editor. CWP: Ellicott City, MD. 20 p. Website: https://owl.cwp.org/mdocs-posts/center-for-watershed-protection-2016-annual-report/. Accessed: November 2018.

Czapla, P. K. and S. J. Wright. 2012. Interior Alaska Revegetation and Erosion Control Guide. B. V. Low, Editor. Alaska Department of Natural Resources, Division of Agriculture, Alaska Plant Materials Center: Palmer, AK. July 2012. 152 p. Website: http://plants.alaska.gov/pdf/interior_reveg_web.pdf. Accessed: November 2018.

Densmore, R. V., M. E. Vander Meer, and N. G. Dunkle. 2000. Native Plant Revegetation Manual for Denali National Park and Preserve. Information and Technology Report # USGS/BRD/ITR-2000-0006. U.S. Geological Survey, Biological Resource Division, Alaska Science Center: Anchorage, AK. March 2000. 51 p. Website: https://pubs.usgs.gov/itr/2000/0006/report.pdf. Accessed: November 2018.

Derksen, D. V. and D. H. Ward. 1993. Life history and habitat needs of the black brant. Fish and Wildlife Leaflet #13.1.15. *In:* Waterfowl Management Handbook. U.S. Fish and Wildlife Service, Alaska Fish and Wildlife Research Center. 7 p. Website: http://www.nwrc.usgs.gov/wdb/pub/wmh/13. Accessed: November 2018.

Environmental Resources Management (ERM). 2014. "Sediment Sampling and Analysis to Support Dredging Operations at West Dock, 2014." Letter from ERM, J. Casey and B. Authier, to BP Exploration [Alaska] Inc. L. Brott and J. Carter. August 21, 2014.

Erwin, K. L. 2009. Wetlands and global climate change: the role of wetland restoration in a changing world. DOI 10.1007/s11273-008-9119-1. *In:* Wetlands Ecology and Management 17:71-84. November 7, 2008. Website: https://www.wetlands.org/wp-content/uploads/2015/11/Wetlands-and-Global-Climate-Change.pdf. Accessed November 2018.

Greene, C. R, S. B. Blackwell, and M. W. McLennan. 2008. Sounds and vibrations in the frozen Beaufort Sea during gravel island construction. *In:* Journal of the Acoustical Society of America 123(2):687-695.

Henry, C. 2015. Interior energy project still best bet for gas. *In:* Fairbanks Daily News-Miner. January 5, 2015. [No longer available online.]

Kelly, B. P., L. T. Quakenbush, and J. R. Rose.1986. Ringed seal winter ecology and effects of noise disturbance. Final report. Outer Continental Shelf Environment Assessment Program Research Unit 232. Institute of Marine Science, University of Alaska: Fairbanks, AK. December 1986. 86 p. Website: https://www.boem.gov/ESPIS/0/147.pdf. Accessed: November 2018.

National Marine Fisheries Service (NMFS). 2011. Anadromous Salmonid Passage Facility Design. NMFS, Northwest Region: Portland, OR. July 2011. 140 p. Website: https://www.westcoast.fisheries.noaa.gov/publications/hydropower/fish_passage_design_criteria.pdf. Accessed November 2018.

National Marine Fisheries Service (NMFS). 2013. Final Environmental Impact Statement (EIS) for issuing annual quotas to the Alaska Eskimo Whaling Commission for a subsistence hunt on bowhead whales for the years 2013 through 2018. NMFS, Alaska Region: Juneau, AK. 310 p. Website: https://www.fisheries.noaa.gov/resource/document/final-environment-impact-statement-issuing-annual-quotas-alaska-eskimo. Accessed: November 2018.

National Marine Fisheries Service (NMFS). 2016. Technical guidance for assessing the effects of anthropogenic sound on marine mammal hearing: underwater acoustic thresholds for onset of permanent and temporary threshold shifts. NMFS. NOAA Technical Memorandum NMFS-OPR-55, 178 p. July 2016. [Revised 2018 report available.] Website: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance. Accessed: November 2018.

Neff, J.M. 2010. Fates and effects of water-based drilling muds and cuttings in cold water environments. Report to Shell Oil Co., Anchorage, AK. 286 p.

North Slope Science Initiative (NSSI). 2014. Emerging Issue Summary: Rehabilitation and Restoration of Disturbed Tundra. *In:* Emerging Issues, pp. 75 – 86. North Slope Science Initiative: Anchorage, AK. June 2014. 121 p. Website: http://catalog.northslopescience.org/catalog/entries/8606-nssi-emerging-issues. Accessed: November 2018.

Oasis Environmental, Inc. (Oasis is now Environmental Resources Management or ERM). 2002. West Dock Causeway Testing – West Dock and Seawater Treatment.

Oasis Environmental, Inc. (Oasis is now Environmental Resources Management or ERM). 2010. Sediment sampling and analysis at West Dock: Dock heads #2 & #3 – Final. Letter from Oasis, K. Miller and B. Authier, to BP Exploration [Alaska], Inc. L. Brott and J. Croak. June 24, 2010.

Oasis Environmental, Inc. (Oasis is now Environmental Resources Management or ERM). 2002. West dock Causeway Testing – West dock and Seawater Treatment Plant Groin Area. Report to BP Exploration [Alaska], Inc. July 10, 2002.

R&M Consultants, Inc. 1973. Case studies of hydraulic and thermal erosion. R&M Report #HD-003. November.

Richardson, W. J., J. Charles, R. Greene, C. I. Malme, and D. H. Thomson. 1995. Marine Mammals and Noise. First Edition. Academic Press: San Diego, CA. 576 p. (A 2013 edition is available).

Trefry, J. H., R. D. Rember, R. P. Trocine, and J. S. Brown. 2003. Trace metals in sediments near offshore oil exploration and production sites in the Alaskan Arctic. *Environmental Geology* 45(2):149-160.

URS Corporation. 2012. Drilling Procedures, Sample Descriptions, Boring Logs, Borehole Locations, and Archive Inventory for 32 Near-Shore Marine Sediment Vibracore Samples: West Dock Causeway, Prudhoe Bay, Alaska. Alaska Geologic Materials Data Report #407. Alaska Division of Geological & Geophysical Surveys Geologic Materials Center. October 2012. 23 p. Website: http://dggs.alaska.gov/pubs/id/24506. Accessed: November 2018.

U.S. Army Corps of Engineers (USACE). 1998. Corps Screening Levels.

U.S. Army Corps of Engineers (USACE). 2012a. Draft Environmental Impact Statement Alaska Stand Alone Pipeline. January 2012.

U.S. Army Corps of Engineers (USACE). 2012b. Final Environmental Impact Statement Alaska Stand Alone Pipeline. October 2012. Website: http://asapgas.agdc.us/documents.html. Accessed: November 2018.

U.S. Army Corps of Engineers (USACE). 2017. Draft Supplemental Environmental Impact Statement for the Alaska Stand Alone Pipeline. July 2017. Website: http://asapgas.agdc.us/documents.html. Accessed: November 2018.

U.S. Fish and Wildlife Service (USFWS). 2010a. Intra-service biological opinion for U.S. Fish & Wildlife Service's Issuance of a Section 10 Permit to Fairbanks Fish & Wildlife Field Office for Breeding Biology of Steller's Eiders and Other Waterfowl near Barrow, Alaska. June 1, 2010. USFWS Region 7 Alaska. Website: https://www.fws.gov/alaska/fisheries/endangered/pdf/BarrowEiderStudy_BO_2010%20Final.pdf. Accessed: November 2018.

U.S. Fish and Wildlife Service (USFWS). 2016. Intra-Service Biological Opinion for Issuance of 2016-2021 Beaufort Sea Incidental Take Regulations. USFWS Fairbanks Fish and Wildlife Field Office, Fairbanks, AK. July 27, 2016. 74 p.

U.S. Fish and Wildlife Service (USFWS). 2017. Timing Recommendations for Land Disturbance & Vegetation Clearing (Chart). USFWS Region 7. May 2017. 1 p.

Van Dalfsen, J. A. and K. Essink. 2001. Benthic community response to sand dredging and shoreface nourishment in Dutch coastal waters. *In:* Senckenbergiana maritima 31(2):329-332, 5 figures. May 2001.

Wartzok, D., W. A. Watkins, B. Würsig, and C. I. Malme. 1989. Movements and behaviors of bowhead whales in response to repeated exposures to noises associated with industrial activities in the Beaufort Sea. Report from Purdue University for Amoco Production Company: Anchorage, AK. 228 p.

Williams, M. T., V. D. Moulton, W. J. Richardson, and S. B. Blackwell. 2006. Summary of results of overwintering ringed seals in relation to Northstar sounds. *In:* W.J. Richardson, editor. LGL Report #P1004. LGL Ltd., Environmental Research Associates: King City, Ontario (Canada).

Wright, S. J. and P. K. Czapla. 2013. Alaska Coastal Revegetation and Erosion Control Guide. Third Edition. Alaska Department of Natural Resources, Division of Agriculture, Plant Materials Center. Palmer, Alaska. 242 p.