

Federal Agencies

FA1 – U.S. Environmental Protection Agency

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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REGIONAL
ADMINISTRATOR'S
DIVISION

OCT 02 2019

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE, Room 1A
Washington, D.C. 20426

RE: Alaska LNG Project Draft Environmental Impact Statement (FERC Docket No. CP17-178-000)

Dear Ms. Bose:

The U.S. Environmental Protection Agency has reviewed the Draft Environmental Impact Statement for the Alaska Liquefied Natural Gas Project (CEQ No. 20190154; EPA Project No.15-0025-FRC) prepared by the Federal Energy Regulatory Commission. Our review was conducted in accordance with our responsibilities under the National Environmental Policy Act and Section 309 of the Clean Air Act.

The Draft EIS evaluates the potential environmental effects from the construction and operation of the Alaska LNG Project proposed by the Alaska Gasline Development Corporation. The Project includes new gas treatment facilities, an 806.6-mile-long natural gas pipeline and associated aboveground facilities, and a 20-million-metric-ton per annum liquefaction facility to commercialize the natural gas resources of Alaska's North Slope by converting the existing natural gas supply to liquefied natural gas for export and providing gas for users within the state of Alaska. The Project would have an annual average inlet design capacity of up to 3.7 billion standard cubic feet per day and a 3.9 billion standard cubic feet per day peak capacity. The Draft EIS identifies alternatives to the proposed action, including a pipeline route through the Denali National Park and Preserve.

On August 16, 2019, AGDC filed a notification revising the project description to include the Denali Alternative into the Mainline Pipeline route, which would cross the Park for 6.1 miles and be co-located with existing infrastructure right-of-way, such as the Parks Highway and the Alaska Railroad. AGDC indicated that additional project details and resource information needed to update the Draft EIS would be provided to FERC by October 4, 2019.

The EPA is a cooperating agency on the development of the EIS. We provided scoping comments in December 2015, and supplemental scoping comments on the Denali Alternative in September 2016. In March 2019, the EPA provided comments on the Administrative Draft EIS. In addition, the EPA provided comments on the draft resource reports during the pre-filing stage.

The Draft EIS has determined that construction and operation of the Project would result in significant adverse environmental impacts on certain resources, such as air quality, wetlands, and permafrost. We support a number of FERC staff's recommended mitigation measures and best management practices to mitigate the environmental impacts associated with the Project's construction and operation, which would be included as specific conditions in the Commission's Order. In addition, the EPA is providing additional recommendations for information to be evaluated and disclosed in the Final EIS.

FA1-1

FA1-1

Comment noted. See the responses to EPA's specific comments below.

CC-209

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Under the Alaska Statehood Act, the United States retains exclusive federal jurisdiction in the Denali National Park and Preserve. We note that the Mainline Pipeline route that crosses the Park could be subject to EPA's regulatory authorities under Clean Water Act Sections 401 (water quality certification) and 402 (National Pollutant Discharge Elimination System permitting). Depending on the specific nature of project-related activities that would occur within the Park, other EPA authorities may also apply. We recommend that AGDC provide additional specific details regarding Project construction and operation of the Mainline Pipeline route through the Park to support our potential permitting actions and the Final EIS. The EPA is available to work with FERC, the National Park Service, and AGDC to identify additional permits and authorizations that may be required for certain construction and operation activities associated with the Mainline Pipeline within Park boundaries.

FA1-2

FA1-2

Section 1.6 of the final EIS has been updated to include the additional permits and authorizations required for construction and operation within the DNPP.

The EPA appreciates that the Draft EIS has addressed some of the recommendations and comments that we provided earlier in the process. Our detailed comments and recommendations on the Draft EIS are enclosed and include the following topics:

FA1-3

FA1-3

Comment noted. See the responses to comments FA1-4 through FA1-73.

- Denali National Park and Preserve Mainline Pipeline Route – EPA Clean Water Act authorizations, air quality Class I area, associated facilities, infrastructure and improvements, in-state gas interconnection, water resources and waterbody crossings, material source sites, and induced growth;
- Cook Inlet Offshore Pipeline Route – Evaluation of pipeline design and construction;
- Cook Inlet Dredging and Dredged Material Disposal – Identification of the baseline, dredged material characterization, dispersal modelling, and disposal site monitoring;
- Underground Injection Control Class I Industrial Wells – RCRA exempt and non-hazardous wastes;
- Wastewater Discharges – Identification and description, sanitary and domestic wastewater, water incinerators, hydrostatic testing, wastewater treatment, and ballast water in Cook Inlet;
- Acid Rock Drainage and Metal Leaching – Monitoring and management;
- Waterbody Crossings and Water Resources – identification and characterization, and methods to minimize impacts;
- Wetlands and Aquatic Resources – mapping and delineation, functional assessment, adverse impacts, avoidance and minimization, compensatory mitigation;
- Permafrost – Impacts from granular fill, and mitigation measures;
- Fugitive Dust – Impacts to wetlands and permafrost, and accounting for emissions;
- Air Quality – Prevention of Significant Deterioration Analysis, Class I and Sensitive Class II areas, emissions estimates, general conformity, Liquefaction Facility, Cook Inlet Vessel emissions, background concentrations, particulate matter 2.5, and regional ozone;
- Cumulative Effects – Non-jurisdictional facilities, and the Kenai LNG Cool Down Project;
- Changes to Climate – Evaluating impacts to permafrost and infrastructure stability; and
- Mitigation, Monitoring, and Adaptive Management

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The EPA appreciates the opportunity to review and provide comments on the Draft EIS for the Alaska LNG Project. If you have any questions regarding our comments, please contact Mark Jen in our office in Anchorage, Alaska, at (907) 271-3411 or jen.mark@epa.gov, or you may contact me at (206) 553-1841 or nogi.jill@epa.gov.

Sincerely,



Jill A. Nogi, Chief
Policy and Environmental Review Branch

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**U.S. Environmental Protection Agency
Comments on the
Alaska Liquefied Natural Gas (LNG) Project
Draft Environmental Impact Statement (June 2019)**

FERC Docket No. CP17-178-000

Denali National Park and Preserve Pipeline Route

The Denali Alternative as a 6.1-mile-long Mainline Pipeline route modification through the Denali National Park and Preserve, which deviates from the Alaska LNG Project Mainline Pipeline route. This alternative route was evaluated by the U.S. Army Corps of Engineers for the Alaska Stand Alone Pipeline Project Supplemental EIS. The Corps determined that the pipeline route through the DNPP was the Least Environmentally Damaging Practicable Alternative pursuant to the Clean Water Act Section 404.

In the Alaska Stand Alone Pipeline Project Joint Record of Decision, the Corps determined that the route through the DNPP would cross through a corridor (MP 535 to MP 543) that contains existing infrastructure, such as the Parks Highway, Alaska Railroad, and fiber optic cable systems. The Denali Alternative would avoid the steep and challenging terrain east of the highway and would minimize visual impacts associated with the proposed pipeline route. This variation would result in a reduced acreage of total land use by eliminating two material sites and reducing the need for construction access roads. Approximately 89 percent of the DNPP route variation is either upland or currently developed land. The remaining 11 percent is wetland. In comparison with the proposed route, the DNPP variation would result in avoiding placement of fill material into approximately 87 acres of wetland within its route. Compared to the proposed action, there would be six fewer pipeline stream crossings, and eight fewer road stream crossings. The EPA supports the Corps' LEDPA determination for the Denali Alternative, which we believe represents a significant environmental advantage to the proposed Mainline Pipeline route.

On August 16, 2019, the project proponent provided FERC with notification regarding a change in the project description by adoption of the Denali Alternative route as part of the Mainline Pipeline route. We note that the project proponent plans to submit more detailed project and resource information after the public comment period for the Draft EIS. We recommend that the Final EIS be revised to accurately characterize the change in the project description (proposed action), including the Mainline Pipeline route through the Park and a detailed re-evaluation of the environmental consequences of the revised proposed action. The changes to the project description to include the Mainline Pipeline route through the DNPP will also require changes in the overall estimates and evaluation of project impacts to physical, biological, and social resources. For example, we recommend that the estimates and characterization of wetland acreages and impacts be revised to accurately reflect the different wetland types and classifications. We recommend that the Final EIS disclose these necessary revisions to more accurately evaluate the project impacts on resources and the environmental consequences associated with the revised project description to route the Mainline Pipeline through the Park.

The EPA notes that the Department of Interior, National Park Service General Management Plan and amendments for the Park may require updating to ensure that the Mainline Pipeline route through the Park is consistent with these Plan requirements and to address potential induced growth and future indirect land development, and other reasonably foreseeable future actions both within and directly outside the Park boundaries. We recommend that the Final EIS evaluate and discuss consistency of the

4

CC-212

FA1-4

FA1-4

Comment noted.

FA1-5

FA1-5

The final EIS has been revised to incorporate the Denali Alternative into the proposed Mainline Pipeline route.

FA1-6

FA1-6

AGDC has not proposed improvements to transportation, recreation, or utility infrastructure within or near the DNPP that would support induced growth or indirect land development. The NPS would determine consistency with its applicable plans.

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DNPP pipeline route with Park management plans and evaluate mitigation measures to avoid and minimize potential adverse impacts and ensure consistency with the Park General Management Plans.

The Alaska Statehood Act

Section 11 of the Alaska Statehood Act indicates that the United States, apart from limited exceptions not relevant to this Project, shall exercise exclusive jurisdiction in the Park "as now or hereafter constituted." We note that the pipeline located along the Mainline Pipeline route through the Park would be subject to the EPA's regulatory authorities. For example, the EPA retains Clean Water Act Section 402 National Pollutant Discharge Elimination System and Section 401 Water Quality Certification authority within the Park based on Section 11 of the Alaska Statehood Act, and as set forth in the related Memorandum of Agreement between the EPA and the State of Alaska.¹ The EPA is available to work with the FERC, NPS, ADEC, and the applicant to identify additional permits and authorizations that may be required for certain construction and operation activities of the mainline pipeline within the Park boundaries.

FA1-7

FA1-7

See the response to comment FA1-2.

Clean Water Act Authorizations

The Clean Water Act Section 402 NPDES requirements may apply to any discharge of pollutants associated with the certain activities within the Park boundaries, including, but not limited to, construction storm water, hydrostatic testing, camp domestic wastewater, filter backwash, gravel pit and excavation dewatering, fire testing, secondary containment, mobile spill response, horizontal directional drilling, non-contact cooling water, and other related activities.

The Draft EIS and the August 2019 notice did not provide information regarding potential wastewater discharges as a result of project construction and operations within the DNPP. We recommend that the Final EIS include information regarding the types of wastewater discharges to surface waters within the Park that are expected to occur from construction and operations of the Project. In particular, as the EPA would be the permitting authority for issuance of NPDES permits, we will require information regarding treatment processes, discharge volumes, rates, and frequencies, as well as the approximate location of potential outfalls and discharge points in the DNPP as part of any permit application.

FA1-8

FA1-8

AGDC would provide information to the EPA on wastewater discharges to surface waters within the DNPP (e.g., type, treatment processes, volumes, locations, rates, and frequencies) as part of its NPDES permit application for the Project. See the updates to sections 4.3.2.4, 4.3.3.3, and 4.3.4.2 of the final EIS.

The applicant should submit completed NPDES Application Form 1 (EPA Form 3510-1)² and Application Form 2D (EPA Form 3510-2D)³ to the EPA Region 10 to initiate the NPDES permitting process for the Mainline Pipeline route through the Park. The information described above is also the information that will be required by the NPDES Permit Forms.

In addition, the EPA is the permitting authority for construction stormwater discharges within the Park boundaries. While a majority of stormwater discharges from oil and gas operations, including pipelines, are exempt from coverage under the Construction and/or Multi-Sector General Permits, pursuant to CWA Section 402(l), an owner/operator must obtain coverage under a CWA Section 402 permit for stormwater discharges associated with construction (for at least one acre of land disturbance and less than one acre if part of a common plan of development or sale) and/or a permit covering stormwater

FA1-9

FA1-9

See the responses to comments FA1-2 and FA1-8 and the updates to sections 4.3.2.4 and 4.4 of the final EIS.

¹ See *National Pollutant Discharge Elimination System Memorandum of Agreement between State of Alaska and United States Environmental Protection Agency* (2008) at §§ 3.01, 3.03, and 4.14

² EPA Form 3510-1 (Revised March 2019) can be downloaded from: https://www.epa.gov/sites/production/files/2019-05/documents/form_1_epa_form_3510-1.pdf

³ EPA Form 3510-2D (Revised March 2019) can be downloaded from: https://www.epa.gov/sites/production/files/2019-05/documents/form_2d_epa_form_3510-2d.pdf

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discharges from industrial activities. See 40 CFR 122.26(c)(1)(iii). These circumstances are tied to the “contaminated by contact with, or do not come into contact with” threshold for permitting.

Furthermore, a Clean Water Act Section 401 Water Quality Certification from the EPA is required to provide reasonable assurance that the Project and associated discharges to waters of the U.S. authorized under other federal permits, such as permits issued by the U.S. Army Corps of Engineers under Section 404 of the CWA, meet the applicable provisions of the CWA and the EPA approved State of Alaska water quality standards. Information that is typically provided to the U.S. Army Corps of Engineers during the Section 404 permitting process is also needed by EPA to complete this certification process, particularly the methods that will be used to minimize impacts to water quality. Such information includes the number and location of all waterbody crossings, the size and type of culverts or bridges to be installed, construction method to be used at each crossing, best management practices and the spill prevention and control plan measures to be used to minimize water quality impacts during construction.

FA1-9

Clean Air Act Authorizations

The Draft EIS identified certain project activities that would require permits under the Clean Air Act prior to construction related to the Mainline Facilities. At this time, based on the information provided in the Draft EIS, the EPA does not have sufficient information to make a determination on whether air permits may be required for construction and operation of the Mainline Pipeline through the Park. We recommend that the Final EIS include: (1) a review of permanent (if any) and temporary construction source units and activities that would occur within the DNPP, (2) an identification of the air permitting jurisdictional uncertainty, and (3) an evaluation of air permits (e.g., minor, major, Prevention of Significant Deterioration, etc.) that may be needed, if any, under both the State and Federal authority.

FA1-10

FA1-10 Section 4.15.4 of the final EIS has been updated with additional information regarding the timing of permitting for temporary construction equipment and regulatory authority for these permits.

Air Quality Class I Area

Under the Clean Air Act, the DNPP is a federal land unit identified as a Class I area to protect and improve visibility. Federal Class I areas have special protection under the CAA PSD program. The purpose of the PSD program is “to preserve, protect, and enhance the air quality in national parks, wilderness areas, and other areas of natural, recreational scenic or historic values, and to ensure economic growth will occur in a manner consistent with the preservation of existing clean air resources. We recommend that the Final EIS include an air quality related values analysis for the PSD sources from the Denali route and a modelling analysis, which demonstrates that all applicable PSD Class I increments will be achieved. The EPA supports FERC’s recommendations that AGDC file revised air dispersion modeling for the Project facilities and all air emissions sources to identify and disclose impacts on units of the NPS or other federally protected areas. We also support FERC’s recommendation that Class I and Sensitive Class II Mitigation Plans, developed in consultation with Federal Land Managers and the Alaska Department of Environmental Conservation, to reduce operational emissions and ensure that the predicted visibility and deposition impacts at Class I and II areas are below NPS thresholds should be filed with EERC. We further recommend that the information from the Mitigation Plan be included in the Final EIS.

FA1-11

FA1-11 The locations of emission-generating aboveground facilities for the Project have not changed due to the adoption of the Denali Alternative. Therefore, there are no updates to the AQRV analyses provided in section 4.15.5 of the final EIS. ADEC and FLMs will have opportunities to provide additional input on the impact assessment and mitigation or minimization measures during the PSD permitting process for the GTP and Liquefaction Facilities.

The Federal Regional Haze Rule⁴ establishes regulations to improve and protect visibility of designated Class I areas. The Rule lays out the specific requirements to ensure improvements in the visibility of the Park. The State of Alaska has developed a Regional Haze Plan, which describes how federal requirements would be achieved by measuring and monitoring visibility, aerosols, and air pollution in the Class I area. We recommend that the EIS discuss how the Denali Pipeline route would be designed,

FA1-12

FA1-12 See the response to comment FA1-11.

⁴ 40 CFR 51, Subpart P

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constructed, and operated to be consistent with the requirements of the Regional Haze Rule. We recommend that the Final EIS identify mitigation and monitoring measures to ensure protection and improvements to the visibility of the Park.

FA1-12

Associated Facilities and Infrastructure

Depending on the specific nature of project-related activities that would occur within the Park, other EPA authorities may apply. We recommend that the Final EIS provide additional specific details regarding proposed facilities and infrastructure associated with the Mainline Pipeline route within the Park. This information should include the location and dimensions of proposed aboveground and/or belowground facilities, such as, but not limited to, compressor, heater, or metering stations, mainline block valves, cathodic protection facilities, pipe launchers/receiver stations, communication and electric cables, temporary and/or permanent access roads, camps, pipe storage areas, contractor yards, rail spurs, fuel storage facilities, and construction infrastructure, temporary work and storage pad areas within the Park. We recommend that these aboveground and/or belowground appurtenances be described, identified on aerial photographs, and their direct, indirect, and cumulative impacts evaluated in the Final EIS.

FA1-13

FA1-13 See the response to comment FA1-5.

In-State Gas Interconnection

The applicant has indicated that it would install taps or isolation valves at a minimum of three locations along the Mainline Pipeline to allow for future interconnections with lateral pipelines to provide in-state deliveries of natural gas to third party utility or industrial customers. Due to the applicant's proposed revision to include the Mainline Pipeline route through the DNPP, we continue to recommend that a fourth interconnection point along the Mainline Pipeline include the Denali Borough and the Park. Natural gas would support existing public and private businesses and facilities, and future development near the Park entrance and visitors center, and within the Park Boundaries. Additionally, there would be the potential to convert existing Park operations, including the bus fleet, to natural gas which would reduce air emissions within the Park.

FA1-14

FA1-14 Comment noted. See the discussion in section 4.19.2.5 of the final EIS.

FA1-15

FA1-15 Comment noted.

Infrastructure Improvements

The DNPP route would enter the Park along the George Parks Highway after crossing the Nenana River. There is existing surface infrastructure in the vicinity of the Park, such as the Highway, the Alaska Railroad, other highways and footbridges, recreation hiking and bike trails, and the Park Road. As part of the logistics planning for the DNPP route, there may be a need to upgrade/improve the existing surface infrastructure. We recommend that the Final EIS evaluate the need to upgrade/improve the existing infrastructure to support the DNPP route as connected actions, non-jurisdictional facilities, or actions pertaining to this project. We recommend that the Final EIS evaluate the direct, indirect, and cumulative impacts associated with these infrastructure improvements.

FA1-16

FA1-16 AGDC has not proposed improvements to transportation or recreation infrastructure within or near the DNPP.

Water Resources and Waterbody Crossings

The route through the Park would require freshwater for project construction, hydrostatic testing, operations, etc. The Draft EIS indicates that a final Water Use Plan would be filed prior to project construction. However, in order to prepare the EPA's CWA Section 401 Certification and certain CWA Section 402 NPDES permit(s) for the mainline pipeline route within the DNPP, we require detailed information regarding water resources and discharge locations. We recommend that the Final EIS identify the water requirements, location of water resources (e.g., surface and groundwater aquifers) and discharge locations within and adjacent to the Park. For each water resource, information should include source locations and depths, water withdraw volumes, water discharge locations and proposed water

FA1-17

FA1-17 Information on water use for the Project, including source locations, volumes, discharges, and BMPs, is provided in section 4.3.4 of the final EIS and in the Project Water Use Plan; instructions for accessing this plan are provided in table 2.2-1 of the final EIS. AGDC would file a final Water Use Plan prior to construction that would evaluate the potential for reuse of hydrostatic test water, demonstrate that reuse of water has been applied where practicable, and provide updated information on water volumes, source and discharge locations, and water treatments. Fish presence in source waters used for construction and mitigation measures for withdrawals from and discharges to these waters are described in section 4.7.1.6 of the final EIS. Information on fish presence is also provided in the Project Water Use Plan. See also the response to comment FA1-8.

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treatment, including best management practices and mitigation measures for project construction and operations. For discharges from certain activities, such as hydrostatic testing of the pipeline and construction storm water, we recommend evaluation of options to reuse the wastewater for other project purposes, such as fugitive dust suppression on granular roads and work pads. In addition, we recommend that information regarding surface water resources identify the presence/absence of resident and/or anadromous fish. Mitigation measures and BMPs should be included to avoid and minimize potential impacts to fisheries resources. We recommend that the Final EIS evaluate the direct, indirect, and cumulative impacts associated with the discharges of wastewater into the water resources within and outside the Park boundaries.

FA1-17

The Draft EIS identifies six waterbody crossings that would be required for the DNPP pipeline route. We recommend that the Final EIS identify the location of the surface waterbody crossings, such as rivers, streams, lakes, and wetlands within the Park, and describe the proposed construction method(s) for the DNPP pipeline route (e.g., wet open cut trench, dry open cut trench, direct micro-tunneling, aerial crossings, etc.). We recommend that the Final EIS evaluate the direct, indirect, and cumulative impacts associated with the waterbody crossing construction techniques. We recommend winter construction techniques using ice roads and work pads to avoid and minimize impacts associated with granular fill material placed in wetlands and other surface water bodies.

FA1-18

Material Source Sites

The construction of the Mainline Pipeline route within the Park would require granular fill material for permanent and temporary access roads, pads, and other project related facilities. We recommend that the Final EIS identify the location of material source sites within and adjacent to the Park. For each material source site, we recommend that the Final EIS include estimates of the surface area impacts, volume of material available, and describe how the material source sites would be restored and rehabilitated at the end of each site’s active life. We recommend that the Final EIS evaluate the direct, indirect, and cumulative impacts associated with the development of the material source sites to cultural and historic resources, wetlands, recreation, and water quality from potential acid rock drainage and metals leaching.

FA1-19

Induced Growth and Indirect Land Use Impacts

The DNPP route would result in induced growth and indirect land use impacts associated with the pipeline construction and operation. A source of natural gas to the Park may result in future development of ancillary natural gas distribution systems within and adjacent to the Park boundary. Reasonably foreseeable future actions could include additional public access roads, infrastructure, lodging, hiking trails and bike paths, public facilities in and around the vicinity of the Park. We recommend that the Final EIS evaluate the potential impacts of the indirect and cumulative effects from the induced growth and changes in land use inside and outside of the Park boundaries, such as the McKinley Park Village and the overall socioeconomic impacts. There are a number of hiking trails, bicycle paths and camping sites within the right-of-way. The Nenana River forms the eastern boundary of the Park and is a popular area for recreational boating and whitewater rafting activities during the summer season. We recommend that the Final EIS evaluate the direct, indirect, and cumulative impacts to recreational facilities and activities within and adjacent to the Park as a result of the DNPP Mainline Pipeline route.

FA1-20

Cook Inlet Offshore Pipeline Route

The extreme tides and strong currents in Cook Inlet present unique challenges for oil and gas infrastructure construction and operation, and responses to potential subsea pipeline failures. The Draft EIS identifies potential threats to the integrity of the offshore Mainline Pipeline caused by vessel anchor

FA1-21

FA1-18

Waterbodies and wetlands crossed by the Project, including those within the DNPP, are identified in appendices I and K of the final EIS. Waterbody and wetland crossing methods are described in section 2.2.2.2 of the final EIS. Specific construction methods for each waterbody crossing are provided in appendix I of the final EIS. Impacts on waterbodies and wetlands are discussed in sections 4.3.2.4, 4.3.2.5, 4.4.2, and 4.4.3 of the final EIS. A cumulative impacts analysis for waterbodies is provided in section 4.19.4 of the final EIS. AGDC would construct the Mainline Pipeline through the DNPP beginning in late September (last month of the summer season) and continuing into winter. Additional requirements for Project activities on DNPP lands could be included as conditions in the right-of-way permit issued by the NPS or the NPDES permit issued by the EPA for the Project.

FA1-19

There are no proposed material sites within or adjacent to the DNPP.

FA1-20

The Project does not include, and would not require, a natural gas lateral serving the DNPP and surrounding areas. See the discussion in section 4.19.2.5 of the final EIS.

FA1-21

Safe operation of the pipeline falls under the jurisdiction of PHMSA. PHMSA’s review of the offshore pipeline is ongoing. To date, PHMSA has not determined that adverse impacts, based on AGDC’s design of the offshore pipeline, would require consideration of other designs or installation methods. See the updated discussion in section 2.2.2.2 of the final EIS regarding the status of PHMSA’s review of the offshore pipeline.

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drop and/or drag, dropped containers/cargo, trawl gear, ship sinking and/or grounding, boulders and/or ice scouring. In particular, the strong currents can create a vortex of water to build around the pipeline that can cause the pipeline to snap if not secured to the seafloor. Lessons learned from past offshore pipeline failures in Cook Inlet indicate that contact between rocks and boulders and the pipeline wall can contribute to pipeline leaks. For example, in April 2017, a large boulder (3 ft. x 3 ft.) rolled over a natural gas pipeline associated with the Middle Ground Shoal (MGS) Production Facility causing it to bend resulting in a small crack in the pipeline (0.2 x 0.4 inches). We recommend that the Final EIS include other lessons learned from past subsea natural gas pipeline failures and leaks as opportunities to guide the design of the proposed offshore Mainline Pipeline in Cook Inlet. In addition, we recommend including examples and descriptions of subsea pipeline designs and construction methods that have been implemented in Alaska, and elsewhere in the United States or abroad, to serve as a basis for comparison to this proposed offshore pipeline design in Cook Inlet.

FA1-21

The proposed offshore portion of the Mainline Pipeline would traverse 27.3 miles of the Cook Inlet seafloor. The offshore pipeline would be coated with 3.5 inches of concrete and rest on the seafloor without anchoring or burial. We note that the Pipeline Hazardous Material Safety Administration has concerns with the proposed offshore pipeline design and has requested that a complete technical analysis of pipeline integrity threats associated with the proposed design for the offshore pipeline be conducted to ensure safety and cover standards required by federal regulations.

Upper Cook Inlet is a high resource marine environment providing critical habitat for the ESA-listed Cook Inlet stock of Beluga Whales and supporting commercial and sport fisheries. We have concerns regarding the potential threats to the offshore pipeline integrity and potential risks to public health and the environment. We recommend that the Final EIS incorporate the results of the requested pipeline integrity technical analysis to help increase the understanding of the subsea pipeline impacts by decision makers and the public. In addition, we recommend that the Final EIS evaluate alternatives to pipeline designs, such as thicker concrete casing (> 3.5 inches), heavy wall pipe, supporting the offshore pipeline using stanchions, concrete/metal anchors, and/or concrete mattresses. Furthermore, we recommend evaluating alternative underwater pipeline construction methods to ensure consistency with PHMSA requirements and to ensure adequate safeguards against public safety and impacts to the environment. For example, construction methods to evaluate may include direct micro-tunneling, trenching and burying the pipeline below the seafloor, screeding and leveling the seafloor within the ROW, placing fill material (e.g., non-native gravel, rip rap) on the seafloor within the ROW to create a level, solid, and stable foundation to lay the pipeline, and/or placing dredged material from the temporary material offloading facility to cover and bury the pipeline along the ROW as a beneficial use of the dredged material. We recommend that mitigation and monitoring measures for the offshore pipeline be discussed in the Final EIS to ensure the reliability and safety of the pipeline and to mitigate potential risks to the public and the environment.

FA1-22

FA1-23

FA1-24

FA1-25

The Offshore Mainline Pipeline route would enter Cook Inlet along the west side near Beluga Landing and exit the east side at Boulder Point near Suneva Lake on the northern part of the Kenai Peninsula. During the public meeting in Nikiski, residents of the Boulder Point community expressed concerns regarding potential risk to the Mainline Pipeline integrity should the Suneva Lake dam breach, which has occurred in the past. The Boulder Point residents supported the Cook Inlet West Alternative, which would avoid Suneva Canyon by exiting Cook Inlet just south of Boulder Point. The EPA supports FERC's recommendation for an analysis of the potential hazards of pipeline engineering design and construction techniques in the area through the Suneva Canyon in order to avoid potential pipeline exposure and scour should another dam breach occur. In addition, we recommend that the Final EIS

FA1-22

FA1-23

FA1-24

FA1-25

Impacts on Cook Inlet beluga whales are discussed in section 4.8.1.3 of the final EIS and section 7.4 of the Biological Assessment, which is provided as appendix O of the final EIS. Safety measures that would be implemented for the pipeline are discussed in section 4.18.10 of the final EIS. See the response to comment FA1-21.

See the response to comment FA1-21. Alternative construction methods evaluated for the shoreline crossing of Cook Inlet are discussed in section 4.3.3.3 of the final EIS.

See the response to comment FA1-21. Safety measures that would be implemented for the pipeline are discussed in section 4.18.10 of the final EIS.

Potential impacts associated with a breach of Suneva Lake Dam on the integrity of the Mainline Pipeline are addressed in section 4.1.3.10 of the final EIS. Section 3.6.1.2 of the final EIS evaluates an alternative shoreline approach west of Boulder Point (i.e., the Cook Inlet West Alternative).

CC-217

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evaluate an alternative location for the Offshore Mainline Pipeline to exit the east side of Cook Inlet south of Boulder Point to avoid Suneva Canyon and the lake dam. This location may be similar to the location identified in the Cook Inlet West Alternative.

FA1-25

Cook Inlet Dredging and Dredged Material Disposal

Identification of the Baseline

The proposed Project would require offshore unconfined aquatic dredged material disposal sites in Cook Inlet to accommodate the total volume of dredged material for the Material Offloading Facility. The placement of dredged material in these disposal sites would require federal authorization either under the Marine Protection, Research, and Sanctuaries Act or CWA Section 404, depending on the location of the disposal sites relative to the baseline. The baseline is the line from which the United States Territorial Sea is measured. Dredged material disposal sites located shoreward of the baseline (inland waters) are subject to CWA Section 404, and dredged material disposal sites located seaward of the baseline (ocean waters) are subject to the MPRSA. Due to the complexity of Alaska’s geography and coastline, we recommend that NOAA hydrographers be consulted to confirm the exact location of the baseline for Cook Inlet.

FA1-26

FA1-26

AGDC would not dispose of dredged material in federal waters in either Cook Inlet or Prudhoe Bay so the MPRSA is not applicable to the Project. See the updates to section 1.6.1.12 and table 1.6-1 of the final EIS.

Based on EPA’s preliminary review of the information in the Draft EIS, it appears that the proposed disposal site locations may be within inland waters and authorization for disposal of dredged material may be under the jurisdiction of the CWA Section 404. We are available to work with FERC, the Corps, and the applicant to make a final determination, which we recommend be discussed in the Final EIS.

Dredged Material Characterization

The EPA recommends that FERC reevaluate the sediment characterization of the dredge prism in Section 4.2.3.2 (pages 4-78) of the EIS. We recommend additional clarification in the Final EIS regarding areas of the dredge prism (both horizontally and vertically) that have been assessed for physical and chemical properties. Based on the information included in the Draft EIS, it appears the dredged material contains high levels of metals, FERC acknowledges that the proposed dredge area was not analyzed for metals and that metal concentrations could be higher at depth. We were not able to review the Sampling and Analysis Plan nor the Sediment Characterization Report to allow for full review and comment on the sufficiency of the results provided in the Draft EIS. Furthermore, we cannot determine from Figure 4.2.3-3 (pages 4-79) how the sediment sample locations relate to the proposed dredge prism or the depth of sediment sampled relative to the dredge depth.

FA1-27

FA1-27

The Sediment Characterization Report and Sampling Analysis Plan were filed as appendices to Resource Report 2 of AGDC’s application to FERC on April 17, 2017 (Accession No. 201704175341). While arsenic, chromium, nickel, and selenium levels were detected at concentrations exceeding the ADEC Method 2 Cleanup Levels for migration to groundwater, no potential contaminants were detected at concentrations above the associated screening levels identified in the COE User Manual. As discussed in section 4.7.1.7 of the final EIS, dredging could increase turbidity and release contaminated sediments from the seabed in the short term, but examination of sediment samples collected in Cook Inlet sites in the general Project area indicates that sediments do not contain high levels of contaminants. For this reason, the release of high levels of contaminants during dredging would not be expected in Cook Inlet. With regard to dredge material disposal, AGDC has committed to testing dredged material in accordance with the User Manual. If test results do not meet the standards in the manual, then no in-water placement would occur and dredged material would be beneficially reused or placed in approved upland disposal sites.

In light of the following factors: (1) the lack of clarity and information in the Draft EIS regarding a full chemical characterization of the sediments to be dredged; (2) initial testing that shows high concentrations of metals; (3) the knowledge that the sediments are primarily fine-grained; (4) approximately 800,000 cubic yards of material would be dredged and disposed in Cook Inlet; and (5) the long duration of dredging and disposal of up to seven years, the EPA recommends biological testing of the full dredge prism to more fully assess the potential environmental impacts of disposal on fish and wildlife. Including the results of the biological testing of the dredged material in the Final EIS would support conclusions about anticipated effects in Section 4.7.2.3.

FA1-28

FA1-28

As discussed in section 4.7.2.3 of the final EIS, due to the presence of heavy metals in sediment near the Marine Terminal in Cook Inlet, construction and maintenance dredging activities would cause localized effects on marine benthic invertebrates, which would be long term (because of the multi-year impacts).

The Draft EIS states that the levels of metals are within natural background levels for that area. Even if this is the case, the disturbance, removal, and disposal of the dredged materials may cause benthic organisms to be exposed to higher metal concentrations and to experience acute or chronic toxicity and/or mortality (as indicated on pages 4-442). The depths of the disposal sites are relatively shallow such that rockfish, groundfish, sharks, flatfish, and invertebrates feeding within the area may be

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FA1 – U.S. Environmental Protection Agency (cont'd)

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continually disturbed for nearly a decade. The potential for the high metal concentrations to cause reduced fecundity and lead to reductions in near-field benthic diversity may cause trophic level impacts for higher marine organisms.

FA1-28

Dispersion Modelling

The DEIS (Section 4) indicates that the applicant has evaluated the potential dispersion rates of the dredged material to be disposed. Based on that hydrodynamic modeling, FERC does not anticipate any mounding to occur on the seafloor that would cause a deleterious effect on wave height resulting in a hazard to navigation. The EPA recommends providing supporting documentation of the modeling in the Final EIS for review by decision makers and the public. In addition, our review did not find a discussion of the anticipated form of the dredged material (e.g., consolidated vs. unconsolidated) that would be disposed. The EPA recommends that the Final EIS consider and evaluate whether all material would be unconsolidated when disposed or if, when dredging into native formations, the material may be in angular and consolidated form, which would then create a different habitat structure on the seafloor at the disposal site.

FA1-29

FA1-29

Instructions for accessing AGDC's modeling report, *Sediment Modeling Study Material – Offloading Facility Construction*, were provided in section 4.3.3.3 of the draft EIS and likewise are provided in section 4.3.3.3 of the final EIS.

Disposal Site Monitoring

EPA recommends that the Final EIS include a Dredged Material Disposal Site Monitoring Plan for the disposal site in Cook Inlet during and after dredge material disposal for a certain number of years. The monitoring plan should be designed to assess the level of impact and would include: (1) bathymetric surveys; (2) physical characterization of the seafloor; (3) chemical characterization of seafloor sediments; (3) benthic infauna community dynamics; and (4) epifaunal community assessment. The Monitoring Plan should be designed at appropriate intervals before, during, and after disposal to allow sufficient time to adaptively manage the disposal operations at the site, if needed.

FA1-30

FA1-30

Impacts from and mitigation measures for the disposal of dredge material at the offshore disposal site are addressed throughout the final EIS, including sections 4.2.5.3 (sediments), 4.3.3.3 (marine waters), and 4.2.4.3 (benthic invertebrates). Additional measures, including a requirement for a post-construction dredged material disposal site monitoring plan, could be included as conditions to the COE's Department of the Army authorization for the Project.

Underground Injection Control

Pursuant to the Safe Drinking Water Act, the EPA authorizes permits for Class I Industrial Non-hazardous Underground Injection Control wells for the injection of Resource Conservation and Recovery Act, or RCRA-exempt and non-hazardous wastes below the lowest underground source of drinking water. The Draft EIS indicates that two UIC Class I injection wells are proposed for injection of waste streams from the gas treatment facilities at the GTP. The proposed injection wells would be approximately 6,000 ft. to 7,000 ft. in vertical depth and would be installed on the northwest corner of the GTP site near the flare area. We recommend that the Final EIS provide the location of the two UIC wells on an aerial map of the GTP pad overview (Figure 2.1.3-2; pages 2-6).

FA1-31

FA1-31

The approximate location of the Class I UIC injection wells is depicted on figures 2.1.3-1 and 2.1.3-2 of the final EIS. The anticipated waste streams from construction and operation of the GTP, including liquid waste streams, are provided in the Project Waste Management Plan. Instructions for accessing this plan were provided in table 2.2-1 of the draft EIS and likewise are provided in table 2.2-1 of the final EIS. AGDC has committed to constructing and operating the Class I UIC injection wells in accordance with applicable federal and state permitting programs. The EPA's permitting program for Class I injection wells is discussed in sections 1.2.3 and 1.6.9 of the final EIS and the applicable permit is listed on table 1.6-1 of the final EIS.

Wastes must be non-hazardous or exempt from consideration as hazardous under RCRA to be injected into a Class I Industrial Non-hazardous UIC well. We recommend that the Final EIS identify the RCRA non-hazardous and exempt wastes generated from the gas treatment facilities which are proposed to be injected into a Class I well. For example, wastes derived from exploration or production streams (e.g., produced water, gas condensate) are not considered hazardous waste (exempted) under RCRA regulations at 40 CFR §261.4(b)(5). Only construction wastes directly associated with exploration and production (well construction) is exempt from consideration as hazardous under RCRA. Other construction wastes must be considered non-hazardous under RCRA to be injected into a Class I Industrial UIC well. Wastewater from hydrostatic testing is not exempt under RCRA and may be classified as hazardous if it contains anti-freeze chemicals. Diesel fuel may not be injected into a Class I well if classified as a RCRA hazardous waste but may be used to fill the annulus around the well for freeze protection. Construction of Class I Industrial UIC wells must comply with both federal and state requirements.

FA1 – U.S. Environmental Protection Agency (cont'd)

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The Draft EIS (pages 2-7) indicates that excess hydrocarbons and CO₂ would be flared from two flare stacks (east flare and west flare) at the GTP. If significant quantities of CO₂ would be generated, then it would generally be injected for enhanced oil recovery through a permitted Class II UIC well. However, CO₂ may also be injected for long-term geological sequestration/storage through UIC Class VI UIC wells. We recommend that the Final EIS clarify where hydrocarbons and CO₂ would be removed from the waste stream, either through flaring or reinjection for EOR. In addition, to reduce CO₂ emissions to the atmosphere and to mitigate for greenhouse gas emissions, we recommend that the Final EIS evaluate long-term geological sequestration of CO₂ through a Class VI UIC well as a reasonable alternative to gas flaring. The EPA is available to discuss the requirements of the UIC program and the permitting process under the Safe Drinking Water Act.

FA1-32

The footnote on pages 2-7 of the Draft EIS indicates that the Project Waste Management Plan identifies the anticipated waste streams, volumes of waste, and waste disposal options for the Gas Treatment, Mainline, and Liquefaction Facilities. We recommend that this information be disclosed for decision makers and the public in the Final EIS. The EPA UIC Program is available to assist the FERC and the applicant in identifying any additional information needs for the permit application. The information that EPA requires for a UIC Class I permit application is also listed in the EPA Form 7520-6.⁵

Wastewater Discharges

We recommend that the Final EIS provide detailed information regarding wastewater discharges proposed for all components of the Project, including construction and operation. We recommend that the Final EIS include a section (or subsections) that clearly identifies and describes all anticipated wastewater discharges, including sources, volumes, discharge rates, frequency, treatment processes, disposal mechanisms (e.g., surface waters – rivers, wetlands, lakes; underground injection, existing disposal facilities, etc.).

FA1-33

Sanitary and Domestic Wastewater

The Draft EIS (pages 2-14) indicates that sanitary and domestic wastewater would be treated at the compressor and heater stations although is not clear whether there would be any anticipated waste streams produced that require a CWA Section 402 NPDES permit. We recommend that the Final EIS include additional information regarding the types of treatment technologies that would be implemented and whether the waste streams would be discharged, containerized and transported, or injected into UIC wells. For example, we recommend that wastes associated with pig receivers/launchers be discussed in the Final EIS.

FA1-34

The Draft EIS indicates that sanitary and domestic wastewater would be the only expected wastewater discharges from the construction camps. We recommend that the Final EIS discuss whether the applicant would seek authorization under the North Slope General Permit. We recommend that additional information regarding sanitary and domestic wastewater be consolidated in the Water Resources Subsection (4.3.2.5).

FA1-35

Waste Incinerators

The Draft EIS (Table 2.1.4-3; page 2) indicates that there would be waste incinerators located at the compressor stations and debris generated onsite would be transferred to a disposal location. We

FA1-36

⁵ EPA Form 7520-6 can be downloaded from: https://www.epa.gov/sites/production/files/2019-05/documents/owner_or_operator_permit_application_for_a_class_i_well_form_7520-6_class_i.pdf

FA1-32

The feed gas produced from the PTU and PBU contains CO₂ and H₂S. These compounds would be removed from the feed gas at the GTP and sent by pipelines to the PBU for reinjection into the field. Construction and operation of these pipelines would be part of the PBU MGS Project, which is discussed in section 4.19.2.2 of the final EIS as a nonjurisdictional facility.

Excess hydrocarbons and CO₂ produced at the GTP as part of normal plant operations would be flared through two flare stacks at the facility. As discussed in section 4.15.3.1 of the final EIS, GTP operations would be subject to PSD permitting because facility emissions would exceed the 250 tpy threshold under this program. The emissions from GTP operations identified in section 4.15.5.1 of the final EIS are based on AGDC's proposed design for the facility. The PSD permitting process requires a BACT analysis to identify appropriate control technologies for GHG emissions. Depending on the specific BACT identified in the permit, operating emissions could be less than those identified in the final EIS. EPA or ADEC could require an assessment of reinjection as part of the BACT analysis.

Instructions for accessing the Project Waste Management Plan were provided in table 2.2-1 of the draft EIS and are provided in table 2.2-1 of the final EIS. Information on wastewater discharges is provided in the Project Waste Management Plan. Instructions for accessing this plan were provided in table 2.2-1 of the draft EIS and likewise are provided in table 2.2-1 of the final EIS. While AGDC has not specified the volume, type, frequency, rates, treatments, and disposal mechanisms for all wastewater discharges, this information would be developed by AGDC in preparation of federal (EPA) and state (ADEC) permits. See the updates to sections 4.3.3.3 and 4.3.4.2 of the final EIS. Sections 4.3.3.3 and 4.3.4.2 of the final EIS have been updated to address this comment. Prior to construction, AGDC would file updates to the Project Water Use Plan and Waste Management Plan, which would provide additional information on wastewater discharges during Project construction and operation. Instructions for accessing this plan were provided in table 2.2-1 of the draft EIS and likewise are provided in table 2.2-1 of the final EIS. AGDC has committed to obtaining and complying with the conditions of applicable permits for wastewater discharges.

FA1-33

FA1-34

FA1-35

FA1-36

See the response to comment FA1-33. Section 4.3.4.4 of the final EIS notes that wastewater discharges would be subject to APDES and EPA permitting. The permits required for wastewater discharges, including an APDES permit under Section 402 of the CWA, are listed in table 1.6-1 of the final EIS. The Project Waste Management Plan identifies sludge, food waste, filters, small amounts of medical waste, and general debris as types of waste that may be incinerated. Estimated volumes of these wastes as well as estimated volumes of ash from incineration are also provided in this plan. AGDC has committed to incinerating wastes and disposing of ash in accordance with applicable state and federal regulatory requirements. Instructions for accessing the Project Waste Management Plan were provided in table 2.2-1 of the draft EIS and likewise are provided in table 2.2-1 of the final EIS.

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recommend that the Final EIS clarify the types and volumes of waste that may be incinerated at the compressor stations and identify the locations of the disposal facilities.

FA1-36

Hydrostatic Testing

The Draft EIS (pages 2-20) discusses the possible inclusion of hydrostatic test water withdrawal and discharge locations. We recommend that the Final EIS discuss permitting of hydrostatic test water discharges and options for containing or reusing the wastewater for other project purposes, such as fugitive dust abatement. The Final EIS should also discuss whether hydrostatic test water would be injected into the proposed UIC Class I Industrial wells. We recommend a discussion regarding hydrostatic test water be consolidated in the Water Resources Subsection (4.3.2.5).

FA1-37

FA1-37

Hydrostatic testing is discussed in sections 2.2.2, 2.2.3, and 4.3.4 of the final EIS. Estimated water needs for hydrostatic testing and locations of water sources and discharges are provided in section 4.3.4 of the final EIS (see tables 4.3.4-3, 4.3.4-4, and 4.3.4-5). Hydrostatic test water from the Gas Treatment Facilities and one test section of the Mainline Pipeline (section ML 1-A-01) would be discharged into two UIC Class I wells to be built at the GTP as discussed in section 4.3.4.4 of the final EIS. The permits required for water needs and discharges for hydrostatic testing are identified in table 1.6-1 of the final EIS.

Wastewater Treatment

The Draft EIS (pages 2-24) states that treated wastewater, boiler blowdown, reverse osmosis reject water, and stormwater would be treated prior to discharge from the LNG plant. We recommend that the Final EIS discuss whether hydrostatic test water and/or fire control test water would also be expected discharges from the LNG Plant. We recommend that additional information regarding discharge frequencies, volumes and treatment methods be consolidated in the Water Resources Subsection (4.3.2.5).

FA1-38

FA1-38

The discharges referenced in this comment would result from Project operations at the LNG Plant. Hydrostatic testing of the Liquefaction Facilities is addressed in sections 2.2.3.1 and 4.3.4.4 of the final EIS, the latter of which identifies the source and volume of water needed for testing and notes that the test water would be discharged to Cook Inlet via an outfall. Section 4.3.4.4 similarly addresses water needs and discharges for firewater testing. Also see the response to comment FA1-37.

Ballast Water in Cook Inlet

On December 4, 2018, the Vessel Incidental Discharge Act was signed into law, which requires EPA to develop new national standards of performance for commercial vessel incidental discharges and the U.S. Coast Guard to develop corresponding implementing regulations. In 2013, pursuant to the CWA Section 402, EPA issued the Vessel General Permit, which requires authorization to discharge ballast water and other pollutants incidental to the normal operation of certain commercial vessels into navigable waters. The VIDA legislation has extended the effective date of the 2013 VGP until the EPA finalizes new regulations.

FA1-39

FA1-39

Section 4.3.3.3 of the final EIS has been updated to address this comment. Vessels traveling into State of Alaska or federal waters, including LNG carriers, are required to comply with Coast Guard regulations for BWM systems, including regulations for the control of invasive species.

The Draft EIS indicates that about 2.9 billion to 3.2 billion gallons of ballast water would be discharged per year from the LNG vessels during LNG loading operations at the Product Loading Facility. LNG vessels would generally take in ballast water (seawater) from international waters and discharge the ballast water into Cook Inlet. Ballast water discharges may adversely impact marine water quality resulting from changes in temperature, salinity, dissolved oxygen, and pH. In particular, we have concerns regarding the introduction of non-native marine invasive species/organisms that may be commingled with the potentially large volumes of discharge ballast water into Cook Inlet anticipated from LNG vessels per year. We recommend that FERC identify and disclose in the Final EIS ballast water management practices and mitigation measures to minimize the potential adverse impacts to marine water quality and to avoid introduction of marine invasive species/organisms. In addition, we recommend that the operation of USCG-type approved ballast water treatment systems for LNG vessels be evaluated and disclosed. For ballast water treatment systems that may require the use of biocides, we recommend biocides registered with the EPA for under the Federal Insecticide, Fungicide, and Rodenticide Act. We encourage the project proponent to develop a Ballast Water Management Plan for LNG vessels in Cook Inlet to address management and treatment of ballast water.

FA1-40

FA1-40

See the response to comment FA1-39.

Ballast water exchange should be conducted in waters outside the exclusive economic zone and not less than 200 nautical miles from shore prior to discharging into waters of the United States. We recommend evaluating additional options to the discharge of ballast water into Cook Inlet and discussing in the Final EIS. For example, as liquefied natural gas is loaded to LNG vessels at the PLF, direct pumping of ballast

FA1 – U.S. Environmental Protection Agency (cont'd)

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water to an onshore treatment system at the LNG facility may occur. We recommend that the Final EIS evaluate the installation and operation of a shore-based treatment system at the LNG Facility to avoid and minimize impacts from ballast water exchange in Cook Inlet. FA1-40

Acid Rock Drainage and Metal Leaching

The Draft EIS indicates that 26.6 million cubic yards of granular fill material would be needed for the Project, requiring approximately 153 potential material source sites. The weathering process that results in ARD/ML may be naturally occurring or the result of increased exposure to bedrock through pipeline trenching or development of material source sites. ARD/ML would result in water quality impacts by lowering the pH, and increasing the concentration of certain toxic metals, such as arsenic, mercury, and antimony, which are naturally occurring in the bedrock. An ARD/ML study characterized portions of the onshore Mainline Facilities as having high, moderate, low or no ARD/ML potential.⁶ Certain areas were identified to have high or moderate potential for ARD/ML. We support FERC's recommendation to identify mitigation measures specific to blasting, trenching, granular fill pads and road, and material source site development in an ARD/ML Management Plan. We recommend that the Final EIS include requirements for surface and groundwater monitoring in areas of high or moderate ARD/ML potential and that the Management Plan be made available for public and cooperating agency review. FA1-41

Waterbody Crossings

The construction methods used in close proximity to water bodies will also have varying effects on aquatic resources and can be specified further to minimize impacts. The Draft EIS identifies five construction methods to install the onshore Mainline Pipeline beneath or across waterbodies: wet-ditch open-cut, dry-ditch open-cut, frozen-cut, aerial span, and direct micro-tunneling. The wet-ditch open-cut method would disturb streambanks and beds resulting in temporary increases in turbidity and sedimentation. The dry-ditch open-cut and frozen-cut methods would minimize these impacts by isolating flow or leveraging low flow or frozen conditions, but temporary increases in turbidity and sedimentation would occur when flow is re-established. According to the sediment transport model, the average sediment accumulation would range from 0.02 to 0.4 inch out to about 160 feet downstream of excavation. The model predicted that wet ditch open cut trenching would lead to a localized exceedance of the designated use water quality standard to a maximum distance of about 290 feet downstream and lasting about 1 hour after excavation ceases. FA1-42

We have concerns that the wet ditch open cut trenching at waterbody crossings upstream from fish spawning areas could result in downstream sediment deposition adversely impacting and degrading sensitive spawning redds/gravels and potentially smothering incubating eggs and/or larval fish. To ensure that turbidity and sediment water quality standards are not exceeded, we recommend implementing the other four types of construction methods identified in the Draft EIS. In addition, we encourage the applicant to conduct dry-ditch open-cut construction method in winter season to avoid and minimize impacts to surface waters at waterbody crossings, as proposed for the Alexander Creek crossing. FA1-43

Information regarding waterbody crossings have been provided for the Mainline Pipeline and Point Thompson Unit Gas Transmission Line GTP access road crossings, and five material sites for the Mainline Facilities. Waterbody crossings for other Project components have not been provided in the Draft EIS. We support FERC's recommendation to characterize and identify the location of the waterbodies crossed or affected by the construction of all Project components. We recommend that the FA1-44

⁶ Worley Parsons (2018) Onshore Geohazard Assessment Methodology and Results Summary. Included in response to Information Request No. 64, filed on July 27, 2018. Prepared by WorleyParsons for AGDC. Docket No. CP17-178-000; Accession No. 20180727-5049.

FA1-41 We recommended in section 4.1.3.10 of the final EIS that, prior to construction, AGDC file an ARD/ML Management Plan that includes details for surface and groundwater monitoring in areas of known moderate and high ARD/ML potential.

FA1-42 Sedimentation impacts on fish downstream of waterbody crossings where the Mainline Pipeline would be installed using the wet-ditch open-cut construction method and applicable measures for mitigating impacts are discussed in section 4.7.1.7 of the final EIS. Our recommendation for AGDC to conduct in-stream construction within the timeframes provided by the ADF&G would minimize impacts on sensitive fish resources.

FA1-43 See the response to comment FA1-42.

FA1-44 Section 4.3.2 and appendix I of the final EIS have been updated to include additional waterbody information filed by AGDC.

FA1 – U.S. Environmental Protection Agency (cont'd)

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more complete waterbody crossing information be included in appendix I of the Final EIS. Also, for each waterbody, we recommend identifying the construction method and type of crossing structure proposed (e.g., direct micro-tunneling, culvert, bridge, aerial span, ice road, etc.).

FA1-44

Water Resources

Freshwater, including surface and groundwater, and marine sources would be used for a variety of Project construction and operational activities, including hydrostatic testing, mixing of drilling mud, ice road construction, dust control, ballast water, and routine maintenance and repairs. The Draft EIS identifies the anticipated water needs for Project construction, but volumes and sources of water have not been finalized. Additionally, water needs for project operations and construction camps have not been estimated. Therefore, we recommend that the Final EIS include final volumes, source and discharge locations, and proposed treatments of the water needed for Project construction and operation. We support FERC's recommendation that the Water Use Plan be updated to evaluate the reuse of hydrostatic test water for other types of construction or operation activities, such as for fugitive dust control. We recommend that the updated information be included in the Final EIS.

FA1-45

FA1-45

See the response to comment FA1-17.

Wetlands and Aquatic Resources

Mapping and Delineation

Wetlands and potential jurisdictional waters of the United States in the Project area were identified and delineated using a field target sampling method approved by the Alaska District, based on aerial photo interpretation, with approximately 11 percent of wetland sites being verified in the field. A validation study⁷ in the Project area found that the field target sampling method provided a reasonable estimation of wetlands area affected by the Project, but that in some cases wetland locations and their boundaries were not accurately mapped when compared with the Corps' standard field-verified wetland delineation method. The validation study also found that the field target sampling method excluded more wetlands in mountainous regions (36 percent in the Alaska Range and 32 percent in the Brooks Range) than the field-verified wetland delineation method.

FA1-46

FA1-46

Comment noted.

The Draft EIS (4.4.1.2) states that AGDC has committed to completing a field-verified wetland delineation prior to construction once the final pipeline centerline has been surveyed and access can be obtained. We support FERC's recommendation that AGDC file final wetland delineation reports during construction, meaning a field-verified wetland delineation will not be available for inclusion in the Final EIS. We agree with FERC that the Final EIS should include all available field-verified wetland data and the evaluation of impacts reflect these data. More accurate information regarding wetland locations and boundaries are needed to implement required avoidance and minimization measures and compensatory mitigation.

Functional Assessment

Delineated wetlands were classified using both the Cowardin and the Hydrogeomorphic (HGM) classification systems. The Draft EIS (4.4.1.3) includes descriptions of the HGM wetland classes and limited information about the typical characteristics of the Cowardin wetland classes crossed by the Project. Our review finds that the Draft EIS does not include site-specific function or condition assessment data, nor was the condition or functional performance of individual wetlands attributed to the imagery or available data on existing disturbance, landscape position, or vegetation community.

FA1-47

FA1-47

AGDC did not complete a functional assessment of wetlands in the Project area. Such an assessment, if needed, could be required by the COE as part of the CWA Section 404 permitting process for the Project.

⁷ AGDC (2018). *Wetlands Methodology Validation Study Report*.

FA1 – U.S. Environmental Protection Agency (cont'd)

Information about the functions performed by wetlands impacted by the Project is important to quantify the extent of Project-related change and identify the likely environmental consequences of those changes. The joint EPA/Corps Final Rule regarding Compensatory Mitigation for Losses of Aquatic Resources⁸ states that functional or condition assessment methods should be used where practicable to determine how much compensatory mitigation is required to offset project impacts.

FA1-47

Wetland function assessment methods developed by the Alaska Department of Environmental Conservation and the Corps, Alaska District are available for the North Slope,⁹ Interior Alaska,¹⁰ and the Cook Inlet Basin Ecoregion.¹¹ The functional performance of individual wetlands can often be attributed based on data used for mapping and delineation. We recommend that data specific to functional performance be collected when AGDC conducts the field-verified wetland delineation prior to construction.

We recommend that the Final EIS include additional discussion of the functions performed by the wetlands that would be impacted by the Project. We also recommend that AGDC use the available functional assessment methods to quantify the functional loss associated with the Project's direct and indirect impacts and include that information in their Compensatory Mitigation Plan.

Adverse Project Impacts

The Draft EIS characterizes project impacts into four categories based on duration until the resource returns to pre-construction condition. These categories are: temporary (8 years), short-term (13 years), long-term (14 years to 30 years), and permanent. The Draft EIS characterizes approximately 70 percent of project impacts to wetlands, 8,270 acres, as permanent. We have concerns that the characterization of wetland impacts duration (temporary, short-term and long-term) may not accurately reflect the overall Project impacts when compared to permanent impacts. We recommend that the summary of wetland impacts (acres) be clarified in the Final EIS as separate tables for each of the four levels of wetland impact duration: temporary, short-term, long-term, and permanent.

FA1-48

While information about the duration of impacts is valuable, the severity of permanent impacts to wetlands varies from limited functional loss to elimination of the wetland. We recommend that the Final EIS discuss the extent of functional loss associated with permanent impacts that do not result in complete wetland loss, such as the conversion of forested wetlands to other types. Similarly, we recommend that the nature and extent of indirect impacts to wetlands, such as from disturbance and fragmentation, also be discussed and quantified in the Final EIS.

FA1-49

The Draft EIS indicates that 5,525 acres of wetlands would be eliminated through conversion to uplands due to the placement of granular fill from construction Mode 4 or grading from construction Mode 5A. Placement of granular fill material in wetlands for construction of work pads and access roads would directly convert wetlands to uplands, fragment wetlands, alter natural drainage patterns and reduce biogeochemical cycling functions. Granular fill placement would cover and compact wetland vegetation and soils, decreasing wetland functions and contributing to turbidity and sedimentation. Granular fill material would increase soil thermal conductivity that, coupled with increased solar radiation, can lead to permafrost thaw and contribute to thermokarsting and ponding as the granular fill settles. Adjacent to

FA1-50

⁸ 33 CFR § 332.4(c)(2)-(14)/40 CFR § 230.94(c)(2)-(14).

⁹ Corps, Alaska District. (2017). *Operational Draft Regional Guidebook for the Rapid Assessment of Wetlands in the North Slope Region of Alaska*.

¹⁰ Alaska Department of Environmental Conservation. (1999). *Operational Draft Guidebook for Reference Based Assessment of The Functions of Precipitation-Driven Wetlands on Discontinuous Permafrost in Interior Alaska*.

¹¹ Alaska Department of Environmental Conservation. (2003). *Operational Draft Guidebook for Assessing the Functions of Slope/Flat Wetland Complexes in the Cook Inlet Basin Ecoregion, Alaska, using the HGM Approach*.

CC-224

FA1-48

AGDC provided wetland impact data for Project construction and operation. We assessed the duration of wetland impacts based on irreversible and irretrievable outcomes by activity. For example, granular fill placement was assessed as a permanent impact regardless of whether the facility would be used for construction or operation, because the wetland would be permanently lost and would therefore be an irreversible loss. Areas that would be disturbed by construction but not permanently filled would be restored over time in accordance with the Project Revegetation Plan, but the duration of impact would vary depending on the type of vegetation affected and by the length of the growing season as discussed in section 4.4.3.2.

FA1-49

Direct and indirect impacts associated with the Project are collectively discussed as noted in section 4.0 of the final EIS. Permanent impacts from the conversion of forested wetlands are discussed in section 4.4.3.2 of the final EIS, and fragmentation of wetlands is discussed in sections 4.4.2 and 4.4.3.2 of the final EIS. See the responses to comments FA1-47 and FA1-48.

FA1-50

Comment noted. See the discussion in section 4.4.3.2 regarding granular fill placement, removal, and alternatives. We recommended in section 4.2.4 of the final EIS that AGDC use timber/composite mats in place of granular fill in wetlands on slopes of 0 to 2 percent in areas where Mode 4 construction would occur, which would reduce some wetland impacts from fill placement. AGDC would remove the mats upon completion of construction.

FA1 – U.S. Environmental Protection Agency (cont'd)

granular fill areas, related construction activities, such as clearing, grading, and fugitive dust deposition from heavy equipment and vehicle traffic, could further degrade wetlands underlain by permafrost. The EPA continues to recommend that all granular fill material placed in wetlands from the construction of temporary access roads and work pads be removed after construction activities have been completed for this Project and that disturbed wetland areas be restored/revegetated to maintain surface hydrological connectivity.

FA1-50

Avoidance and Minimization

In order to avoid and minimize the direct and indirect adverse impacts to wetlands, we recommend reevaluation of the project construction methods to focus on winter construction for all construction modes, which would include using ice and frost pack roads and work pads to the maximum extent practicable. In particular, winter construction should be implemented in wetlands underlain by discontinuous thaw-sensitive permafrost soils. If winter construction is determined not to be practicable, or specifically not in some locations, then we recommend that alternative construction methods to the use of granular fill material be evaluated for all work in wetlands. For example, we support FERC's recommendation on the use of construction mats, which may include, but not be limited to, crane mats, laminated mats, timber mats, composite mats, and steel framed mats in wetlands can minimize adverse impacts. We recommend removal of these mats after construction activities have been completed to allow the disturbed areas to restore naturally. Approximately 12,000 acres of forests are proposed to be cleared for this Project. We recommend that local timber be evaluated as a reasonable alternative to granular fill in wetland areas where winter construction is not practicable. Timber, woody shrubs, and wood chips for construction of corduroy roads would be a biodegradable option. To accurately assess and quantify the Project impacts to wetlands, we recommend that the Final EIS include a table identifying where winter construction in wetlands is practicable, where summer construction on equipment matting is practicable, and where summer construction from fill is necessary.

FA1-51

FA1-51

Information on construction mode, construction season, and application area is provided in section 2.2.2 and table 2.2.2-1 of the final EIS. See the response to comment FA1-50.

FA1-52

FA1-52

See the response to comment FA1-50.

Compensatory Mitigation

The Draft EIS (4.4.4) identifies that "compensatory mitigation would be required to replace (offset) the loss of wetland and aquatic resource functions for any unavoidable impacts on wetlands or aquatic resources." It also states that AGDC has provided a Project Wetland Mitigation Plan to the Corps. Our review did not find further discussion in the Draft EIS of how the compensatory mitigation might be conducted or how compensation might reduce the severity of the Project impacts to wetlands. We recommend that this information be included in the Final EIS.

FA1-53

FA1-53

As discussed in section 4.4.5 of the final EIS, AGDC is consulting with the COE to determine the appropriate form of mitigation offsets for unavoidable impacts on waters of the United States, including wetlands; specific mitigation requirements for the Project have not been determined.

To ensure the NEPA analysis sufficiently addresses direct, indirect, and cumulative adverse impacts to wetlands and aquatic resources from the Project, the EPA recommends that the Wetlands Compensatory Mitigation Plan be included in the Final EIS as an appendix. We recommend that the Compensatory Mitigation Plan include a wetlands functional assessment using the functional assessment methods mentioned above. The Compensatory Mitigation Plan should contain all the required elements identified in the joint EPA/Corps Final Rule regarding Compensatory Mitigation for Losses of Aquatic Resources.

The Corps, Alaska District, has developed a Credit Debit Methodology (CDM)¹² as a tool to determine the sufficiency of compensatory mitigation to offset specific unavoidable losses to aquatic resources. We recommend that the CDM be used to calculate the mitigation debits resulting from this Project's specific unavoidable impacts to wetlands and aquatic resources, and credits that would be generated by proposed compensatory mitigation projects. As required by the joint EPA/Corps Final Rule regarding

FA1-54

FA1-54

Comment noted. See the response to comment FA1-53.

¹² Corps, Alaska District. (2016). *Alaska District: Credit Debit Methodology, Version 1.0*.

FA1 – U.S. Environmental Protection Agency (cont'd)

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Compensatory Mitigation for Losses of Aquatic Resources, “the amount of required compensatory mitigation must be, to the extent practicable, sufficient to replace lost aquatic resource functions. We are available to work with FERC and the Corps to review the Draft Compensatory Mitigation Plan.

FA1-54

Permafrost

The Draft EIS indicates that over 80 percent of Alaska is comprised of permafrost soils. Thirty-two percent of permafrost in Alaska is continuous and 31 percent is discontinuous, with the remaining 18 percent comprised of sporadic and isolated patches. Table 4.2.4-2 (pages 4-83) provides estimates of the acres of permafrost thaw sensitivity associated with project construction and operations. Overall, thaw-sensitive permafrost would experience the most significant impacts due to construction of the Mainline Pipeline, which represents 79 percent of the total project impacts to thaw sensitive permafrost (11,391 acres of the total 14,339 acres). Permanent impacts to thaw sensitive permafrost from Mainline Pipeline construction represents 86 percent of the total project impacts (5,474 acres of the total 6,377 acres).

FA1-55

Construction activities associated with the Mainline Pipeline include land clearing, grading, granular fill placement, trenching, and excavation, which would adversely affect permafrost soils. The Draft EIS indicates that long-term to permanent impacts would result from permafrost degradation and the loss of soil surfaces from granular fill placement and construction of aboveground facilities. The effects of permafrost alteration due to construction of the Mainline Pipeline could include hydrologic impacts, subsidence and thermokarst development, solifluction, soil creep, and thawed-layer detachment on steep slopes, increased erosion, and vegetation impacts.

Furthermore, the Draft EIS indicates that granular fill work pads and access roads would conduct solar radiation to underlying soils, resulting in changes to thermal regimes in areas with thaw-sensitive permafrost and causing permanent changes to the subsurface thermal regime and drainage patterns. Thermokarsting has the potential to occur adjacent to granular work pads and permafrost thaw could extend up to 20 feet outside of the construction right-of-way. In addition, degradation of permafrost can accelerate the release of greenhouse gases, such as carbon dioxide and methane.

The Draft EIS identifies (4.2.4) that the Project proposes granular work pads of 12 to 36 inches in depth. This depth is much less than the North Slope industry standard minimum of five feet to provide thermal protection to permafrost. If placement of granular fill material for temporary work pads and access roads is the only practicable construction option in permafrost-supported wetlands, then we recommend that sufficient insulating foam material be placed between the granular fill material and the surface of the wetland to insulate the underlying permafrost. We support FERC’s recommendation that the foam material should be closed-cell extruded polystyrene or other closed cell foams rather than non-extruded expanded polystyrene.

The Draft EIS indicates that there is a potential for thaw settlement of the pipe, ditch backfill, and right-of-way within permafrost soils. Thaw settlement of the Mainline Pipeline could cause significant pipe strain. Ditch backfill thaw settlement could occur as a result of melting interstitial ice and ice lenses. If the ditch backfill area settles more than the surrounding right-of-way, changes in surface topography and natural drainage patterns could occur. The Draft EIS indicates that ditch backfill thaw settlement is possible along approximately 21.5 miles of the Mainline Pipeline. The majority of thaw settlement is anticipated to be located within the first 50 miles of the Mainline Pipeline on the North Slope. We support FERC’s recommendation that construction BMPs and mitigation measures be identified to address areas susceptible to ditch backfill settlement, such as incorporating foam insulation around the

FA1-56

FA1-55

AGDC proposes to leave granular fill for work pads and access roads in place after construction of the Project. Permanently placing insulating foam material between the granular fill and underlying wetland surface would create a semi-permeable layer that could increase ponding. Site-specific work pad requirements, including thickness of the pads, would be determined during the detail design phase of the Project.

FA1-56

Comment noted.

FA1 – U.S. Environmental Protection Agency (cont'd)

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pipe and/or along the bottom of the trench, foam pillows, snow/ice pads, trench crowning, and operational monitoring and maintenance. We recommend including this information in the Final EIS.

FA1-56

Blasting may be required in certain terrain conditions underlain by permafrost where mechanized methods may not be practicable. Blasting operations in permafrost would be conducted in winter, which would dissipate any heat resulting from the blasting or other construction methods. The Draft EIS indicates that site specific information on ice content and distribution would be required to properly design each blast in permafrost. We support FERC's recommendation for additional information regarding details on ice content and permafrost distribution required to design blasting operations in permafrost. We recommend that the Final EIS include an update to the Blasting Plan to specifically address site specific blasting requirements in permafrost.

FA1-57

FA1-57

Section 4.2.5.2 of the final EIS has been updated to address this comment.

Impacts of Fugitive Dust

Heavy equipment and vehicle traffic on granular work pads and access roads could permanently affect permafrost soils and wetlands by generating fugitive dust. The ASAP Project Final Supplemental EIS assumed that fugitive dust could travel up to 50 feet from gravel roads and, depending on the prevailing wind direction, up to 350 feet from granular material sites. Fugitive dust would be deposited to the ground surface. Over long periods, dust deposition could result in thermokarsting of permafrost soils because the darker surface would absorb more solar radiation than adjacent snow-covered areas, thereby increasing surface temperatures. These increased temperatures could result in earlier snowmelt, which could contribute to warming permafrost soils and cause thermokarsting.^{13,14} A Walker and Everett (1987) study¹⁵ observed an increase in thaw depth within 32 feet of gravel roads as a result of fugitive dust, possibly due to decreased plant cover and earlier initiation of thaw.

FA1-58

FA1-58

See our analysis of the Mode 4 construction method in section 4.2.4 of the final EIS and our response to comment FA1-50 regarding granular fill. As discussed in sections 2.1.3 and 2.1.4 of the final EIS, ice roads and pads would be used for construction of GTP infrastructure, the PBTL and PTTL, and Mainline Pipeline from MPs 0.6 to 86.6 and at MPS 475.9 and 476.1. Control measures for fugitive dust are discussed in sections 4.2.4 and 4.15.4 of the final EIS and in the Project Fugitive Dust Control Plan. Instructions for accessing this plan were provided in table 2.2-1 of the draft EIS and likewise are provided in table 2.2-1 of the final EIS.

The Draft EIS indicates that impacts from thermokarst caused by fugitive dust would not be reversed within a short timeframe and could result in permanent impacts on permafrost soils. We recommend evaluation of winter construction and the use of ice or frost packed work pads and access roads on thaw sensitive permafrost areas. This would minimize the need for granular fill material, which is the source of the fugitive dust. We continue to recommend that all temporary granular fill work pads and access roads be removed after construction activities to avoid and minimize generation of fugitive dust.

FA1-59

FA1-59

See the response to comment FA1-50.

The Draft EIS (pages 4-895) indicates that 100 percent fugitive dust control is assumed when temperatures are below freezing. This assumption may be adequate for road emissions when the ground is covered by ice and snow. However, significant fugitive dust emissions could still occur in cold dry conditions, where soil moisture is low and the ground is not covered by ice and snow. Regardless of conditions, fugitive dust emissions could occur due to material handling. The 100 percent fugitive dust control assumption may underestimate PM₁₀ emissions from the Project during the winter months. The EPA recommends confirmation that fugitive dust emissions from material handling is properly accounted for in the air quality emissions inventory for all months of the year. We also recommend including the rationale to support the level of surface-based fugitive dust emissions during winter months in the Final EIS. Temperature-based assumptions may not account for cold dry periods when fugitive dust emissions could still occur.

FA1-60

FA1-60

Based on information provided by AGDC, fugitive dust control efficiencies assumed for construction emission calculations ranged from 50 percent to 100 percent. A 100 percent control efficiency was assumed only for the GTP, PTTL, and Mainline Spreads 1-2 during the 6-month winter season (October-April/May). See the updates in section 4.14.4 of the final EIS regarding fugitive dust calculations.

¹³ U.S. Army Corps of Engineers. (2018). Alaska Stand Alone Pipeline Project, Final Supplemental Environmental Impact Statement. Available online at <http://www.asapcis.com/docs.html>. Accessed August 2018.

¹⁴ National Research Council (2003). Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope. Available online at <https://www.nap.edu/read/10639/chapter/1#viii>. Accessed December 2018.

¹⁵ Walker, D.A., and K.R. Everett (1987). Road dust and its environmental impact on Alaskan taiga and tundra. Arctic and Alpine Research, 19(4):479-489. Available online at <https://www.tandfonline.com/doi/pdf/10.1080/00040851.1987.12002630?needAccess=true>.

FA1 – U.S. Environmental Protection Agency (cont'd)

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Air Quality

Prevention of Significant Deterioration – PSD Analysis

The Draft EIS provides a summary of the Class I and Class II Prevention of Significant Deterioration increment analysis for the Gas Treatment Plant and the Liquefaction Facility. The EPA notes that the analysis conducted for the Draft EIS is intended for public disclosure under NEPA and is not a full regulatory PSD increment analysis that would be required for PSD permitting by the Alaska Department of Environmental Conservation. A full PSD analysis requires identification of a significant impact area, baseline emissions inventory, and examination of increment consumption due to emission changes from the baseline date from all increment consuming sources in the vicinity of the project. We recommend that the Final EIS disclose that the PSD increment analysis reported here is not a full regulatory assessment as would be required for PSD air permitting. We recommend that the Final EIS clarify the differences between the EIS analysis and the full regulatory analysis under PSD air permitting. In addition, we recommend that the Final EIS describe why the assessment in the Draft EIS demonstrates the GTP will likely not cause or contribute to a violation of the PSD increment.

FA1-61

FA1-61

Section 4.15.3.1 of the final EIS describes the PSD permitting process. Section 4.15.3.3 of the final EIS provides the results of the preliminary PSD impact analysis completed by AGDC, which demonstrates that the PSD sources associated with the Project would not likely cause or contribute to a violation of the PSD increment. Section 4.15.3.3 of the final EIS has been updated to clarify that the full PSD increment analysis is under review by ADEC as part of the PSD permitting process.

Class I and Sensitive Class II areas

The Draft EIS indicates that emissions from compressor and heater stations for the Mainline Pipeline Facilities could exceed nitrogen and sulfur deposition thresholds and visibility thresholds at nearby Class I and Class II designated areas. In particular, emissions from the Galbraith Lake Compressor Station could exceed the Federal Land Manager's established visibility threshold and sulfur deposition threshold at the Arctic National Wildlife Refuge. Established nitrogen thresholds at multiple Class I and Class II areas, including ANWR, Gates of the Arctic National Park and Preserve, Yukon Flats National Wildlife Reserve, Kanuti NWR, DNPP and the Kenai NWR could also be exceeded by operation of the compressor and heater stations. We support FERC's recommendation that Class I and Class II Mitigation Plans be developed in coordination with the FLMs and ADEC to reduce operational emissions of NOx and SOx associated with the Project facilities and help ensure that predicted visibility and deposition impacts are below the associated thresholds. The Mitigation Plans identify best available control technologies and specific mitigation and monitoring measures appropriate to ensure that emissions are mitigated during project construction and operations near designated Class I and Class II areas. We recommend that information from the Mitigation Plans be included in the Final EIS. In addition, we recommend correcting the designation of the Tuxedni NWR to state that it is a Class I Area.

FA1-62

FA1-62

Section 4.15.5 of the final EIS presents our analysis of the potential effects of Project emissions on Class I and Class II nationally designated protected areas. The visibility and deposition thresholds are screening levels. When air quality modelling indicates an exceedance of these levels, additional reviews by the permitting authority (ADEC) and FLMs are triggered. The air quality permitting process, currently being completed by ADEC, provides an opportunity to incorporate enforceable mitigation measures, if needed, based on input from FLMs. Additional mitigation measures may be identified during the PSD permitting process to further minimize predicted visibility and deposition impacts on Class I and Class II nationally designated protected areas. Table 4.15.5-28 of the final EIS has been updated to identify Tuxedni NWR as a Class I area.

Emissions Estimates

On November 6, 2018, a revised Project construction schedule was provided to FERC. The construction emission estimates in the Draft EIS are not consistent with the revised construction schedule. We support FERC's recommendation that more accurate emission estimates for all criteria pollutants, hazardous air pollutants, and greenhouse gas emissions for all proposed Project facilities. We recommend including the revised emissions estimates in the Final EIS.

FA1-63

FA1-63

Section 4.15.4 of the final EIS has been updated to address this comment.

General Conformity

The Draft EIS (Table 4.15.3-2; pages 4-894) summarizes the annual emissions generated in each nonattainment (Fairbanks for PM_{2.5}) and maintenance area (Fairbanks and Anchorage for CO; Eagle River for PM₁₀) compared to the General Conformity applicability thresholds. The emissions estimates in the Draft EIS compared to the General Conformity thresholds are also not consistent with the revised Project schedule. To ensure that the construction emission estimates appropriately reflect potential revised construction schedules in CAA designated nonattainment and maintenance areas, we support

FA1-64

FA1-64

Section 4.15.3.1 of the final EIS has been updated to address this comment.

FA1 – U.S. Environmental Protection Agency (cont'd)

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FERC's recommend that the General Conformity analysis be updated to ensure that applicable thresholds will not be exceeded. We recommend that the Final EIS include the updated General Conformity analysis.

FA1-64

Liquefaction Facility

A detailed construction and operation schedule for the Liquefaction Facility was not identified in the Draft EIS. There is a potential for concurrent construction, startup and operational activities during the end of construction in years seven and eight at the Liquefaction Facility. We have concerns that this would result in aggregate emissions in excess of the modelled emissions for construction and operations, which may exceed the National Ambient Air Quality Standards/Alaska Ambient Air Quality Standards for criteria pollutants. We recommend that the Final EIS evaluate options for phasing construction, start-up, and operations at the Liquefaction Facility to minimize potential overlap and exceedances of emissions standards. We support FERC's recommendation regarding the need to provide a more detailed emissions estimate for all proposed emission sources during construction and operations, including LNG carriers, support vessels, and vessels/barges anticipated for construction of the Liquefaction Facility. We recommend including this information in the Final EIS. Furthermore, we recommend that the Final EIS identify specific air quality monitoring and mitigation measures to ensure that NAAQS/AAAQS are not exceeded.

FA1-65

FA1-65

Section 4.15.5.3 of the final EIS has been updated to include estimated emissions associated with minimum, average, and maximum LNG carrier trips. In addition, AGDC has developed an ambient air quality monitoring plan to monitor air quality in the vicinity of the Liquefaction Facilities during years where construction, startup, and operational activities could overlap.

Cook Inlet LNG Vessels

During annual operations, LNG vessels, a marine pilot and up to four assist tugs for docking and undocking, vessel escorts, ice management and firefighting vessels would transit through Cook Inlet to the PLF at the Liquefaction Facility. LNG vessels could add 204 to 360 port calls per year (17 to 30 calls per month) with an average addition of 21 vessels per month (252 per year) to vessel traffic in Cook Inlet, potentially resulting in a 42- to 74-percent increase in large ship traffic in Cook Inlet. The Draft EIS estimated emissions (Table 4.15.5-20; page 925) of LNG carriers are based on the minimum anticipated LNG carriers per year. Therefore, to account for the range of LNG carriers per year, we support FERC's recommendation to include emissions estimates for the anticipated maximum number of LNG carriers and support vessels per year and the emissions estimates for vessels used during the construction of the Liquefaction Facility. We also recommend that the Final EIS compare the emission estimates between the minimum and maximum number of LNG vessels and support vessels to determine potential exceedances of the Clean Air Act National Ambient Air Quality Standards and impacts to visibility. We recommend that the Final EIS include this level of additional information and analysis.

FA1-66

FA1-66

Section 4.15.5.3 and table 4.15.5-21 of the final EIS have been updated to address this comment. Our analysis demonstrates that emissions from operation of the Liquefaction Facilities, including marine emissions, nearby sources, and background, would not cause or contribute to an exceedance of the NAAQS or AAAQS.

Background Concentrations

The Draft EIS (pages 4-883) indicates that exceedances for NO₂, PM₁₀, and PM_{2.5}, were observed for those standard concentrations but do not necessarily indicate a violation of the NAAQS. In this case, we recommend that the Final EIS indicate that while the observations may be isolated exceedances of the NAAQS threshold concentrations, the design concentrations indicate compliance.

FA1-67

FA1-67

Section 4.15.3 of the final EIS has been updated to address this comment.

Regional Ozone

The Draft EIS (pages 4-909) indicates that the GTP may contribute to ozone exceedances, which is different than the results presented in Resource Report 9. We recommend that the Final EIS also discuss the results from Resource Report 9 and explain that the exceedance of the ozone standard is unlikely. The EPA notes that the highest ozone background values tend to occur in the winter due to transport from other areas and stratospheric injections. The highest project impact would tend to occur in the summer when there is enough solar radiation to induce ozone formation. We recommend clarifying ozone impacts in the Final EIS.

FA1-68

FA1-68

Section 4.15.5.1 of the final EIS has been updated to address this comment.

FA1 – U.S. Environmental Protection Agency (cont'd)

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Cumulative Effects

Non-Jurisdictional Facilities

The Draft EIS identifies a number of facilities that do not fall under the jurisdiction of FERC but represent connected actions to this Project. The Fairbanks/North Star Borough Interconnection is one such connected action that would allow for a future lateral pipeline for gas delivery to the Fairbanks area. The Corps has evaluated the Fairbanks Lateral in the ASAP Supplemental EIS and Record of Decision. Pursuant to CWA Section 404, a Department of the Army permit has been issued by the Corps for the Fairbanks Lateral. Because there is so much interest in Fairbanks air quality issues from a number of stakeholders, we recommend that the Final EIS disclose that the applicant has been issued a permit from the Corps for the Fairbanks Lateral pipeline to provide gas delivery to the Fairbanks area.

FA1-69

FA1-69

Section 4.19.2.5 of the final EIS has been updated to address this comment.

Kenai LNG Cool Down Project

On May 17, 2019, FERC published a Notice of Intent to Prepare an Environmental Assessment for the proposed Kenai LNG Cool Down Project (FERC Docket No. CP19-118-000). This project is proposed by the Trans-foreland Pipeline Company, LLC and includes construction and operation of a boil-off-gas management system to facilitate the import of LNG to cool down existing LNG storage tanks and associated LNG facilities at the existing Kenai LNG Plant. This would allow the Kenai LNG Plant to provide up to seven million standard cubic feet per day of natural gas to the Trans-foreland Kenai Refinery. The Kenai LNG Plant and the Kenai Refinery are located north of and adjacent to the AK LNG Project Liquefaction Facility in Nikiski. We recommend that the Final EIS include and evaluate the Kenai LNG Cool Down Project as a reasonably foreseeable future action under the Cumulative Impacts section and Appendix W-1.

FA1-70

FA1-70

Section 4.19 and appendix W of the final EIS have been updated to address this comment.

Impacts of Future Potential Changes to Climate

The Draft EIS indicates that there is currently no universally accepted methodology to attribute discrete, quantifiable, physical effects on the environment to the Project's incremental contribution to GHGs. Different models were evaluated but were not reasonable for Project-level analysis. In addition, without either the ability to determine discrete resource impacts or an established target to compare GHG emissions against, the Draft EIS concluded that the significance of the Project's contribution to climate change could not be determined.

FA1-71

FA1-71

Section 4.2.5.2 of the final EIS describes the extent of impacts on permafrost due to the Project and provides an estimate of the CO₂ equivalent emissions resulting from the loss of permafrost, both with and without climate change. Section 4.19.4.2 of the final EIS provides an analysis of cumulative impacts on soils and sediments.

In the EPA's scoping comments, we recommended that the EIS include a discussion of the reasonably foreseeable future actions and effects that changes in the climate may have on the proposed project and the project area, including the long-term stability of the Project infrastructure. The Draft EIS indicates that long-term and permanent impacts could result from permafrost degradation associated with the placement of granular fill and construction of the Mainline Pipeline and the aboveground facilities. We note that the Draft EIS provided estimates of permafrost thaw that could occur during the life of the Project (without climate change), which is estimated to be about 221 billion tons, translating to 2,680 tons (2,431 metric tons) of CH₄ emissions and 67,012 tons (60,792 metric tons) of CO₂-e emissions. To complement the discussion in the Draft EIS, we recommend that the Final EIS discuss projected changes in climate and the effects on permafrost soils, particularly in thaw-sensitive permafrost, associated with the reasonably foreseeable future actions in the Project area.

FA1-72

FA1-72

Sections 2.5 and 4.18 of the final EIS describe the operation, maintenance, and safety procedures that would be implemented for the Project, including the Mainline Pipeline, to ensure the long-term stability and safety of the Project.

Potential changes in climate from the reasonably foreseeable future actions could result in potential cumulative impacts to the long-term stability and safety of the Mainline Pipeline. We recommend that the Final EIS evaluate mitigation and monitoring measures to ensure the long-term viability of the Project infrastructure for 30 years. We recommend that an adaptive management plan be prepared and

FA1 – U.S. Environmental Protection Agency (cont'd)

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provided in the Final EIS to address cumulative changes to climate on Project infrastructure. This Plan should include the monitoring and specific measures to manage and mitigate impacts that could result from changes in the climate within the Project area. FA1-72

Mitigation, Monitoring, and Adaptive Management

The Draft EIS indicates that the Project would result in substantial long-term to permanent impacts on permafrost, wetlands, forests, wildlife (Caribou-Central Arctic Herd), and air quality. Past, present, and reasonably foreseeable future actions in the study area would similarly affect these resources. The Draft EIS states that these cumulative impacts would be significant. FA1-73

We note the FERC staff's Recommend Mitigation (Section 5.2) includes specific conditions to be included in the Commission's Order, which would mitigate the environmental impacts associated with Project construction and operation. The FERC has requested additional updated information and/or documents be provided by the applicant. We support FERC staff's recommendation regarding mitigation and adaptive management.

FA1-73 Comment noted.

FA1 – U.S. Environmental Protection Agency (cont'd)

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CC-232

FA2 – U.S. Army Corps of Engineers

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DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
REGULATORY DIVISION
P.O. BOX 6898
JBER, AK 99506-0898

October 3, 2019

Regulatory Division
POA-2015-00329

Federal Energy Regulatory Commission
Attention: Mr. James Martin
888 First Street, N.E.
Washington, D.C. 20426

Dear Mr. Martin,

The U.S. Army Corps of Engineers, Regulatory Division (Corps), as a cooperating agency, has completed the review of the Alaska LNG Project Draft Environmental Impact Statement (DEIS). Enclosed with this letter is a matrix of the Corps' comments regarding the information presented in the DEIS as it pertains to the Corps' authorities and informational requirements for permitting under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899.

In addition to the comments included in the matrix, the Corps respectfully requests that a draft 404(b)(1) Guideline analysis be included as an appendix to the Final Environmental Impact Statement (FEIS). Such a draft analysis will assist the Corps in completing their Record of Decision (ROD). FA2-1

The Corps appreciates the opportunity to work with the Federal Energy Regulatory Commission and to comment on the Alaska LNG DEIS. If you have any questions regarding the Corps' comments, please contact Ms. Roberta Budnik via email at roberta.k.budnik@usace.army.mil, or by phone at (907) 753-2785.

Sincerely,

A handwritten signature in black ink, appearing to read "Ryan H. Winn".

Ryan H. Winn
North Section Chief

FA2-1

The COE's Section 404(b)(1) analysis will be included with its record of decision for the CWA permit.

CC-233

FA2 – U.S. Army Corps of Engineers (cont'd)

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Comment #	Text Location	USACE Comment
1	Pg. 1-22; Table 1.6-1	Status of the Corps' review of the DA permit application for the Project should be updated. Please see the FAST-41 Dashboard for the latest status. EO 13807 is listed in this table. Previous guidance from FERC was that the project was not subject to "one federal decision," and it is the Corps' understanding that no FERC project is subject to "DFD." Rather, the cooperating agencies must decide whether it is most efficient to issue one IROD or separate IRODs for proposed projects. Suggest making a clarification in the text either within the table, or a note to the table.
2	Pg. 1-30; Table 1.6-2	The Corps understands that the applicant's preferred alternative is now the Denali Park Route Alternative. This section will need to be updated accordingly.
3	Pg. 1-35; Sec. 1.6.15	"BP Exploration (Alaska), Inc." Should this be revised to Hillcorp now?
4	Pg. 2-9; Sec. 2.1.3.2	
Alternatives		
5	Pg. 3-3; Sec. 3.2	How is a "timely manner" defined? System alternatives would need to commercialize natural gas resources on the North Slope during the economic life of the PBU and PTU gas fields. The projected economic life of those gas fields should relate to the "timely manner" criteria you are assigning system alternatives. "Both alternative sites would affect a slightly greater acreage of wetlands." Table 3.3.1-1 states that the North of Put-23 Mine Site and Northwest of PBU CGF Site would affect 228 acres of NWI-mapped wetlands, which is equal to the acreage affected by the Proposed Site.
6	Pg. 3-6; Sec. 3.3.1	Suggest adding "Proposed" next to "West of the CGF Site" on figure.
7	Pg. 3-7; Fig. 3.3.1-1	The Corps recommends that you revise the alternatives section to ensure that each discussion of alternatives considered first outlines the screening criteria for each issue. For example, in this section, "Access Roads," FERC's discussion of seasonal ice roads is dismissed first because using such roads would extend the construction schedule. However, FERC concludes the discussion by stating seasonal roads would not be a reasonable alternative due to AGDC's need to access these project facilities year round. Lengthening construction schedule is a different issue than the necessity of year-round facility access. The Corps believes FERC means to convey that seasonal ice roads would not allow for year-round facility access.
8	Pg. 3-8; Sec. 3.3.2.2	In addition, if construction schedule is going to be used as screening criteria for any alternative, a construction schedule necessary to meet the Project's purpose and need must be identified. "Given the unlikely reduction in wetland impacts..." is the statement after determining that the use of existing access roads would result in approximately one acre less of wetland impacts. How would a reduction in wetland impacts be "unlikely" in this case? Please clarify in text.
9	Pg. 3-9; Sec. 3.3.2.2	"...longer haul distances for the existing road alternatives would increase air impacts..." No quantification and comparison was given here. It makes sense that a longer travel route would result in more emissions, but comparison is warranted as emissions is being used to dismiss the alternative. What is the environmental comparison of projected emissions using existing access roads (plus the wetland impacts of upgrading those roads) versus one acre more of wetland impacts with constructing a new access road (plus the projected emissions from utilizing that road)? This is a difficult comparison to make; however, in order for the Corps to demonstrate that this alternative is not a part of the LEDPA, we need to show that one acre more of wetland impacts is less environmentally damaging than the amount of emission which would occur if AGDC utilized existing access roads. In order for the Corps to fully adopt the FEIS, this information needs to be included.
10	Pg. 3-9; Sec. 3.3.2.2	Please provide an approximate comparison of what the wetland impacts for Dalton Highway (and potentially rail) upgrades would be compared to the proposed wetland impacts of constructing the module delivery access road. Also, the Corps suggests including a discussion of the condition of the Dalton Highway to better illustrate the extent of what "major modifications" would be necessary in order to ready it for module transport.
11	Pg. 3-9 -10; Sec. 3.3.3	Please provide a comparison of impacts to waters of the U.S., including wetlands, for on-site module fabrication. Also, this is another example of when lengthening of construction duration is used as a reason to dismiss the alternative, and yet there is no explanation of what the necessary construction schedule would be. Lastly, you use emissions to further support why this alternative is not significantly better than the proposed project, but offer no comparison. If you use emission to eliminate alternatives from consideration, you need to provide such evaluations.
12	Pg. 3-10; Sec. 3.3.3	"...this option would involve incrementally greater haul distances..." Please define "incrementally." This alternative would eliminate 141 acres of wetland disturbance. That's a substantial amount of impacts, and FERC is dismissing this alternative based solely on the increase of trucking transit (emissions and noise). The Corps' previous comments regarding emissions apply also to this alternative. FERC needs to explain why temporary trucking impacts outweigh the loss/conversion of 141 acres of wetlands. This alternative needs more thorough discussion.
13	Pg. 3-12; Sec. 3.3.6	The light green color in the figure is identified as "Proposed Alternative Dredge Channel Alignment." The proposed option ("Dock Head 4 - No Channel) doesn't include a dredged navigation channel, however one is shown on this figure. Is this an existing channel? This figure should be revised for clarification.
14	Pg. 3-13; Fig. 3.3.5-1	There are annotations (a, b, and c), however there are no notes to accompany these in the table.
15	Pg. 3-17; Table 3.6.1-1	"The Denali Alternative would require 1.9 miles fewer new access roads, which in turn reduces the amount of disturbance and granular fill needed." Please provide a comparison of wetland impacts for access roads.
16	Pg. 3-24; Sec. 3.6.2	"...because wetland and waterbody crossings on a future lateral were not available for inclusion in our review..." Please require AGDC to provide this information for inclusion in the FEIS, if not already. This information is required by the Corps for our review of the Project.
17	Pg. 3-27; Sec. 3.6.3	

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FA2-2	Section 1.6 of the final EIS has been updated to reflect the latest status of Project permits, approvals, and consultations.
FA2-3	Table 1.6-2 of the final EIS has been revised to remove EO 13807 as it is not applicable to the proposed Project.
FA2-4	Section 1.6.15 of the final EIS has been revised to reflect the AGDC's adoption of the Denali Alternative into the proposed Project.
FA2-5	We understand that BP has agreed to sell its Alaska businesses, including BP Exploration (Alaska), Inc., to Hillcorp Alaska with the transaction scheduled to be completed in 2020, subject to state and federal regulatory approvals. As of the publication of this final EIS, the sale is pending and BP Exploration (Alaska), Inc. remains the owner of West Dock Causeway.
FA2-6	Section 3.2 of the final EIS has been updated to address this comment.
FA2-7	Section 3.3.1 and table 3.3.1-1 of the final EIS have been updated to address this comment.
FA2-8	Figure 3.3.1-1 has been updated to address this comment.
FA2-9	Section 3.3.2.2 of the final EIS has been updated to address this comment.
FA2-10	Section 3.3.2.2 of the final EIS has been updated to address this comment. The Project construction schedule is provided in section 2.3 of the final EIS.
FA2-11	Section 3.3.2.2 of the final EIS has been updated to address this comment.
FA2-12	Section 3.3.2.2 of the final EIS has been updated to address this comment.
FA2-13	Section 3.3.3 of the final EIS has been updated to address this comment.
FA2-14	Section 3.3.3 of the final EIS has been updated to address this comment.
FA2-15	Section 3.3.6 of the final EIS has been updated to address this comment.
FA2-16	The dredging channel referenced in the comment is associated with the Saltwater Treatment Plant Alternative as discussed in section 3.3.5 of the final EIS. Figure 3.3.5-1 indicates that no dredging channel would be necessary for Dock Head 4.
FA2-17	Table 3.6.1-1 of the final EIS has been updated to address this comment.
FA2-18	Section 3.3.6 of the final EIS has been updated to address this comment.
FA2-19	Section 3.6.3 of the final EIS has been updated to address this comment.

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18	Pg. 3-37; Sec. 3.8.1.3	"AGDC indicates that dredging to enlarge and maintain the ship channel across the Knik Shoal would amount to about 700,000 cubic yards annually for the life of the Project, doubling the average volumes currently dredged from the shoal." Based on the remainder of this discussion, it sounds as though FERC made edits based on the Corps' previous comment. Has AGDC provided any additional information regarding this number and statement? Although it wasn't intentional by AGDC, it's a misleading statement, and should be removed or revised from the EIS. The Corps doesn't annually dredge the shoal, although they do monitor the shoal for assessing dredge requirements.	FA2-20	FA2-20	Section 3.8.1.3 of the final EIS has been updated to address this comment.
19	Pg. 3-38; Sec. 3.8.1.3	"According to AGDC, the increased distance would result in 12 additional vessel transits annually to meet the proposed export volumes..." Can FERC include an explanation as to why this is? Would not the same size LNG carriers be transiting to a Port MacKenzie facility? If not, why not?	FA2-21	FA2-21	Section 3.8.1.3 of the final EIS has been updated to address this comment.
20	Pg. 3-39; Sec. 3.8.1.3	"The proposed Project is superior in certain other..." The use of the word "superior" indicates an extreme bias on FERC's part for the proposed Project. The Corps recommends the use of a more neutral word or phrase such as, "more beneficial," or "has less impacts to other specific resources than the Port MacKenzie Alternative..."	FA2-22	FA2-22	Section 3.8.1.3 of the final EIS has been updated to address this comment.
21	Pg. 3-39; Sec. 3.8.1.3	"Beluga whale impacts...would be greater with the Port MacKenzie Alternative, and these impacts would persist for the life of the Project as opposed to the short-term impact presented by the Cook Inlet pipeline construction for the proposed route." This statement is an inaccurate, or misleading, summary of Beluga whale impacts. FERC's discussion of beluga whale impacts was a statistical analysis of the probability of beluga whale strikes and construction in beluga whale critical habitat. Your summary makes it seem as though after construction of the Cook Inlet crossing, impacts to beluga whales would cease for the proposed Project; however, there is still a potential for beluga whale vessel strikes in that location. Your summary should acknowledge this, but should also state the probability of vessel strikes is significantly lower than that of the Port MacKenzie Alternative location. Impacts to beluga whales would persist throughout the life of the Project no matter the location (in Cook Inlet). The impacts, or likelihood of impacts, are just at different degrees.	FA2-23	FA2-23	Section 3.8.1.3 of the final EIS has been updated to address this comment.
22	Pg. 3-39; Sec. 3.8.1.3	"Moreover, the Port MacKenzie Alternative would allow for only two of the three currently identified gas delivery points within the state. Consequently, although the Port MacKenzie Alternative would be technically feasible, it would not allow the Project to meet all its objectives." FERC defines the Project objective as "...to commercialize North Slope natural gas reserves by treating and liquefying the gas and then exporting it to foreign markets, while also providing for in-state deliveries." This stated objective does not define how many or where those in-state deliveries would be. Therefore, the Port MacKenzie Alternative meets the stated Project objective. If FERC is going to use the lack of a Kenai Peninsula interstate as a reason to dismiss the Port MacKenzie Alternative, then the Project objective needs to be revised.	FA2-24	FA2-24	Section 3.8.1.3 of the final EIS has been updated to address this comment.
23	Pg. 3-39; PMA General	Based on the Corps' discussions with AGDC about the Port MacKenzie Alternative, the marine environment (high tidal fluctuations and relating strong current, ice floes, etc.) is the limiting factor, making the site too difficult logistically and too dangerous. The Corps recommends further discussion in this analysis about the conditions at the site, what measures would be needed in order to operate there safely due to those conditions, and whether or not implementation of those measures are reasonable and practicable.	FA2-25	FA2-25	Section 3.8.1.3 of the final EIS has been updated to address this comment.
24	Pg. 4-114; Sec. 4.2.5.3	"AGDC would submit a Project Dredging Plan as part of its permit application to the COE for dredging operations." The Corps also commented on this statement in the ADEIS. The way this is written sounds like AGDC is going to submit a separate permit application for dredging, which they are not. The Corps suggests revision by deleting "dredging operations," and using "the Project," instead. Also, as of AGDC's revised May 28, 2018 DA permit application, a specific "Project Dredging Plan" was not included.	FA2-26	FA2-26	Section 3.8.1.3 of the final EIS has been updated to address this comment.
25	Pg. 4-147; Sec. 4.3.2.3	Regarding the recommendation that AGDC provide a comprehensive table of all waterbodies crossed or affected by the Project. The Corps requires this information, as well, specific to impacts regulated under CWA Sec. 404 and RHA Sec. 10. The information that AGDC provides to FERC should be consistent to what is provided to the Corps.	FA2-27	FA2-27	Comment noted.
26	Pg. 4-148; Sec. 4.3.2.3	"Section 10 of the RHA requires authorization from the COE for the construction of any structure in or over any navigable water of the United States, the excavation/dredging or deposition of material in this water, or any obstruction or alteration in navigable water." Recommend the following revised language: "Section 10 of the RHA requires authorization from the COE for any work in, over, or under navigable waters of the U.S., or which affects the course, condition, location, or capacity of such waters."	FA2-28	FA2-28	Section 4.3.2.3 of the final EIS has been updated to address this comment.
27	Pg. 4-152; Sec. 4.3.2.4	"The placement of granular fill and in-stream structures for access roads...Culverts and gravel placed below the ordinary high water mark of streams and rivers would not be removed following construction unless requested by the landowner." AGDC's Restoration Plan (dated 11/19/18) states in Section 4.2, "Waterway crossings for temporary access roads would have the culverts, bridges, low-water crossings, etc. removed from the stream/waterbody and the area restored to pre-construction contours. Where practicable, native material from the streambed would be replaced as part of the restoration, if it was removed prior to construction." Please clarify. If AGDC no longer plans to restore waterway crossings along temporary access roads, please include in the FEIS AGDC's rationale for the change.	FA2-29	FA2-29	See the updates to section 4.3.2.4 of the final EIS.
28	Pg. 4-152; Sec. 4.3.2.4	"Proper installation and maintenance of culverts would result in minor impacts on freshwater resources." If AGDC does not remove culverts, bridges, etc., and restore waterways along temporary access roads, can this statement be true? Abandoned access roads and associated waterway crossings would fall into disrepair over time.	FA2-30	FA2-30	See the updates to section 4.3.2.4 of the final EIS.
29	Pg. 4-188; Sec. 4.3.3.3	One paragraph discussing the barge bridge ends: "Preparation of the seabed at this site, which could be performed in the summer and/or winter, would be influenced by the type of material encountered, the need to fill, and the amount of and method of placing fill." The next paragraph begins: "Gabion mattresses...would be placed within the footprint of the barge bridge to prevent scour." The placement of gabion mattresses is a filling activity under Section 404 of the CWA, so the concluding sentence of the previous paragraph is misleading. It implies that AGDC hasn't proposed to fill under the barge bridge and would determine such a need at a later time. Recommend revising.	FA2-31	FA2-31	Section 4.3.3.3 has been updated to address this comment.

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30	Pg. 4-188; Sec. 4.3.3.3	"Over the course of six sealift seasons, however, it is a possibility. Therefore, the placement and conditions of the gabions would be monitored during Project construction." What about after project construction? Would the gabion mattresses be removed? The DA permit application states that bedding material under the gabions would remain in place, but does not discuss removal of the gabions.	FA2-32
31	Pg. 4-188; Sec. 4.3.3.3	"In addition, 118 acres of fill would be required to expand the West Dock Causeway. 3 acres would be needed for the breach bulkheads..." Although the DA permit application discusses the causeway expansion, the table of impacts provided with the application does not list these acreages. The Corps plans to request clarification from AGDC, and recommends that FERC do the same.	FA2-32
32	Pg. 4-188; Sec. 4.3.3.3	"Constructing Dock Head 4 would result in a permanent loss of 166 acres of open water marine habitat." This total takes into account the 34 acres of screening. While screening would have impacts, it does not result in a permanent loss of open water marine habitat. Suggest revising.	FA2-33
33	Pg. 4-192; Sec. 4.3.3.3	In the discussion of the use of DMT continuation methodology, FERC recommends that AGDC revise their construction plan to utilize this methodology as it would reduce impacts. This is an alternative that should be analyzed in Section 3. The Corps recommends an addition to Section 3, Alternatives that analyzes construction methodology alternatives (also see comments on Section 4.4, Wetlands).	FA2-34
34	Pg. 4-194; Sec. 4.3.3.3	"...the temporary loss of 5,070 acres and permanent loss of 330 acres of open-water marine habitat." Describing these impacts as losses is misleading. Suggest revising to describe these as impacted areas of Cook Inlet.	FA2-35
35	Pg. 4-195; Sec. 4.3.3.3	"AGDC is considering several disposal and/or reuse options, which have been submitted in the COE application..." Only open water disposal is being proposed by AGDC, with discussion as to how it is the only practicable option.	FA2-36
36	Pg. 4-196/7; Sec. 4.3.3.3	"AGDC committed to providing mitigation measures that it would implement during dredging and dredged material disposal activities in a Project Dredging Plan, which AGDC stated would be submitted as part of its COE permitting process." The Corps has not received such a plan from AGDC, and plans to clarify the matter with AGDC. Nonetheless, this statement implies that FERC has never seen the mitigation measures it is referencing. If this is the case, it is not appropriate to reference mitigation measures that have not actually been provided to FERC by the applicant. The Corps recommends clarifying the matter with AGDC, and revising this statement as necessary.	FA2-37
37	Pg. 4-199; Sec. 4.3.3.3	"...construction would follow the techniques outline in the Project Dredging Plan AGDC committed to submitting as part of the COE permitting process." Again, such a plan has not been submitted to the Corps. We intend to clarify this matter with AGDC, but, again, it is not appropriate to reference mitigation measures that have not been submitted to FERC, as well.	FA2-38
38	Pg. 4-220; Sec. 4.4	"Permits issued under Section 404 require a water quality certification issued by ADEC..." Recommend revising to "...certifications issued by ADEC and/or the EPA..." in light of AGDC's adoption of the DNPP Alternative.	FA2-39
39	Pg. 4-221; Sec. 4.4.1.1	"Wetlands in this subdivision include scrub bogs and marshes..." Recommend revising to, "Wetlands in this subdivision include scrub-shrub bogs and marshes..."	FA2-40
40	Pg. 4-221; Sec. 4.4.1.2	The Corps previously commented in the ADEIS that "wetland determinations" is not the appropriate terminology to describe AGDC's wetland identification efforts. It would be more appropriate to use the term "wetland delineations." While a wetland delineation does in fact involve determining whether or not wetlands exist in a specific area, the description of what AGDC did is a delineation of approximate wetland boundaries in the project area.	FA2-41
41	Pg. 4-225; Sec. 4.4.1.4	"The USFWS identified pendant grass...as an emergent plant species important to these PEM wetlands." What is their importance? What would the Project's impacts on pendant grass be?	FA2-42
42	Pg. 4-226; Sec. 4.4.2	In regard to permanent and temporary impacts to wetlands - according to the revised DA permit application submitted to the Corps by AGDC on May 28, 2019, the grand total of wetlands to be permanently impacted during construction (that is, filled/converted to uplands) is 10,412.19 acres. Wetlands to be temporarily impacted during construction comes to a grand total of 8,731.71 acres. The Corps responded to AGDC's updated wetland impacts table in July 2019, with comments making it very clear how the Corps defines permanent and temporary impacts along with some other comments. The Corps has not yet received a response from AGDC, but expects to soon. The numbers presented in the DEIS and the numbers in the DA permit application are very different. FERC's definition of "permanently affected" is broader than the Corps' definition of "permanently impacted," therefore FERC should be reporting a higher number of "permanently affected" wetlands in the DEIS than AGDC is reporting would be "permanently impacted" (i.e., converted to uplands) in the DA permit application. The Corps understands that the project footprint was "frozen" for the FERC application process, which may explain the difference in the reported acreages. However, the Corps will request that AGDC address the discrepancy in wetland impact acreages, and requests that FERC does the same. The Corps also recommends that reported acreages be updated for accuracy in the FEIS.	FA2-43
43	Pg. 4-231; Sec. 4.4.3	The Corps will also request that AGDC ensure that the facility specific impacts to wetlands they provide to FERC and reported in the DEIS are consistent to what they provide to the Corps. The Corps requests that FERC do the same.	FA2-44
44	Pg. 4-232; Sec. 4.4.3.1	"...such as the GTP pad, operations center, camp pads, PTTL above ground facilities, and access roads" Recommend adding "etc." to the end of that list. This list implies that FERC is only taking into consideration those listed project features for the discussion of Gas Treatment Facilities, but then the table also shows the PBT. It's also not clear that West Dock is also included in the GTP acreages until further into the discussion, as West Dock isn't clearly called out on Table 4.4.3-2. The addition of "...etc." will make it clear that there's more than just those examples listed. Also, a period is need after "access roads," or "etc." (if revised as suggested).	FA2-45
45	Pg. 4-233; Sec. 4.4.3.1	"AGDC could add granular fill to ice roads..." AGDC has not proposed to add granular fill to ice roads in their DA permit application, and refer to ice roads as an avoidance/minimization measure to wetlands. The Corps intends to request clarification on this matter from AGDC, and recommends that FERC do the same.	FA2-46

FA2-32	FA2-32	See the updates to section 4.3.3.3 of the final EIS.
FA2-33	FA2-33	Section 4.3.3.3 of the final EIS has been updated to address this comment.
FA2-34	FA2-34	Comment noted.
FA2-35	FA2-35	Section 4.3.3.3 of the final EIS has been updated to address this comment.
FA2-36	FA2-36	Section 4.3.3.3 of the final EIS has been updated to address this comment.
FA2-37	FA2-37	Sections 4.2.5.3 and 4.3.3.3 of the final EIS have been updated to address this comment. See the response to comment CM6-4.
FA2-38	FA2-38	Sections 4.2.5.3 and 4.3.3.3 of the final EIS have been updated to address this comment. See the response to comment CM6-4.
FA2-39	FA2-39	Section 4.4 of the final EIS has been updated to address this comment.
FA2-40	FA2-40	The wetland terminology used in section 4.4.1.1 of the final EIS is based on Gallant et al., 1995.
FA2-41	FA2-41	As discussed in section 4.4.1.2 of the final EIS, AGDC's methodology did not map wetland boundaries, but instead determined the approximate presence of wetlands along the Project route. For this reason, we have used the terminology "wetland determination" rather than "wetland delineation."
FA2-42	FA2-42	AGDC would conduct field verified wetland delineation surveys in the Project area prior to construction.
FA2-43	FA2-43	Sections 4.4.1.4 and 4.6.2.1 have been updated to address this comment.
FA2-44	FA2-44	AGDC has not quantified the abundance of pendant grass within the Project area.
FA2-45	FA2-45	Section 4.4.2 of the final EIS has been updated to address this comment.
FA2-46	FA2-46	Section 4.4.2 of the final EIS has been updated to address this comment.
FA2-47	FA2-47	Section 4.4.3.1 of the final EIS has been updated to address this comment.
FA2-48	FA2-48	Sections 2.1.4.3, 4.4.3.1, and 4.5.3.1 of the final EIS have been updated to address this comment.

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46	Pg. 4-239; Sec. 4.4.3.2	"AGDC stated that switching construction modes for numerous and relatively short flat wetland segments that are within larger wetland crossing areas proposed for Mode 4 would not be feasible or practicable." More matted wetland crossings is a construction alternative that the Corps would include in analysis to help determine the LEDPA. It would be helpful if this was included as an alternative in the FEIS, rather than only discussed in section 4.0. If included in the alternatives, it should have a more thorough discussion on why AGDC believes switching modes would not be practicable (what's the limiting factor: technology, logistics, or costs?) or feasible and then any rebuttle to that presumption, if applicable.	FA2-47
47	Pg. 4-239; Sec. 4.4.3.2	"To reduce these impacts, we recommend that AGDC incorporate the use of the DMT continuation methodology for the shoreline crossings, or provide a site-specific justification demonstrating that this methodology is not feasible." Use of DMT continuation methodology is also a construction alternative that should be included in the alternatives section.	FA2-48
48	Pg. 4-700; Sec. 4.14	"Urban growth in Alaska occurred as people from the continental United States..." Alaska is a part of North America (the continent), and therefore a part of the "continental United States." FERC means "contiguous," i.e., all states which share borders with other states, or are contiguous.	FA2-49
Cumulative Impacts			
		The Corps fully understands and appreciates that the impacts which would occur are unknown if in-state gas interconnection lines are realized and constructed with all necessary associated features. However, the DEIS inappropriately declines to estimate the cumulative impacts that would be associated with the lines because of these unknowns. For example language such as, "The extent and scope of any required distribution facilities for the Fairbanks, Anchorage, and Kenai interconnections are unknown. Similarly, the location, extent, and scope of the laterals and distribution facilities for any other future interconnections are unknown," and "Future development associated with the in-state interconnections could affect freshwater resources to the extent that pipeline laterals and associated appurtenant facilities are routed near or across waterbodies...locations of such facilities are not yet known, so the extent of impacts cannot be fully assessed," and "Future development at the in-state interconnections could result in wetland impacts to the extent that pipeline laterals and associated appurtenant facilities are routed through or sited in wetlands. The location of such facilities are not yet known so the extent of impacts cannot be fully assessed." is used in the cumulative impacts analysis.	FA2-50
		The three interconnection points along the Mainline are known. The infrastructure that the interconnections would likely tie into for the Anchorage/Mat-Su and Kenai Peninsula are known. The Alaska Stand Alone Pipeline FEIS estimated impacts from a Fairbanks Lateral Line. Using current and estimated future populations and natural gas usages, the diameters of the interconnection lines could likely be estimated, which would help determine estimated impacts. This information should be enough to provide a rough estimate of the environmental impacts these interconnection lines would have. The estimated cumulative impacts resulting from these interconnection lines should be included for a complete cumulative impacts analysis.	FA2-51
49	General Comment Regarding In-State Interconnections	The Corps requires this information be provided for determining cumulative impacts to waters of the U.S., including wetlands, and respectfully requests that this information be provided in the FEIS.	
50	Pg. 4-1109; Sec. 4.19.2	"PBU MSG" should be "PBU MGS."	FA2-52
		"...the Project would be fully utilized by natural gas produced from wells already drilled on the North Slope for about 20 years before there would be available pipeline capacity for new production. The need for additional gas wells to be drilled on the North Slope, and the timing of such drilling, would be market driven and not reasonably foreseeable. Thus, any analysis beyond this 20-year time frame would be speculative." The project's lifespan is an estimated 30 years. The cumulative analysis should cover 30 years at the very least, because at the 20 year mark, it is reasonable to assume that the newly available capacity for new production would be utilized. The Corps understands that FERC cannot say with any amount of certainty what impacts from that assumed new production would be, but it can be stated that it would likely result in further development of, and impacts to resources on the North Slope.	FA2-53
51	Pg. 4-1109; Sec. 4.19.2	The previously permitted Eastern Gathering Line discussion was removed from the DEIS. What is the rationale for not including the discussion of this project in the cumulative impacts analysis?	FA2-54
52	Pg. 4-1109; Sec. 4.19.2.1	"The PTU Expansion Project would be subject to review by the USFWS and NMFS under the ESA..." Where a federal action is involved, a lead federal agency must make a determination of effects to ESA listed species. A "no effect" determination would not require consultation with the Services (therefore the statement in the DEIS would be inaccurate). Any other determination would require consultation with the one or both services. The Corps recommends the following language for a more accurate statement: "The PTU Expansion Project would be subject to review by the lead federal agency on impacts to species listed under the ESA. In the case that there would be impacts to listed species, the project would be subject to ESA Section 7 consultation with the USFWS and/or NMFS."	FA2-55
53	Pg. 4-1110; Sec. 4.19.2.1	"The highway relocation project would comply with federal statutes such as the ESA..." The Corps recommends revising to read, "The highway relocation project would be required to comply with federal statutes..." As I understand, the highway relocation project does not require any federal action, and therefore there would be no lead federal agency to ensure compliance with certain specific acts (such as ESA and NHPA). Compliance with these acts are the sole responsibility of the project proponent when there is no federal action.	FA2-56
54	Pg. 4-1112; Sec. 4.19.2.3	It is warranted to look at where the highway relocation would be routed, and whether or not it could make accessible previously inaccessible areas to new development. The analysis wouldn't need to be too specific, if there are no known plans for development off of the relocated highway. However, it does need to be acknowledged that such development would be facilitated by the new access.	FA2-57
55	Pg. 4-1111/2; Sec. 4.19.2.3		

FA2-47 Section 4.4.3.2 of the final EIS has been updated to address this comment.

FA2-48 Comment noted.

FA2-49 Section 4.14 of the final EIS has been updated to address this comment.

FA2-50 Potential estimated impacts from the Fairbanks Lateral are disclosed in section 3.6.3 based on a similar pipeline lateral evaluated for the ASAP. The infrastructure associated with any other potential future laterals, including their lengths and specific routes, are unknown

FA2-51 See the response to comment FA2-50.

FA2-52 Section 4.19.2 of the final EIS has been updated to address this comment.

FA2-53 Section 4.19.2 of the final EIS has been updated to address this comment.

FA2-54 Based on AGDC's response to question 43 of our EIR dated February 15, 2018, the East Gathering Line is not proposed for the Project (Accession No. 20180611-5159).

FA2-55 Section 4.19.2.1 of the final EIS has been updated to address this comment.

FA2-56 Section 4.19.2.3 of the final EIS has been updated to address this comment.

FA2-57 Section 4.19.2.3 of the final EIS has been updated to address this comment.

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56	Pg. 4-1125; Sec. 4.19.4.3	"Furie Operating Alaska, which operates an existing offshore oil platform in Cook Inlet, is developing two new offshore gas wells, but this action will be complete in 2018, well before the construction of the Project." Were these completed? The Corps suggests revision for clarification in the FEIS.	FA2-58
57	Pg. 4-1128; Sec. 4.19.4.4	"It is not possible to quantify the significance of these cumulative effects until the success of the fiber projects' remedial actions can be assessed." "fiber optic projects" The Corps suggests that the cumulative impact analysis use the condition of the fiber optic projects at the present time (i.e., the time in which the analysis is being written), rather than stating cumulative impacts cannot be assessed because remedial action is ongoing. It is appropriate to acknowledge that these projects are undergoing remedial action to restore the detrimental impacts caused by the projects, and that those remedial actions could result in less cumulative impacts once completed.	FA2-59
58	Pg. 4-1128; Sec. 4.19.4.4	"...PTU and PBU Expansion Projects..." "PTU Expansion and PBU MSG Projects." "PBU MGS	FA2-60
59	Pg. 4-1128; Sec. 4.19.4.4	"Adding the other project impacts for which data are available with the Project's impacts on wetlands results in an estimated cumulative wetland impact of about 12,080 acres." "These measures notwithstanding, the Project and other actions would result in significant cumulative impacts due to the permanent loss of wetlands." Is that 12,080-acre number the permanently lost wetlands (i.e., wetlands converted to uplands)? For the Corps' purposes, permanently lost wetlands, wetlands converted to uplands, (and other waters of the U.S.) need to be identified. If 12,080-acres is not the acreage of wetlands converted to uplands, please clarify in the FEIS.	FA2-61
60	Pg. 4-1137; Sec. 4.19.4.6	"Any projects not requiring Incidental Take Authorization would still require compliance with the MMPA." While this is true, any projects not requiring an ITA still need to comply with the ESA, which will either be accomplished by the lead federal agency making a determination with applicable coordination with the services, or by the project proponent working through the ESA Sec. 10 process.	FA2-62
Conclusions and Recommendations			
61	Pg. 5-36; Sec. 5.1.13	"Compliance with Section 106 of the NHPA is not complete for the Project." In order for the Corps to issue a permit under CWA Sec. 404 or RHA Sec. 10, compliance with Section 106 of the NHPA is required. Without demonstration of completed compliance with Section 106 of the NHPA, the Corps cannot issue a permit. Given the very similar project routes, and same applicant, the Corps suggests that FERC use and modify the Programmatic Agreement developed for the ASAP project as a starting point for Section 106 consultation.	FA2-63
FERC Staff's Recommended Mitigation			
62	Pg. 5-48; Condition 8	The Corps suggests that the team of EIs also include EIs for other project features, outside the mainline pipeline and mainline facilities (such as material sites, access roads, etc.). If FERC does plan that the EIs cover these project features, the Corps suggests clarifying the condition.	FA2-64
63	Pg. 5-48; Condition 9	"Problems of a significant magnitude shall be reported to FERC within 24 hours." The Corps suggests defining what "significant magnitude" would be. The Corps also suggests stating that problems which fall under separate acts or authorizations (such as ESA) may require reporting sooner than within 24 hours.	FA2-65
64	Pg. 5-48; Condition 9c	The Corps appreciates FERC's requirement for the EI to report on compliance with all applicable authorizations.	FA2-66
65	Pg. 5-53; Condition 38	The Corps suggests also requiring AGDC to list the mode of construction that was used, and what restoration/vegetation efforts were made after construction through each wetland spread.	FA2-67
66	Pgs. 5-54/55; Conditions 50 & 51	Shut down distances for underwater noise and PSO requirements are typically worked out during ESA consultation, (and potentially MMPA consultation) which I understand to be on-going currently. In general, Corps permits reference the resulting Biological Opinion/Letter of Concurrence and/or Incidental Take Authorization from the Services, which should include the appropriate shut down distances and PSO requirements. Recommend revising this condition to include a requirement for reinstitution of consultation with the Services, as applicable, and notifying of the Corps (and potentially other federal agencies) of any reinstitution of consultation and subsequent revised BO/LOC and/or ITA.	FA2-68

FA2-58	Section 4.19.4.3 of the final EIS has been updated to address this comment.
FA2-59	Sections 4.19.4.2 and 4.19.4.4 of the final EIS has been updated to address this comment.
FA2-60	Section 4.19.4.4 of the final EIS has been updated to address this comment.
FA2-61	Section 4.19.4.4 of the final EIS has been updated to address this comment.
FA2-62	Section 4.19.4.6 of the final EIS has been updated to address this comment.
FA2-63	We will work with the consulting parties to develop an agreement document as Project effects on historic properties are determined.
FA2-64	In accordance with staff recommendation No. 8, AGDC would propose and the Director of the OEP would approve or modify the number of EIs assigned to each construction spread. Approval would take into account the number of access roads, material sites, contractor yards, and other construction areas associated with each spread in addition to factors such as length of spread and number and extent of environmentally sensitive areas.
FA2-65	Comment noted.
FA2-66	Comment noted.
FA2-67	Additional requirements for the wetland delineation reports could be included as conditions in the COE permit for the Project.
FA2-68	Comment noted.

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