5. 23 MITIGATION

This section summarizes the mitigation measures proposed by the AGDC to reduce the risk of environmental degradation, injury or harassment of animals, and the risk of negative effects on people during construction and operation of the proposed Project.

5.23.1 Introduction

The proposed Project is currently in the conceptual stage of analysis to determine the feasibility of the proposed Action. The details of each Mitigation Measure and Plans implemented for each resource have not been fully developed at this time. This document briefly describes the regulatory environment under NEPA, the stipulations and plans required under the Right-of-Way Lease by the State of Alaska, and a list of federal, state, and borough permits. Consultations between the AGDC and the appropriate agency staff would occur regularly to produce site and resource-specific mitigation plans to reduce impacts as much as practicable. These mitigation plans would define the process used to reduce impacts to resources and identify criteria to be able to rank the level of success of the mitigation efforts.

The AGDC has committed to the following mitigation measures included under each resource, to reduce potential impacts to the human and natural environments from construction and operation of the proposed Project. Each mitigation measure has been analyzed to describe its purpose or scope, in addition to its effectiveness.

5.23.1.1 Regulatory Environment

NEPA Analysis

Under NEPA, mitigation measures must be analyzed "even for impacts that by themselves would not be considered significant" (CEQ 1981). Mitigation measures must be analyzed for effectiveness for proposed impacts of the proposed Project.

Mitigation, as defined by CEQ (43 FR 56003), includes any of the following:

- a) Avoiding the impact altogether by not taking a certain action or parts of an action;
- b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
- c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

- d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
- e) Compensation for the impact, by replacing or providing substitute resources or environments.

Right-of-Way-Lease

The AGDC entered into the Right-of-Way (ROW) Lease with the State of Alaska on July 25, 2011 (Appendix M). The ROW Lease requires AGDC to comply with extensive stipulations (Exhibit A) of the Right-of-Way Lease under the provisions of AS 38.35 the Alaska Right of Way Leasing Act. These stipulations (Exhibit A, 1.4.3) include a list of 22 plans that AGDC must submit for approval for construction, operation, maintenance, and termination of the proposed Project. An example of some of the plans required includes:

- Erosion and Sedimentation Control;
- Timber Clearing, Salvage and Utilization;
- Stream, River, and Floodplain Crossings (Stipulation 3.13);
- Restoration and Revegetation of Disturbed Areas;
- Control, Cleanup, and Disposal of Hazardous Substances; and
- Construction in Wetlands.

In addition to the 22 plans, a Design Basis and Criteria document, Corrosion Plan, Engineering Analysis and Report on the Seismic Design of the Pipeline, and a Seismic Analysis of Pipeline Communication Systems are required. An approved Quality Assurance Program (QAP) (Exhibit A, 1. 4. 4) is also required and would be in effect during all phases of construction, operation, maintenance, and termination activities. The QAP must be comprehensive and comply with all stipulations, to assure the safety and integrity of the pipeline.

Federal, state, and borough permits or authorizations for each proposed activity would be issued to the AGDC prior to each activity and must be held in good standing for so long as the permits are required for activities pursuant to rights granted under the ROW lease during the term of the lease.

Federal, State and Borough Permit Requirements

The AGDC is required to apply for, be approved, and maintain in good standing, more than 50 permits for design and construction of the proposed Project (Table 5.23-1; list of permits provided at the end of this chapter). Additional permits may be identified as the planning and design phase continues. Federal, state, and borough permits compiled by the AGDC for the proposed Project are summarized in Table 5.23-1. The list of federal, state, and

borough permits was compiled from the Alaska Gas Pipeline Project Office and the Office of the Federal Coordinator for Alaska Natural Gas Transportation Projects.

The AGDC has created a tracking database (Permit Management System Database) which tracks the status of permits and is updated regularly and maintained on the AGDC intranet site. The permit tracking system would be used to track implementation and success of imposed mitigation measures. The ASAP database includes:

- Information on all permit applications, final permits, and permit requirements;
- Scheduling and tracking information to manage permits;
- Information about the status of permit applications;
- Items that need to be completed as part of permit applications, including information needed in permit applications or submittals;
- Items that must be included as part of permit application submittals;
- Requests for additional information from agencies;
- Agency contact information; and
- Record of all contacts with agencies regarding permits.

The AGDC has also developed a Permit Acquisition and Management Plan to:

- Identify the regulatory framework for the proposed Project, including the permits and authorizations needed;
- Present an overall strategy for permitting, including the following:
 - o Determine the information necessary to complete permit applications;
 - Provide a strategy for coordinating with regulatory agencies;
 - Provide a tracking system for permit applications and requirements; and
- Establish procedures for assuring compliance with all proposed Project permits.

5.23.2 Affected Resources

In the following section, for each environmental resource category previously analyzed, the potential environmental impacts from the proposed Project are summarized, followed by (i) a detailed description of each of the associated mitigation measures proposed by the AGDC, (ii) an analysis of how the proposed mitigation would address potential adverse impacts, and (iii) an assessment of the effectiveness of the proposed mitigation. The draft EIS (DEIS) provided a list of applicant-proposed mitigation measures and other mitigation identified as additional recommended mitigation (ARMs) at the end of each resource impact subsection. However, comments were received that the discussion of mitigation was hard to understand because it was split into multiple sections. Some of the ARMs were duplicative of regulatory requirements or mitigation proposed by AGDC and it was determined the proper forum for additional mitigation or recommended conditions to be considered would be during the permitting process. Therefore, only applicant proposed mitigation measures are analyzed in the final EIS (FEIS). Additionally there was no accompanying analysis or effectiveness assessment provided within the DEIS. Section 5.23 responds to these comments received on the DEIS, by consolidating consideration of mitigation into a single section, by eliminating duplication and redundancy, and by providing analysis and assessment of effectiveness with respect to proposed mitigation measures.

5.23.2.1 Soils and Geologic Resources

The following geomorphic processes and features would be encountered in the proposed Project area: mass wasting (gravity-driven actions such as avalanches, rock falls, slides, and slumps, as well as solifluction in cold regions); permafrost degradation/aggradation and frost action; and seismicity. Geomorphic processes such as these must be considered in pipeline engineering, design, siting and construction because these processes have the potential to impact pipeline stability and operations.

AGDC Proposed Mitigation Measures

Mitigation measures that would be implemented by the AGDC during construction and operations of the proposed Project include:

1. Design Considerations:

- a) Special installation techniques and foundations;
- b) Earthquake mitigation measures and special design considerations at fault crossings;
- c) Special design considerations at river crossings;
- d) Erosion control measures, to include an Erosion Control Plan; and
- e) Development of a Storm Water Pollution Plan.

Analysis

- a) Foundation systems may include standard spread footings, reinforced concrete slabs, drilled shafts, and piers according to structure, location, and soil conditions.
- b) The AGDC is working with the Alaska Division of Geological and Geophysical Surveys (DGGS) to identify active fault crossings and determine expected lateral and vertical displacements in the event of a seismic event. Typically, the pipeline would be above ground at active fault crossings and placed on sleepers (concrete or steel supports laid on the ground surface) that would allow the pipeline to move during an earthquake.
- c) The open cut method was designated for all stream crossings where engineering, environmental, or economic constraints were not prohibitive. Primary factors used to determine whether methods other than open cut method would be used include:
 - Engineering: Stream depth, flow, and surrounding terrain;
 - Environmental: Presence of anadromous and resident fish and guidance from the Alaska Department of Fish and Game (ADF&G) and the U. S. Fish and Wildlife Service (USFWS); and
 - *Economic*: At several locations, such as Hurricane Gulch, localized terrain prohibits all but an aerial crossing mode for the current alignment, and rerouting the alignment would not be cost-effective.
- d) Probable erosion control measures include the following:
 - *Flow control/diversion:* Culverts, fords, swales, hardened or fabric-lined channels, bypass pumps, and settling basins for pumped effluents;
 - Sediment control: Silt fencing, silt bags, straw bales and/or logs, and silt ditches and check dams;
 - *Impervious dikes:* Sand bags, prefabricated dams, sheet piles, riprap with impervious fabric; and
 - *Ground stabilization:* Seeding and mulching, erosion control blankets, jute matting or other rolled products, synthetic turn protection, and riprap.
- e) The AGDC would develop a Storm Water Pollution Prevention (SWPP) Plan (SWPP) in accordance with the Alaska Pollutant Discharge Elimination System (APDES). The Alaska Department of Environmental Conservation (ADEC) publishes a template that provides guidance on the content of a SWPP Plan¹.

¹ Available at http://dec. alaska. gov/water/wnpspc/stormwater/sw_construction. htm.

- In addition to a detailed project description and general administrative information, the SWPP Plan usually includes the following:
 - i. Description of construction activities;
 - ii. Pollutant discharge information;
 - iii. Description of best management practices (BMPs), including:
 - iv. Minimizing exposed soil during construction activity;
 - v. Maintaining natural buffer areas;
 - vi. Controlling storm water discharges and flow rates, and protecting storm drain inlets;
 - vii. Stabilizing construction vehicle access and exit points;
 - viii. Using sediment basins;
 - ix. Implementing good housekeeping measures;
 - x. Inspection schedules;
 - xi. Monitoring plan;
 - xii. Plan maintenance; and
 - xiii. Appendices that include the proposed Project schedule, site/route maps, BMP detail drawings/figures, grading and stabilization records, and inspection records.

- a) The AGDC would install certified and structurally sound foundations appropriate for the soils and environmental conditions of the area. Engineers would be on site as foundations are installed for quality control purposes and approval. The latest and best technology for reducing impacts to and preventing soil erosion when installing structures would be conducted to the extent most practicable.
- b) Experts in designing the pipeline crossings over fault locations would be employed to install the most technologically sound support structures available at these locations. All structures would be tested and approved for all situations for earthquake activity in these areas.
- c) Stream crossings would be constructed as per agency permit requirements implemented later in the process. Each stream crossing would be constructed during a time and method that ADF&G determines, to the extent most practicable, would be have the least impact to fish and their habitat in consultation with the AGDC.

- d) Appropriate erosion control measures would be installed dependent on the environmental conditions of the area. An Erosion and Sedimentation Control Plan is included as Stipulation 1.4.3 (f) under the ROW Lease (Appendix M, Exhibit A).
- e) The AGDC would produce a thorough SWPPP from the ADEC guidance document noted above. Development of a plan that follows EPA guidance would manage and reduce impacts as much as possible from storm water discharge, as it would occur in the construction areas.

2. <u>Operational Considerations:</u>

- a) Slope stability monitoring;
- b) Seismic/earthquake monitoring;
- c) River hydrology monitoring;
- d) O&M Manuals;
- e) Quality Assurance Manual;
- f) Inspection Services Manual;
- g) Design Basis Updates;
- h) Surveillance Manual;
- i) Environmental Management System Compliance Manual; and
- j) Other controls to be determined.

Analysis

- a) Cut/fill slopes would be monitored by construction inspectors and field engineers on the ground, primarily through visual observation, and would not require the use of specialized equipment. Specific frequency and longevity of inspections would be developed in the project quality documentation, as described below under "Quality Assurance Manual" (e). This would likely vary depending on soil conditions and on the severity and sensitivity of the slopes. Inspections would become less frequent over time.
- b) The AGDC's seismic design provisions would include an earthquake monitoring system that would be integrated into the University of Alaska statewide seismic monitoring system and would include the following elements:
 - A network of ground-motion detectors to continuously detect and instantaneously report events near the pipeline approaching the level of the design contingency earthquake (DCE);
 - An automatic programmed shutdown of the pipeline when an event near the pipeline approaches the level of the DCE;

- An automatic generation of a post-event inspection checklist targeting the facilities most affected by the location of the event; and
- Monitoring would be continuous for the life of the proposed Project.
- c) The pipe would be inspected according to the requirements of the Operations and Maintenance (O&M) Manual required by the U.S. Department of Transportation (DOT) as described below under "O&M Manual." This would include checking the crossings to ensure pipe integrity and maintenance of streambed morphology. Field checks of river crossings would be more frequent directly after construction to ensure stabilization of the crossings. Visual surveillance of river crossings would occur during regular pipeline surveillance, and the frequency of inspections would be determined during detailed design.
- d) The AGDC would develop an O&M Manual in accordance with U.S. DOT regulations contained in 49 CFR 192. Specific requirements are contained in §192.605, "Procedural manual for operations, maintenance, and emergencies," which requires that O&M manuals cover the following:
 - o Maintenance and normal operations:
 - i. Operating, maintaining, and repairing the pipeline in accordance with DOT regulations.
 - ii. Making construction records, maps, and the operating history available to appropriate operating personnel.
 - iii. Gathering of data needed for reporting.
 - iv. Startup and shutdown procedures to assure operations within the maximum allowable operating pressure.
 - v. Maintaining compressor stations.
 - vi. Starting, operating, and shutting down gas compressor units.
 - vii. Procedures for protecting personnel in trenches for unsafe accumulations of vapor or gas, including rescue equipment.
 - viii. Systematic and routine testing and inspection of pipe-type or bottletype holders.
 - ix. Prompt response to report gas odors in a building.
 - x. Implementing applicable control room management procedures.
 - Abnormal operation.
 - Safety-related condition reports.
 - Surveillance, emergency response, and accident investigation.

- e) The Quality Assurance (QA) Manual would define the following:
 - Authority, roles, and responsibilities;
 - Standards of quality for the proposed Project;
 - Procedures for implementing quality standards;
 - o Codes, standards, and regulations;
 - o Training requirements;
 - Inspection requirements;
 - Preventative and corrective actions;
 - Document control and record keeping; and
 - Management review and internal auditing.
- f) This is a sub-part of the O&M Manual described above that detail how and when inspections are to be carried out.
- g) The Design Basis for the project would be updated as needed.
- h) As part of the O&M Manual described above, each operator would have a procedure for continuing surveillance of their facilities to determine and take appropriate action concerning changes in class location, failures, leakage history, corrosion, substantial changes in cathodic protection requirements, and other unusual operating and maintenance conditions.
- The AGDC would develop an Environmental Management System (EMS) for construction and operation. The framework for the EMS would be the one developed by the International Organization for Standardization (ISO) for the ISO 14001 standard. The AGDC's EMS would cover subjects such as the following:
 - Environmental policies, objectives, and targets to reduce environmental impacts and comply with legal requirements.
 - Compilation of legal and other requirements, along with compliance tracking procedures.
 - Organizational structure and responsibilities.
 - Programs to meet the objectives and targets, including training, communication procedures and information to employees and contractors, documentation of written plans and procedures, document control, operational programs, and emergency preparedness.

- Steps to monitor and measure progress in achieving the objectives, including audits and inspections.
- Incident investigation and corrective action.
- Review of the EMS and implementation of improvements.

Inspectors and engineers would monitor the stability of the slopes over time, and follow a quality assurance plan developed by the AGDC. Monitoring would occur as frequently as needed to confirm that the developed slopes are stable, to reduce the likelihood of sloughing of soils or erosion. This mitigation measure would reduce the likelihood of sloughing and erosion of sloped banks. Regular monitoring would reduce impacts to soils from erosion prone areas not being detected or maintained properly. Impacts from soil erosion would be reduced substantially from following regular monitoring controls.

5.23.2.2 Water Resources

The proposed Project would intersect and withdraw water from numerous waterbodies found throughout the proposed Project corridor for construction activities. Potential impacts to water could include sedimentation, changes to water quality, and temporary or permanent changes to fluvial geomorphology. The AGDC has committed to the following measures for mitigating potential impacts to surface and groundwater resources from construction and operation of the proposed Project.

AGDC Proposed Mitigation Measures

- 1. <u>Minimize the Number of River and Stream Crossings:</u>
 - a) Use existing bridges where feasible; and
 - b) Use horizontal directional drilling (HDD) or other trenchless technology to minimize disturbance to waterbodies.

Analysis

Existing bridges would be used as noted in Section 5.2, Water Resources, with the potential for development of a new bridge across the Yukon River. Trenchless technology would be considered for crossing a stream that has defined banks, contains resident or anadromous fish, is important for spawning, and where an isolated open cut is not feasible.

Effectiveness

The AGDC would reduce impacts to water resources by minimizing the number of rivers and streams to be crossed. No structures would be placed below the ordinary high water mark in any bridge crossing. This would reduce impacts from scouring and turbidity, and therefore impacts to fish resources.

2. <u>Maintain, to the Maximum Extent Practicable, the Existing Surface Water Hydrology at all</u> <u>Waterbody Crossings:</u>

- a) Prevent discharges that have the potential to adversely affect waterbodies;
- b) Stabilize cut slopes immediately when the designed grade is obtained;
- c) Initiate reclamation of disturbed areas as soon as practicable; and
- d) Ensure water withdrawals meet federal and state standards and guidelines.

Analysis

The following stormwater discharge, stabilization/reclamation, and water withdrawal measures would be implemented to maintain surface water hydrology:

- a) Storm water discharges would be managed in accordance with the SWPP Plan discussed above under Soils and Geology. In addition, fuel storage, equipment fueling, and equipment maintenance operations would be located at least 100 feet from surface waters. Hydrostatic test water containing freeze depressants would not be discharged into waterways. Other discharges to streams would not occur unless authorized by permit.
- b) Stabilizing cut slopes would involve the placement of erosion control measures in accordance with the AGDC Erosion Control Plan. Such measures would include temporary seedings, erosion control mats, grading, etc. See the discussion of the plan under Soils and Geology mitigation measure #1 above.
- c) Disturbed areas would be stabilized during construction to prevent wind or water erosion. Stabilization practices, as determined by the needs for specific sites, would include placement of mat binders, soil binders, rock, or gravel blankets or structures. Reclamation of disturbed sites would begin as soon as practicable once the site was no longer needed for construction. The timing would be determined in consultation with state and federal agencies.
- d) Water withdrawal limits would follow federal and state permits based on water volumes and fish presence for each lake.

Effectiveness

Implementing the above measures would reduce chemical pollution and sedimentation, and improve water quality by:

- a) Maintaining a minimum of a 100-foot buffer between waterbodies and fuel and storage and hazardous chemicals would reduce the likelihood of polluting the waterways, and altering water quality.
- b) Installing erosion control measures to stabilize disturbed areas would reduce the potential for increased sedimentation in waterbodies.

- c) Reclaiming the area directly after construction is complete would reduce impacts to water quality such as compaction of soils that could increase sedimentation from erosion.
- d) Water limits would be determined to reduce any potential impact to water quality, which could in turn affect fish resources.
- 3. <u>Keep Construction Activities Within the Footprint of the Pipeline ROW and the Disturbed</u> <u>Area of the Adjacent Construction Zone to the Maximum Extent Practicable.</u>

Analysis

The AGDC would limit disturbance to the construction areas to the extent possible. These areas would be surveyed and marked ahead of time to identify the boundaries for construction workspace.

Effectiveness

Maintaining the smallest footprint possible during the construction of the proposed Project would reduce impacts on water quality from compaction of soils, altered wetlands, riparian vegetation removal, and equipment working in streams and other waterbodies for water withdrawal or pipeline installation.

4. <u>Minimize the Construction of New Permanent Access Roads by Emphasizing Winter</u> <u>Construction Using Snow-Ice Roads.</u>

Analysis

The AGDC would construct during the winter as much as practicable and use ice roads to avoid constructing permanent access roads. Ice roads would melt in the spring and leave a negligible trace on the ground, if at all.

Effectiveness

Minimizing the number and length of permanent access roads would substantially reduce impacts to surface water by reducing the number or extent of bridges, culverts, wetland impacts, dust, erosion, and altered water quality from runoff from roads into waterbodies. Ice roads would melt and would not permanently affect surrounding resources (water or vegetation).

- 5. <u>Perform Water Crossings in a Manner that Minimizes Effects on Water Quality.</u>
 - a) Use materials for dam construction that do not introduce sediment or other harmful substances into waters when using the open-cut isolation method;
 - b) Use materials for flume pipe systems that do not introduce sediment or other harmful substances into waters when using the open-cut isolation method; and
 - c) Position flume pipe system discharges to prevent erosion or scouring.

Analysis

The following water crossing measures would be implemented to mitigate their effects on water quality:

- a) Where practicable, water crossings would be constructed during periods of low flow to minimize siltation. In addition, flow would be diverted or blocked while the trench was open; flumes would be used to direct flow around the trench. To prevent siltation of the stream from activities on the stream bank, measures such as the following would be used: silt fences, stabilization of stream-bank cuts, settling ponds for runoff from disturbed areas, etc. Also, see Soils and Geologic mitigation measure # 1(e) above.
- b) Dams would likely be constructed using sandbags. The stream would be dammed upstream and downstream of the trench location, and once the pipe was installed, the dams would be removed. Erosion control BMPs would be used to control sediment from construction at approach and exit sides of the streams (see discussion of Erosion Control Plan under Soils and Geology above).
- c) Flumes would be constructed of plastic or corrugated metal pipes. The outfall area on the downstream end of the flume would be protected from scour/erosion by placement of erosion control measures, likely riprap.

Effectiveness

Implementing the above measures would reduce water quality impacts by:

- a) The AGDC would only use structures that would be free from silt, or foreign substances to avoid altering the water quality. Minimizing disturbance in the waterbody as much as possible during construction would reduce impacts from turbidity, sedimentation, water quality and fluvial morphology.
- b) This mitigation measure would have the same effect as 5 (a) above. A flume would be used instead of a dam.
- c) Erosion control measures to prevent scour from the outfall location would reduce the likelihood of disturbance to sediment downstream of the construction location. It would also reduce impacts to turbidity and sedimentation resulting in altered water quality.
- 6. <u>Minimize the Effect of the Pipeline on the Existing Thermal Regime:</u>
 - a) Design the pipeline and components to take into account the thermal regime, including placement and size of compressor stations and chillers;
 - b) Use engineering controls such as insulation and non-frost susceptible fill to control the thermal signature of the pipeline.

Analysis

The following pipeline construction measures would be implemented to mitigate the effects on the soil and water thermal regimes:

- a) The thermal signature of the pipeline would vary depending on the arrangement of the pipeline system, which is not yet established. Once it is, the thermal signature of the pipeline can be determined and appropriate engineering controls selected. Where change to the thermal regime of soil or water has been determined to be a concern, additional actions may include deeper burial, backfill with non-frostsusceptible soil, and use of board insulation or insulated pipe.
- b) The same response as noted above in (a). Additional actions may include deeper burial, backfill with non-frost-susceptible soil, and use of board insulation or insulated pipe.

Effectiveness

Implementing the above measures would reduce thermal impacts to soils and water by:

- a) Maintaining the thermal regime of the pipeline under the stream would prevent the likelihood of ice damming during the winter; which could in turn cause flooding.
 Flooding could alter the stream channels and stream banks, increasing sedimentation and reducing water quality.
- b) The use of non-frost susceptible fill would prevent the likelihood of ice damming during the winter; which could in turn cause flooding. Flooding could alter the stream channel and stream banks, increasing sedimentation and reducing water quality.
- 7. <u>Implement Dewatering Practices that Avoid Adverse Effects to Vegetation and to Existing</u> <u>Quality of Surface Waters, Including Erosion and Scouring.</u>

Analysis

The AGDC would likely dewater with a pump and dam method with the inlet and outlet velocity regulated to prevent scour or heavy suction of the sediment. As the water drops, the hose would have to be rearranged continually to prevent suction of sediment and aquatic vegetation.

Effectiveness

Monitoring the water level and velocity of the pump would reduce impacts to the water quality, sedimentation, and scour of the streambed.

8. <u>Locate Fuel Storage, Equipment Refueling, and Equipment Maintenance Operations at</u> <u>Least 100 Feet from Surface Waters.</u>

Analysis

Fuel storage, equipment fueling, and equipment maintenance operations would be located at least 100 feet from surface waters.

Effectiveness

Maintaining a minimum of a 100-foot buffer between waterbodies and fuel storage, fueling, and hazardous chemicals would reduce the likelihood of polluting the waterways, and altering water quality. This measure would further reduce impacts to water quality by providing a disturbance buffer between proposed Project features and operations and waterbodies.

9. Avoid Contaminated Sites.

Analysis

The AGDC would avoid constructing the proposed Project through areas known to contain contaminated materials.

Effectiveness

This measure would protect water quality by avoiding disturbances and runoff from contaminated sites.

10. Use Temporary Bridges for Transportation of Construction Equipment and Materials.

Analysis

Temporary bridges would be used to cross streams for construction of the proposed Project. These may include ice bridges and multi-plate structures.

Effectiveness

This measure would further reduce impacts to water quality by minimizing runoff, erosion, and sedimentation resulting from land disturbances.

5.23.2.3 Terrestrial Vegetation Resources

Terrestrial vegetation would be primarily impacted through land clearing for temporary and permanent uses for the proposed Project. As noted in Section 5.3, Terrestrial Vegetation, the permanent ROW would be maintained in a non-forested state. Vegetation would reestablish over time, but forested vegetation would be permanently removed.

AGDC Proposed Mitigation Measures

The AGDC would implement the following mitigation measures to minimize Project-related impacts to terrestrial vegetation resources:

1. <u>Develop and Implement a Stabilization, Rehabilitation, and Restoration (SRR) Plan</u> <u>following ADNR's Plant Materials Center Revegetation Manual for Alaska (Wright 2009) in</u> <u>Consultation with the BLM.</u>

Analysis

The ADNR's *Revegetation Manual for Alaska* includes information to assist with revegetation efforts, which includes selecting the appropriate seed mixes, erosion control, and temporary versus long-term seeding, native species, cultivars, and fertilizers appropriate for Alaska's conditions for revegetation success. Guidance from this document and consultations between the AGDC, ADNR, BLM and other appropriate agency staff would develop a SRR Plan that would be based on site-specific conditions along the proposed ROW route. See Appendix M, Exhibit A, Stipulation 2.6.

Effectiveness

The *Revegetation Manual for Alaska* is a document that was developed by experts at ADNR who have tested and developed the appropriate techniques for revegetating and restoring vegetation in all eco-regions of Alaska. Consultation with agency experts to develop and implement the SRR Plan would be the most effective approach to reduce temporary and permanent impacts to terrestrial vegetation along the proposed Project ROW.

2. <u>Implement BMPs During Construction to Reduce Fugitive Dust, Which Would Minimize</u> Dust Deposition on Vegetation Adjacent to Construction Work Areas.

Analysis

Several fugitive dust control measures (BMPs) would be implemented into a dust control plan. These include wetting dirt/gravel roads with water, wetting gravel roads with calcium chloride or magnesium chloride, imposing speed limits, the use of mulch and vegetative cover to protect disturbed areas, and creating windbreaks. The measures implemented would be dependent on the conditions specific to the area. Arctic areas would not likely have mulch to reduce dust production, but spraying water along the gravel and dirt roads used for construction activities would be a likely solution.

The BMPs listed above are the most common and approved methods to reduce fugitive dust along gravel and dirt roads. These measures would be highly effective in reducing or eliminating dust from landing on surrounding vegetation along new or existing access roads for the proposed Project. Impacts to terrestrial vegetation would be reduced substantially. See Section 5.3.2.2, Dust Deposition, for impacts on vegetation from fugitive dust.

3. <u>Develop and Implement a Storm Water Pollution Prevention Plan.</u>

Analysis

A Storm Water Pollution Prevention Plan (SWPPP) would be developed by the AGDC for construction activities of the proposed Project to include site-specific information that would identify potential erosion prone areas. The SWPPP would include practices and procedures to stabilize the disturbed areas by seeding to comply with the terms of the permit. Mitigation measure #1 above - Develop and implement a Stabilization, Rehabilitation, and Restoration (SRR) Plan would have similar attributes to this measure to reseed the area to stabilize and prevent erosion.

Effectiveness

A SWPPP is required for compliance with a NPDES permit for storm water discharge granted through the EPA. The SWPPP would be kept up to date to reflect changes at the construction site to reduce potential impacts to the proposed Project area from erosion. A SWPPP would reduce impacts to vegetation by preventing erosion to recently seeded areas.

4. <u>Develop a Non-native Invasive Plant (NIP) Plan to Limit the Establishment and Spread of</u> <u>Invasive Species at Proposed Project Locations such as Airports, Gravel Airstrips, Material</u> <u>Sites, and Temporary Use Areas.</u>

Analysis

The NIP Plan would include guidelines and BMPs to avoid and minimize the establishment of prohibited, noxious plant species. The NIP Plan would be developed later in the process, and would include measures to: retain native vegetation, minimize soil disturbance, manage movement of equipment from weed-infested areas, inspect and clean construction equipment before moving to a new work area, and establish native Alaskan plants for revegetation promptly after disturbance. The NIP Plan would be developed after consultation with the ADNR and ADOA.

Effectiveness

The NIP Plan would prevent the spread and establishment of noxious plant species to the extent most practicable in the disturbed areas of the proposed Project area. Contractors on site would implement the NIP Plan during all phases of development of the proposed Project.

5. <u>Reestablish Vegetation that is Typical of the General Area, Where Practicable:</u>

- a) Segregate topsoil and use as top trench fill to the greatest extent practicable; and
- b) Reseed and revegetate affected areas upon completion of construction activities.

Analysis

The following soil and reseeding measures would be implemented to mitigate the effects on revegetation:

- a) During excavation of the trench for preparation and placement of the pipeline, the upper top soil layer would be segregated from the subsurface material to maintain the natural strata of the soil layers. Heavy equipment would separate the organic top soil layer, which would be placed on top of the trench as the last layer prior to rehabilitation.
- b) All disturbed areas would be stabilized so that erosion in excess of natural rates would be minimized until the practicable restoration and revegetation can be accomplished. Revegetation of disturbed areas would be conducted as soon as practicable and, if necessary, would be repeated until revegetation is successful. Areas to be seeded would be prepared by various methods, including grading, scarifying, and application of soil amendments such as fertilizers. Application of seed may be hand or by a hydro-seeded process. ADNR approved seed mixes and fertilizer ratios specific to the area would be used to successfully re-establish vegetation over the disturbed construction areas. Plantings of native shrubs and trees would be considered where necessary to improve soil stability and for screening purposes in visually sensitive areas.

The AGDC would also comply with the stabilization requirements of the Alaska Pollutant Discharge Elimination System General Permit for Discharges from Large and Small Construction Activities.

Effectiveness

Segregating the top soil layer from the rest of the subsoil during excavation of the pipeline trench would allow the organic soil layer to be added as the last layer over the trench. The organic top soil layer has the nutrients and consistency required for efficient establishment of seeds and native plant species after rehabilitation is complete. Seeds, native vegetation, and cultivars would establish and grow in the top soil layer much more efficiently than if subsurface material (potentially clays and gravels) were spread over the trench. Reseeding and revegetating affected areas directly after construction would aid in reestablishing vegetation quickly in the ROW for efficient rehabilitation of the area.

6. <u>Contain Fuel and Lubricant Spills During Construction.</u>

Analysis

During the construction phase of the proposed Project, fuel and lubricants would be stored in double-walled tanks or lined containment areas at specific locations including camps and at refueling areas. Refueling of equipment would occur only at disturbed construction areas, and drip pans and/or sorbent pads would be used under fueling connections where practicable. Refueling areas would be located as stated under Appendix M, Exhibit A - Stipulation 2.11.1 to 2.11.3 (Contingency Plans).

Effectiveness

Specific and approved containment units and materials would be used at restricted locations to reduce the likelihood of a spill. Limiting the locations to store fuel and lubricants and for refueling equipment would reduce the likelihood of a spill occurring in multiple areas. Containing fuel and lubricant spill in specific areas would prevent further contamination to other vegetation areas.

5.23.2.4 Wetland Resources

Maintaining the physical, chemical and biological integrity of the Nation's waters is the objective of the Clean Water Act (CWA). In order for the discharge of dredged or fill material into the Nations waters of the U.S. to be authorized by the USACE, the adverse impacts to wetlands, streams and other aquatic resources must be avoided and minimized to the extent practicable. For unavoidable impacts, compensatory mitigation would be required to replace the loss of wetland and aquatic resource functions in the watershed. Compensatory mitigation refers to the restoration, establishment, enhancement, or in certain circumstances preservation of wetlands, streams or other aquatic resources for offsetting unavoidable adverse impacts.

A comprehensive mitigation plan would be developed by the AGDC to include mitigation of all wetland types and functions affected. The plan would include wetland function, restoration, schedule, performance standards and monitoring. This plan would be determined from collaboration between the USACE, AGDC and other appropriate regulatory authorities upon their review of the complete Preliminary Jurisdictional Determination (PJD).

Compensatory Mitigation

Compensatory mitigation is required to offset unavoidable adverse impacts to wetlands under the Clean Water Act Section 404. After all appropriate steps have been taken to avoid and minimize adversely impacting wetlands pursuant to 40 CFR Part 230; compensatory mitigation would be required to meet the "no net loss" of wetland acreage and function. The "Compensatory Mitigation for Losses of Aquatic Resources; Final Rule" lists three types of compensatory mitigation:

- 1. Mitigation Banks;
- 2. In Lieu Fee Mitigation; and
- 3. Permittee-Responsible Mitigation:
 - a) Restoration of a previously-existing wetland or other aquatic site;
 - b) Enhancement of an existing aquatic site's function;
 - c) Establishment of a new aquatic site; and
 - d) Preservation of an existing aquatic site.

As defined by the EPA, a mitigation bank is a wetland, stream, or other aquatic resource area that has been restored, established, enhanced, or (in certain circumstances) preserved for the purpose of providing compensation for unavoidable impacts to aquatic resources permitted under Section 404 or a similar state or local wetland regulation (EPA 2012). Mitigation banks have four distinct components:

- The bank site: the physical acreage restored, established, enhanced, or preserved;
- The bank instrument: the formal agreement between the bank owners and regulators establishing liability, performance standards, management and monitoring requirements, and the terms of bank credit approval;
- The Interagency Review Team (IRT): the interagency team that provides regulatory review, approval, and oversight of the bank; and
- The service area: the geographic area in which permitted impacts can be compensated for at a given bank.

Best Management Practices Guide

The AGDC would implement all reasonable Best Management Practices (BMPs) imposed by the USACE under Section 404 of the CWA to minimize Project-related impacts to waters of the U. S., including wetlands. Standard BMPs are specified in the USACE Alaska District's Nationwide Permits General BMP Guide (USACE 2007b) and could include the following:

- a) Contain sediment and turbidity at the work site by installing diversion or containment structures.
- b) Disposing of dredge spoils or unusable excavated material not used as backfill at upland disposal sites in a manner that minimizes impacts to wetlands.
- c) Revegetating wetlands as soon as possible, preferably in the same growing season, by systematically removing vegetation, storing it in a manner to retain viability, and replacing it after construction to restore the site.

- d) Using fill materials that are free from fine material.
- e) Stockpiling topsoil and organic surface material such as root mats separately from overburden and returning it to the surface of the restored site.
- f) Dispersing the load of heavy equipment such that the bearing strength of the soil (the maximum load the soil can sustain) would not be exceeded. Suitable methods could include, but are not limited to, working in frozen or dry ground conditions, employing mats when working in wetlands or mudflats, and using tracked rather than wheeled vehicles.
- g) Using techniques such as brush layering, brush mattressing, live siltation (a revegetation technique used to trap sediment), jute matting, and coir logs to stabilize soil and reestablish native vegetation.
- h) The AGDC would implement the type of compensatory mitigation that would be utilized to comply with the Compensatory Mitigation Final Rule, in consultation with the USACE.
- i) The Compensatory Mitigation Plan would evaluate the appropriate level of compensation based on the functional and condition assessment of unavoidable wetland impact.
- j) Restore wetlands by removal of abandoned drill pads and airstrips on the North Slope (North Slope Mitigation Bank).
- k) Create wetlands where necessary to compensate for the loss of "in kind" wetlands.

AGDC Proposed Mitigation Measures

The AGDC would determine site-specific mitigation after collaborations with the USACE to develop a comprehensive mitigation plan. Mitigation measures would be site specific and geographically dependent based on the eco-region and landscape where the wetlands are located. The AGDC has committed to the list of traditional mitigation measures included below.

1. <u>Schedule Pipeline Construction Across Wetlands During the Winter to the Maximum Extent</u> <u>Practicable.</u>

Analysis

Wetlands would be constructed during the winter to the greatest extent practicable. Temporary ice roads and pads would be developed in the winter to access wetland areas. Ice roads would be constructed appropriately to tolerate the weight of heavy equipment and would melt in the summer leaving a negligible trace on the underlying wetland.

Constructing through wetlands (saturated soils) when the soils are frozen and stable would reduce disturbance to aquatic vegetation and surface hydrology from heavy equipment use. Winter construction would effectively allow excavation of a narrower pipe trench through the wetland than during the summer season. Ice roads and pads would also reduce impacts from erosion and soil compaction. Winter construction would reduce fugitive dust dispersal and deposition in surrounding wetlands due to working on gravel roads bound with ice and snow. NIP dispersal and establishment would be reduced from construction through wetlands in the winter. NIP seeds that may incidentally be transferred from one site to the next via personnel or equipment would likely not establish in recently disturbed soils in the winter versus summer construction season. Winter construction through wetlands would reduce impacts substantially by minimizing the footprint, and thus impacts to the hydrologic connectivity and vegetative composition.

2. Avoid and Minimize Ground Disturbing Activities in Wetland Habitats By:

- a) Limit grading except for trenching, to the maximum extent practicable to preserve root systems;
- b) Maintain slope stability;
- c) Use mats of other types of mitigation during non-winter construction to prevent rutting;
- d) When possible, locate permanent facilities including compressor stations, access roads, and work pads outside of wetlands; and
- e) Reduce construction ROW widths across wetlands as practical.

Analysis

Construction through wetlands would be limited to reduce disturbance as much as practicable by grading directly over the centerline. This effort would be effective particularly during the winter construction season when soils are frozen and stable, as noted above. When wetland areas are located in sloped areas, cut and fill embankments would be regularly monitored and inspected. If signs of slope instability were present, the area would be repaired accordingly. Slope stabilization and erosion control measures may be installed where embankment slopes are severe.

During the summer construction season, rig mats would be placed where construction traffic and heavy equipment maneuvering are required. The mats would be relocated as needed across wetlands in the construction ROW. All permanent facilities would be located in upland areas as much as feasible. When positioning the exact location of compressor stations and access roads, avoiding wetlands would be the priority in addition to cost, material needs and maintaining the construction schedule. If an upland location is suitable and is not cost or time prohibitive, wetlands would be avoided to the extent most practicable. The width of the ROW would be reduced as much as possible to reduce

impacts to wetlands. This could be in a situation where TEWS are proposed along the ROW, but would be relocated to an upland location instead if feasible.

Effectiveness

The rootstock from the vegetative mat would be preserved by reducing and limiting disturbance over the centerline as much as possible. The efficacy of wetland rehabilitation and success would largely be dependent on preservation of the root system. Regular monitoring of cut/fill embankments would reduce erosion and sedimentation impacts in wetland areas substantially. Repairing embankment issues when they occur from regular monitoring would limit disturbance to a temporary impact.

Matting would be used during the open water season to reduce the potential for rutting, by dispersing the weight of heavy equipment across the wetland area. Impacts to wetlands from rutting would be reduced substantially from the use of mats. This includes reduced erosion, soil compaction and inhibited seed germination for vegetation establishment. Placing permanent facilities in upland areas away from wetlands would reduce the likelihood of dust deposition, NIP exposure and establishment, fragmentation, and changes to the chemical and physical properties of wetland habitat (see potential impacts listed under Section 5.4.3.2, Support Facilities. Reducing wetland impacts also has indirect beneficial effects for preserving wildlife habitat and surface water quality. Minimizing the ROW width in wetland areas would substantially reduce the potential impacts noted above.

3. <u>Maintain the Existing Hydrologic Systems.</u>

Analysis

During the construction phase of the proposed Project, construction workers would take caution to prevent interfering with wetland connections. A wetland connection could include streams/tributaries, surrounding wetlands, and drainage paths that are seasonally wet areas. Marking wetland areas could be completed by staking lath or flagging along wetland boundaries prior to construction activity. Matting would be used in the summer construction season to prevent creating ruts in wetlands. Ice roads and pads used during the winter construction period would melt during spring break up.

Effectiveness

Marking wetland areas in the construction footprint would identify to the construction workers where the wetland boundaries are, to avoid altering connectivity. Maintaining the connectivity of hydrologic systems would prevent wetland impacts noted above under wetland mitigation measure #2. Erosion, the development of impoundments or excess drainage from wetlands could occur if connectivity is not maintained. Rutting from heavy equipment or improper culvert placement for temporary or permanent access roads could alter the connectivity to other wetlands or streams. As noted above under wetland mitigation measure #1, construction in wetlands would occur in the winter as much as practicable, thus reducing the likelihood of rutting and soil compaction. All new roads would be engineered to have appropriately sized and frequency of placed culverts.

4. <u>Reestablish Revegetation that is Typical of the General Area Where Practicable:</u>

- a) Segregate topsoil and use top trench fill to the greatest extent practicable; and
- b) Reseed and revegetate affected areas upon completion of construction activities.

Analysis

Please see details on under Terrestrial Vegetation mitigation measure #5 noted above.

Effectiveness

Please see details on the effectiveness under Terrestrial Vegetation mitigation measure #5 noted above. Impacts to wetlands would be reduced substantially by maintaining the vegetative composition and maintaining the natural strata of the trench fill.

5. <u>Minimize the Number of Stream Crossings.</u>

Analysis

The number of stream crossings would be minimized to the extent most practicable by feasibly planning the route with the least number of crossings possible. Under Appendix M, Exhibit A, 1.4.3.1 (h), the AGDC would have to develop a Stream, River, and Floodplain Crossings Plan. Mitigation measures included in this Plan would require approval by the State Pipeline Coordinator's Office when disturbance occurs to natural waters. Each stream crossing would require permit approval to comply with State of Alaska State regulations.

Effectiveness

The ROW Lease stipulations (3.13) require a Stream, River, and Floodplain Crossings Plan to construct through drainages. State regulations require the list of permits (Table 5. 23-1) for construction in a waterbody. The AGDC is required to comply with the ROW Lease and all state, federal and local regulations. Minimizing the number of stream crossings would reduce hydrologic impacts between streams and wetlands for hydrologic connectivity.

6. <u>Use Existing Bridges or HDD or Other Trenchless Technology When Feasible.</u>

Analysis

The AGDC has proposed the use of one new and up to three existing bridges for the proposed Project. Surface water impacts would not occur with the use of existing bridges or construction of a new bridge. The HDD method would have little to no impact on any surface body, but would require a large exit (100 by 200 feet) and entry box (200 by 300 feet) area. HDD methods are used primarily in areas where a large area is to be traversed with minimal impacts to the wetland or waterbody.

The use of existing bridges would have minimal to no impacts to surrounding wetlands. Construction of a bridge or HDD at the Yukon River would have similar impacts as noted in the Section 5.4.3.2. The use of HDD methods would reduce substantial impacts to wetlands by placing the pipeline under the wetland, not through the wetland via open-cut and open-cut push pull methods where feasible.

7. Contain Fuel and Lubricant Spills During Construction.

Analysis

Please see analysis details under Terrestrial Vegetation mitigation measure #6 noted above.

Effectiveness

Please see details on the effectiveness under Terrestrial Vegetation mitigation measure #6 noted above. Containing fuel and lubricants in specific contained areas would reduce the likelihood of dispersal into neighboring wetlands.

8. <u>Remove the Top Vegetative Layer of the Wetland with a Backhoe or Similar Equipment and</u> <u>Set Aside Separately from the Subsoil Spoils. The Vegetative Mat Would be Placed on Top</u> <u>of the Ditch as the Last Layer.</u>

Analysis

Specific heavy equipment (backhoe) would be used to separate (peel back) the wetland vegetative mat from the subsurface materials during excavation. The analysis for this technique in wetlands is similar to the analysis noted above under Terrestrial Vegetation mitigation measure #5.a.

Effectiveness

The effectiveness of this technique is the same as noted above under Terrestrial Vegetation mitigation measure 5. By segregating the organic top vegetative layer from subsurface soils and placing it on top as the last layer prior to contouring, success of rehabilitation would be improved substantially.

9. <u>Develop a NIP Prevention Plan, Which Would Address Procedures to Reduce and Eliminate</u> the Spread of NIP.

This Plan would provide the details of the measures to be used to control invasive species through appropriate site preparation, monitoring, revegetation of disturbed areas within native species and performance standards.

Analysis

Please see details on analysis under Terrestrial Vegetation mitigation measure #4 noted above.

Effectiveness

Please see details on the effectiveness under Terrestrial Vegetation mitigation measure #4 noted above. The NIP plan would reduce the likelihood of spread and establishment of NIP species, which would outcompete and displace native species.

5.23.2.5 Wildlife Resources

The primary potential impacts to wildlife from construction of the proposed Project would be temporary visual and noise disturbance, and alteration of habitat. Operational impacts could include permanent alteration of habitat from vegetation removal and some noise disturbance would occur at permanent aboveground facilities.

AGDC Proposed Mitigation Measures

The AGDC has developed the following mitigation measures to avoid and minimize potential Project-related impacts to wildlife:

1. <u>Avoid Locating Pipeline Facilities in Sensitive Wildlife Habitats to the Maximum Extent</u> <u>Practicable.</u>

Analysis

The AGDC would align the pipeline and position the proposed aboveground facilities outside of sensitive wildlife habitats as much as practicable. Sensitive habitats include mineral lick and lambing areas for Dall sheep, raptor nesting areas, moose rutting, and caribou calving and migration areas. Construction activities would comply with regulations of the Migratory Bird Treaty Act (MBTA), Bald, and Golden Eagle Protection Act (BGEPA). Permit requirements would include timing vegetation clearing noted in Table 5.5-2, Section 5.5, Wildlife. During detailed design of the proposed Project, the AGDC would consult with the appropriate resource agencies and adjust siting and the construction schedule if necessary to avoid disturbance of sensitive wildlife habitats. This effort may include conducting surveys of potential sensitive wildlife areas prior to construction activities.

Effectiveness

Avoiding sensitive wildlife habitat or scheduling construction activities to occur when wildlife are not present to the greatest extent practicable, would reduce impacts substantially. It would prevent disturbances to Dall sheep ewes and newborn lambs, nest abandonment or chick mortality of breeding raptors, and disturbance to traditional moose rutting areas, which could potentially reduce the reproductive success of the local moose population. Caribou calving areas would be avoided during the calving season to reduce the likelihood of displacing cows and calves from traditional calving grounds and potentially increasing calf mortality or reducing productivity of a population from displacement into poor quality habitat. The construction activity would occur by segment periodically along the length of the proposed ROW over a two-year period. Because of collaborations with agency staff and permit compliance, negligible impacts would result to sensitive wildlife habitat along the proposed Project.

2. <u>Schedule Construction Activities to Avoid Effects During Sensitive Periods for Wildlife to</u> <u>the Extent Practicable</u>,

This includes scheduling excavation activities during times of the year when major movements across the ROW do not occur (e.g., migrations).

Analysis

As noted above under analysis for mitigation measure #1, regulatory compliance and collaborations between the AGDC and agency staff would occur as the final stages of the proposed Project design are accomplished. Construction in documented sensitive wildlife habitat areas would occur at a time when wildlife is not present, or the areas would be avoided. Additional aerial or ground-based surveys would be completed as needed, based on agency consultation and permit requirements. Traditional knowledge from local residents may be included to supplement published literature and identify potential changes to wildlife habitat use and movements.

Effectiveness

The AGDC would gather available literature and local knowledge, and obtain approval by agency staff to prevent disturbance to wildlife during sensitive life stages and areas along the proposed route as much as practicable. As noted above under mitigation #1, the construction activity would be temporary and occur by segment, which would produce short-term disturbance at each specific location along the pipeline. The AGDC would be required to follow Stipulation 2.8.4, Exhibit A of the ROW Lease requirements in Appendix M in addition to other state, federal and local permits. Scheduling blasting outside of sensitive periods would reduce disturbance such as potentially displacing wildlife into less optimal habitats. This measure would reduce the likelihood of stress to wildlife resulting in lower productivity of wildlife in the immediate area of the proposed Project.

3. <u>Minimize the Duration of Open-Ditch Construction Activities to Mitigate the Risk of Animal</u> <u>Entrapment in an Open Ditch.</u>

Analysis

The trench/ditch would be excavated using a chain excavator or track hoe. The length of time that the trench would be open (trenching to backfill) at any one location would be one to three days. The conventional method of construction would be trenching, and construction would progress as a moving assembly line of continuous operation. See Section 2.2.3 for details on trenching.

As noted above under wildlife mitigation measure #2, construction activities would avoid working in sensitive wildlife habitat and during sensitive life stages to the extent most practicable. Thus, avoiding areas of heavy wildlife use and minimizing the time between trenching and backfilling over the centerline would minimize animal entrapment substantially. Animals would likely move away from the center of the construction area during heavy equipment use when noise and visual disturbance would occur, reducing the likelihood of entrapment.

4. <u>Develop Systems or Mechanisms to Facilitate the Escape of Wildlife from the Pipeline</u> <u>Trench in the Event that Wildlife Becomes Trapped (e. g., Escape Ramps).</u>

Analysis

Trenching depth would range from 5-6 feet, with 30 to 36 inches of material laid over the pipe to meet USDOT standards as noted in Section 2.2.2.3. Large animals (e.g., caribou, moose, and wolf) would be able to escape the trench on their own, by climbing out or jumping across the trench. Smaller animals (lemming, mice) would be able to scale the trench walls to escape.

Effectiveness

The trench would be relatively shallow and opened for a brief period of time (one to three days), which would substantially reduce the timing of impacts to wildlife. Animals would be unlikely to approach (be attracted to) the construction site and become entrapped in the trench. Wildlife would likely avoid the area of construction due to noise produced by heavy equipment. Few animals if any would likely cross the open trench, but would also be able to escape by their own means.

5. <u>Develop a Blasting Control Plan in Accordance with ADF&G Blasting Standards to Protect</u> <u>Wildlife.</u>

Analysis

A Blasting Control Plan is particularly necessary if blasting is required in sensitive areas or during sensitive life stages for wildlife. A typical Blasting Control Plan would address the following:

- Scope of blasting and blasting types/methods proposed.
- Shot locations and proximity to existing facilities.
- Types of explosives / initiation system to be used.
- Drill and blast pattern.
- Flyrock control plan.
- Ground cracking and displacement control, monitoring, and reporting.

- Explosives storage and transportation procedures.
- Fire prevention and similar emergency plans.
- Proximity to protected wildlife species.

Site-specific Blasting Control Plans would be based on the general Blasting and Use of Explosives Plan that AGDC would prepare under the ROW Lease Stipulation 1.4.3.1 (b).

Effectiveness

Development of a detailed blasting plan is a requirement for compliance with the ROW Lease. The AGDC would have a contract with an appropriate blasting contractor to implement the list of items above in the Blasting Control Plan. This plan would reduce impacts to nesting birds, sensitive wildlife habitats and periods (e.g., calving, denning, and lambing) to the extent most practicable. Reducing blasting activities to periods when wildlife are absent, or during sensitive life stages, would reduce the likelihood of wildlife getting displaced into less optimal habitat, which could potentially cause increased mortality, or stress resulting in a decline in productivity.

6. <u>Ensure Construction Camp Operations and Pipeline Facility Construction Activities</u> <u>Comply with Measures that Avoid Attracting Wildlife.</u>

Analysis

A Comprehensive Waste Management Plan would be developed prior to construction activities, and would include procedures for storage and disposal of food wastes and scraps in animal-resistant containers. In addition, a Stipulation in Exhibit A, 1.4.3 (v) includes a Managing Human/Carnivore Interaction Plan under the ROW Lease (Appendix M). See mitigation measure #12 below for more details on a) Wildlife Interaction and Habitat Protection Plan, and c) Bear Avoidance and Human Encounter/Interaction Plan.

Effectiveness

All plans are required to provide enough detail to comply with the ROW lease stipulations, which must be approved by the State Pipeline Coordinator. These plans would reduce the likelihood of attracting wildlife (e.g., bears, fox, and ravens) to the facilities. Properly containing odors and potential food sources for wildlife would reduce mortalities from defense of life or property (DLP) killings or vehicle collisions from the proposed Project activities. Disease or illness could occur to wildlife from feeding on human foods or materials, but would be negligible if appropriate plans are developed. The waste management plan would reduce the likelihood of attracting wildlife from odors.

7. Adopt Motor Vehicle and Aircraft Procedures that Minimize Disturbances to Wildlife.

Analysis

Construction traffic in and around the right-of-way would be limited to designated areas, such as camps, laydown yards, and access roads. Aircraft procedures would be developed for each airstrip and would vary by location. Aircraft procedures may include consideration for migratory patterns of birds and/or other wildlife thus restricting aircraft traffic during migration periods. Consultation with agency staff, such as USFWS and ADF&G, would be able to identify periods to avoid and flight patterns to follow to reduce disturbances to wildlife.

Effectiveness

Motor vehicle and aircraft procedures would reduce impacts to wildlife due to disturbance of the proposed Project. Reducing and minimizing vehicle and aircraft use could reduce potential mortality impacts that could occur from a collision with wildlife. It could reduce impacts that could reduce feeding, breeding, resting efficiency and therefore productivity. It would reduce potential displacing of animals from optimal habitat into less optimal habitat important for survival.

8. <u>Identify and then Avoid or Minimize Situations where Wildlife May Be Killed in Defense of Life or Property (DLP).</u>

Analysis

Identification and avoidance of these situations would be accomplished by using environmental monitors. Monitors would educate the construction personnel on local wildlife, sensitive areas, and potential threats. Environmental briefings for construction workers would increase their awareness of necessary steps to avoid problems with wildlife. Reducing scents (e.g., food and petroleum products) that may attract species such as bears would reduce the chances for encounters. Understanding the general biology of species such as bears would also minimize risk. The mitigation measure #6 noted above would have similar attributes to mitigating potential DLP situations.

Effectiveness

Avoiding areas and at specific periods when wildlife is in a vulnerable state (with young of the year) would reduce the potential for DLP killings substantially. Understanding where and when specific wildlife species occur in their habitat in addition to reproductive status could reduce impacts from reduced survival substantially. Reducing the likelihood of an encounter on the construction site or at camp would reduce impacts to the local wildlife population. Direct or indirect mortality caused by a DLP killing, disease, illness, or forcing wildlife into poor quality habitat (denning, feeding, and raising young) would be substantially reduced.

9. <u>Avoid or Minimize Construction and Operational Activities During Sensitive Periods in Life</u> <u>Cycles Such as Moose and Caribou Calving, Bear Denning, Raptor Nesting, and Nesting</u> <u>Migratory Birds.</u>

Analysis

Sensitive areas and their periods of sensitivity would be identified prior to proposed Project activities. To the extent feasible, proposed Project activities would be minimized accordingly. This would be accomplished through consultation with resource agencies and pro-active scheduling. Environmental control/stewardship plans would address this matter in detail, along with specific wildlife monitoring and reporting procedures. The analysis noted above under mitigation measures #1 and #2 would apply to this mitigation measure.

Effectiveness

Minimizing disturbance to wildlife during sensitive life stages would reduce the likelihood of habitat displacement, reproductive failure, reduced nutrition, increased mortality and overall lower productivity. The construction season would occur over the short term, in specific locations as each spread is developed. See effectiveness for mitigation measures #1 and #2 above.

10. <u>Limit Public Access to the ROW for Recreation or Hunting by Blocking Entry Areas with</u> <u>Large Boulders, Berms, or Fencing.</u>

Analysis

Following construction, access roads and trails not required for operations will be closed. These areas and other points of ingress/egress would be blocked using boulders, berms, fencing, gates, etc. Security and maintenance personnel would monitor these locations, along with the rest of the right-of-way. Specific procedures for controlling access, and for establishing, and maintaining right-of-way security would be developed later in the proposed Project.

Effectiveness

Reducing access to previously inaccessible wildlife habitat would reduce the likelihood of increased mortality to wildlife from hunting and recreating through remote areas near the ROW. Effectiveness noted in mitigation measure #9 above would also apply to this mitigation measure.

11. <u>Rehabilitate Pipeline Construction Access Roads in a Manner that Allows Public Access</u> and Consistent Safe Operation of the Pipeline System and That Is in Accordance with the <u>Plans of the Landowner/Land Manager.</u>

Analysis

Access roads would be maintained during proposed Project construction. Some of the access roads would continue to be maintained throughout the life of the pipeline. These access roads would provide access to the ROW for pipeline security and maintenance crews. In situations where these permanent roads are open to the public, the roads would be left ungated or otherwise controlled. Providing access to the public would require no additional disturbance.

Effectiveness

The AGDC would limit access road driving speeds to reduce the potential for vehicle collisions with wildlife. The AGDC would implement dust reduction measures as noted in Terrestrial Vegetation mitigation measure #2 above. Implementing fugitive dust reduction standards would reduce impacts to the surrounding vegetation as noted above, which also would reduce impacts to wildlife habitat for feeding, resting, breeding, and cover.

12. <u>The AGDC Would Develop the Following Plans Prior to Beginning Construction Activities,</u> to be Implemented During Construction and Operations, to Minimize Human Interactions with Wildlife:

- a) Wildlife Interaction and Habitat Protection Plan;
- b) Blasting Control Plan which follows ADF&G standards protective of wildlife;
- c) Bear Avoidance and Human Encounter/Interaction Plan;
- d) Comprehensive Waste Management Plan; and
- e) Hazardous Materials Emergency Contingency Plan.

Analysis

The following wildlife avoidance, habitat protection, blasting, and waste management measures would be implemented to mitigate the effects of interactions of humans with wildlife:

- a) The AGDC Wildlife Avoidance and Human Encounter/Interaction Plan would be developed in consultation with ADF&G and USFWS. The plan would include considerations for all terrestrial wildlife. Specific habitat-protection measures that would be incorporated in construction planning would include the following:
 - Timing vegetation clearing to avoid nesting birds.
 - Scheduling work to avoid important wildlife habitats and seasons (e.g., calving, spawning, etc.).

- o Avoiding blasting near raptor nests, calving areas, etc., when occupied.
- Scheduling work near buffer zones for important habitats to avoid potential disturbance.
- o Implementing erosion control measures to protect downstream habitats.
- Minimizing vegetation clearing to the extent practicable.
- Identifying high-risk areas such as bear denning locations known to ADF&G and USFWS.
- Laying out camps and other facilities to minimize locations where bears and other animals can hide and surprise workers.
- o Using armed bear monitors where necessary in remote locations.
- Managing food and wastes to avoid attracting wildlife.
- Educating employees to avoid and report wildlife encounters, and not to feed wildlife.
- b) Bears would be a primary topic covered in the AGDC Wildlife Avoidance and Human Encounter/Interaction Plan, which would be developed in consultation with ADF&G and USFWS. The plan would include considerations for all terrestrial wildlife. The plan would include the following considerations:
 - Identifying high-risk areas such as bear denning locations known to ADF&G and USFWS.
 - Laying out camps and other facilities to minimize locations where bears and other animals can hide and surprise workers.
 - Use of armed bear monitors where necessary in remote locations.
 - Managing food and wastes to avoid attracting wildlife.
 - Educating employees on how to avoid and report wildlife encounters, and not to feed wildlife.
 - Coordination with resource agencies before construction begins.
 - Notification and reporting requirements for wildlife encounters.
 - Posting of warning signs and placards.
 - Procedures for handling dead or injured wildlife.
- c) Site-specific Blasting Control Plans would be based on the general Blasting and Use of Explosives Plan AGDC would prepare under State ROW Lease Stipulation 1.4.3.1 (b). See measure #5 above. A typical Blasting Control Plan would address the following:
 - Scope of blasting and blasting types/methods proposed.
 - Shot locations and proximity to existing facilities.

- Types of explosives / initiation system to be used.
- Drill and blast pattern.
- Flyrock control plan.
- o Ground cracking and displacement control, monitoring, and reporting.
- Explosives storage and transportation procedures.
- Fire prevention and similar emergency plans.
- Proximity to protected wildlife species.
- d) AGDC's Comprehensive Waste Management Plan would include written policies and procedures for the following:
 - Identification of waste types.
 - Waste accumulation areas, including satellite accumulation areas, central accumulation areas, recyclable accumulation areas, and universal waste accumulation areas. These areas would be arranged, labeled, and inspected in accordance with 40 CFR 260 Subpart B.
 - Management of food waste to keep it from wildlife.
 - o Management of recyclable metals, burnable wastes, and oily wastes.
 - Waste transport and disposal, including sampling (as necessary), profiling, and manifesting.
 - Wastewater treatment, including disposal of domestic wastewater and hydrostatic testing water.
 - Waste fluid handling, including fuels and lubricants for equipment.
 - Recordkeeping and audits.
- e) The AGDC would develop contingency plans for storage, handling, and use of hazardous materials and substances in accordance with ADEC, U. S. Environmental Protection Agency (EPA), DOT, and other regulations. Specific emergency plans would be developed for hazardous waste storage (40 CFR 260 Subpart D).

Contingency plans would cover the following:

- Notification and reporting requirements.
- Response scenarios.
- Site control and responsibilities for safety.
- o Organization of incident command system.
- Arrangements with local emergency agencies.

- Containment, recovery, and disposal, including remediation of environmental contamination.
- Wildlife hazing, and capture, stabilization, and treatment of affected wildlife.
- Decontamination of personnel and equipment.
- Plan maintenance.

Implementing the above measures would reduce human interaction impacts to wildlife by:

- a) The Wildlife Interaction and Habitat Protection Plan would reduce impacts to sensitive wildlife habitats and periods (e. g. nesting, calving, denning, and lambing). It would reduce the potential for erosion to occur, resulting in reduced sedimentation in nearby streams and rivers. The potential for DLP killings would also be less likely; reducing the potential for increased wildlife (bear) mortality in the proposed Project area.
- b) The Wildlife Avoidance and Human Encounter/Interaction Plan would be effective in the same way as mitigation measure a). This plan would primarily focus on bears to avoid and reduce encounters with bears. Reducing disturbances to bears, in particular in denning areas, would reduce displacement of bears into lower quality habitats for denning or feeding. It would also reduce the potential for DLP killings in the proposed Project area.
- c) Blasting plans would protect species during sensitive life stages and their habitat from additional disturbance from blasting activities. The effectiveness would be similar to that noted above under wildlife mitigation measure #2 and #5.
- d) and e) The Comprehensive Waste Management Plan and contingency plans would have similar effectiveness to wildlife mitigation measures #6 and #8 noted above. It would reduce the likelihood of attracting wildlife (e.g. bears, fox, and ravens) to the facilities. Properly containing odors and potential food sources for wildlife would reduce mortalities from DLP killings or vehicle collisions from the proposed Project activities. Disease or illness could occur to wildlife from feeding on human foods or materials, but would be negligible if appropriate plans are developed.

13. <u>Where VSMs Would Be Used to Elevate the Pipe, a Minimum of 7 Feet of Clearance from</u> <u>Ground Surface to the Bottom of the Pipe would be Maintained for Wildlife Movement.</u>

Analysis

The AGDC would elevate the pipeline on VSMs from the GCF for 6 miles across the tundra while the rest of the pipeline would be buried. The 7-foot clearance of the elevated pipeline above the ground has been proven in the North Slope oilfields to be appropriate for wildlife passage year round.

Elevating the VSMs to maintain a 7-foot clearance would allow wildlife to pass under the pipeline during the winter when snow accumulation has occurred. This would be particularly important for caribou during their migration. This would allow avoidance of impediments to wildlife movements for feeding, calving, and migration. This also would reduce the potential for caribou to be displaced into areas not optimal for feeding or calving.

5.23.2.6 Fish Resources

The AGDC would develop a Fish and Wildlife Protection Plan under State ROW Lease Stipulation 1.4.3.1 (b) to protect fish resources, based on documented EFH, non-salmonid and resident species presence, and habitat use information. Additional seasonal life history and habitat use information would be required to determine the construction schedule for all proposed stream crossings, to protect fish and their habitat. All crossings of fish-bearing streams would require permit approvals from ADF&G, and consultations with NMFS would occur for streams identified as EFH. Collaborations with these agencies would define applicable and appropriate site-specific construction techniques and other mitigation for proposed Project implementation.

AGDC Proposed Mitigation Measures

The following mitigation measures would be implemented by the AGDC to minimize impacts on fish resources:

1. Follow Mitigation Measures for Water Resources (Section 5.23.3) Identified Above.

Analysis

The AGDC has proposed 10 key mitigation measures to reduce impacts to water resources. All measures proposed apply to reducing impacts indirectly to fish resources. See Section 5.23.3.1 above for a list of mitigation proposed (analysis and effectiveness) to reduce impacts to water resources.

Effectiveness

Reducing impacts to water resources would reduce impacts to fish habitat and therefore fish. Minimizing the length of time that equipment is in the water would reduce impacts to rearing, spawning, and overwinter habitat substantially. Sedimentation would be reduced which would reduce turbidity from construction activities, minimizing the effects on water quality. Water quality is important for fish and embryo survival. Maintaining the existing thermal regime at stream crossing locations would reduce potential effects from creating ice dams, which could cause flooding and reduce overwinter habitat for fish. Maintaining the temperature of the pipeline to the ambient temperature would reduce the likelihood of affecting fish and their habitat substantially.
2. <u>Minimize the Number of Fish Stream Crossings Where Practicable.</u>

Analysis

Minimizing the number of stream crossings where practicable was a criterion used to establish the ASAP route and the location of access roads. During detailed design, consultation with agencies on permits may lead to minor route modifications to avoid impacts to fish streams.

Effectiveness

Reducing the number of stream crossings as much as practicable would substantially reduce potential impacts to fish resources. Avoiding construction through streams would result in negligible disturbances to fish habitat or fish.

3. <u>Use Open-Cut Isolation Methods for Stream Crossings at Locations Where an Open-Cut is</u> <u>Prevented by Overwintering and Spawning Fish, or Where Stream Flow Conditions Make</u> <u>Open-Cut Impractical.</u>

Analysis

The open-cut isolation method is a temporary stream crossing technique that allows trenched pipeline to be used "in-the-dry" while diverting the natural flow around the site during construction using flume or dam and pump techniques. Water would be diverted to maintain natural downstream flows and to reduce the pooling effects upstream. Appropriate size mesh screens would be used to prevent injury to fish. Under the ROW Lease Stipulation 1.4.3.1 (h), AGDC is required to develop a Stream, River, and Floodplain Crossing Plan (Appendix M, Exhibit A). In addition, the AGDC would be required to brief field personnel and representatives on permits requirements listed under Sections 2.8.1 and 2.8.2 (Appendix M, Exhibit A).

Effectiveness

The open-cut isolation method would reduce sedimentation dispersal and therefore turbidity in the stream that would affect the ability for fish to filter water through their gills. This method may reduce erosion of the streambanks, and allow restoration of the channel profile and gradient versus other construction methods. Restoring the stream channel as quickly and effectively as possible would reduce impacts to fish such as loss of optimal feeding and resting habitat. Stream flow, cover, substrate and important microhabitat characteristics would be returned to the stream, resulting in reduced impacts to a specific life stage or species. 4. <u>A Blasting Control Plan Would be Developed in Accordance with ADF&G Blasting</u> <u>Standards to Protect Adult Fish, Juvenile Fish and Developing Fish Eggs when Blasting</u> <u>Activities Occur In or Near Streams.</u>

Analysis

Site-specific Blasting Control Plans would be based on the general Blasting and Use of Explosives Plan AGDC would prepare under State ROW Lease Stipulation 1.4.3 (b). For a typical Blasting Control Plan see Wildlife mitigation measure #5 a above. This plan would address the following:

- Scope of blasting and blasting types/methods proposed.
- Shot locations and proximity to streams and waterbodies.
- Types of explosives / initiation system to be used.
- Drill and blast pattern.
- Flyrock control plan.
- Ground cracking and displacement control, monitoring, and reporting.
- Explosives storage and transportation procedures.
- Fire prevention and similar emergency plans.

The AGDC would follow the ADF&G Blasting Standards (1991) to protect fish and redd (incubating embryos) habitat. A Fish Habitat permit may be required for any blasting operation that occurs either in, or near the banks of, a fish bearing waterbody.

Effectiveness

Development of a Blasting Control Plan would reduce fish impacts from sedimentation, noise, vibrations, and/or alteration of channel morphology. Blasting through deflagration techniques would be relatively harmless to fish, thus reducing injury and mortality to both small and large fish. The AGDC would follow the ADF&G Blasting Standards (1991) to protect fish and redd (incubating embryos) habitat.

5. Use Existing Bridges or HDD as Proposed.

Analysis

HDD is a trenchless technology of boring the pipeline under the ground where exceptionally vulnerable ecosystems occur. HDD would be used at 41 waterbody crossings throughout the proposed Project corridor. See Section 2.2.3.2 for details on the HDD method.

The HDD method reduces impacts to fish and fish habitat because it eliminates construction activities in the stream. Fish would not be impacted from HDD activities with the exception of the potential for drilling fluid to be released into the aquatic environment. This would be unlikely and potentially occur only if the containment materials at the entrance pit and receiving hole fail.

6. <u>Use Pipeline Designs and Construction Scheduling that Minimize Disruption of Fish</u> <u>Passage, Spawning Fish, and the Effects to Fish Habitat.</u>

Analysis

The AGDC would be required to comply with state and federal permits to design and construct the stream crossings to minimize disruption to fish and their habitat as much as practicable. This would include construction at times when fish are not spawning or hatching in the reach to be constructed. Specific known spawning areas would be avoided to the extent most practicable. Most construction across waterbodies would occur in the winter and would avoid overwinter habitat. Additional characterization of temporal fish use at proposed stream crossings would be required. Mitigation measures would be implemented for all permitted stream crossings.

Effectiveness

Designing the pipeline and if possible scheduling construction to occur when fish are not present would reduce impacts to fish substantially. Fish move to overwinter locations, which often include a pool, or a location with ground water influence. Avoiding these overwinter locations would result in negligible impacts to fish when construction occurs when the waterbodies are frozen. Winter construction would produce minimal sedimentation beyond what would naturally occur when spring break up occurs. Avoiding known spawning areas, which often include upwellings or downwellings, would reduce impacts to the future generations or cohort of fish. Often optimal spawning areas (i.e., appropriate substrate, flow, cover, and depth) are limited; thus by reducing construction through these areas, fish can continue to spawn without reducing productivity.

7. <u>Develop Supplemental Site Specific Fishery Data to Fill in Data Gaps for the Design of Fish</u> <u>Stream Crossings, for Lakes Where Water Would Be Withdrawn During the Winter, and for</u> <u>Snow-Ice Road Construction and Maintenance During Pipeline Construction.</u>

Analysis

The AGDC would collect additional information at specific stream crossings to characterize the habitat, to prevent additional impacts to fish and their habitat. This may include confirmation of fish overwinter habitat, identifying upwellings in the substrate, springs, seeps, and important spawning habitat. Lakes may be surveyed further to document springs and seeps, overwinter habitat for fish, and water quality.

Obtaining site-specific fish and fish habitat information to determine the least adverse methods of construction by site would substantially reduce impacts to fish. Important life history events and traditional habitats specific for these uses would be preserved. This would result in the reduced likelihood of negatively affecting productivity of the local fish population.

8. <u>Maintain to the Maximum Extent Practicable Existing Stream Hydrologic Regimes and</u> <u>Temperature Regimes at Fish Stream Crossings Throughout the Corridor.</u>

Analysis

Measures that may be used to avoid modification of existing stream hydrologic and temperature regimes at fish stream crossings include the following:

- Installation of appropriate erosion control measures.
- Minimizing disturbance in and around the stream during installation of the pipeline.
- Stabilizing and/or restoring areas of stream bed/bank disturbed during construction.
- When appropriate, insulating installed pipe so that it will not influence the temperatures of surrounding soils.

Effectiveness

Installing erosion control structures along the stream bank would reduce impacts to fish and their habitat. Erosion control measures would reduce sedimentation, reduce sloughing of the bank, and would allow reestablishment of riparian habitat important for rearing, feeding and spawning. Reducing the time, that heavy equipment is in the water and on the stream banks would reduce the potential for disturbances to habitat, and water quality and for potential contamination of streams from small leaks. Stabilizing and restoring the stream banks would result in regrowth of the riparian habitat, which is required as cover for fish. Restoring the stream banks during construction would produce temporary impacts to fish. Long-term impacts to fish habitat would likely be negligible because the stream banks would reduce the likelihood of altering the surrounding ambient water and ground temperatures. Altered water or soil temperatures would cause ice damming which would alter fish habitat and potentially cause flooding. Ice dams could reduce available habitat, strand fish, and prevent passage to important habitats.

9. <u>Use Construction Methods and Reclamation of Disturbed Areas that Eliminates or Reduces</u> <u>the Potential for Erosion and Sedimentation Reaching Fish Streams.</u>

Analysis

See the discussion on the SWPP Plan and Erosion Control Plan above under Soils and Geology mitigation measure #1. Erosion impacts on land have the potential to reach waterbodies, resulting in sedimentation and increased turbidity in streams.

Effectiveness

Reducing the potential for sedimentation would reduce impacts to fish survival and health.

10. <u>Minimize Cumulative Effects to Surface Hydrology, Stream Bottom, and Stream Bank</u> <u>Habitats When the Pipeline Crossing of a Fish Stream is Downstream from an Existing</u> <u>Stream Crossing by the Highway, the TAPS, or Other Buried Utility System.</u>

Analysis

Stream crossings would be constructed to avoid impacts to the stream morphology and flow characteristics using the measures discussed above. This would assure that construction of stream crossings would not affect upstream highway, TAPS, or buried utility crossings or create cumulative effects to the stream. See Appendix M, Exhibit A, Stipulation 1.4.3.1 (a).

Effectiveness

Paying extra attention to the design of stream crossing areas where existing structures occur would reduce impacts to fish by maintaining existing conditions as much as practicable. This would prevent impacts to fish passage, water quality, cover, and substrate.

11. Use Temporary Bridges for Transportation of Construction Equipment and Materials.

Analysis

Temporary bridge locations would be determined as the proposed Project develops, and the specifics of their design/construction would vary by location. Assuming any required bridges would be at stream crossings, general considerations would include:

- Install erosion and sedimentation controls prior to bridge installation.
- Avoid placing footings, piers, and other bridge support structures within the stream to the extent possible.
- Stabilize construction disturbances once installation is completed.

- Install swales/ditches to prevent surface drainage from entering the stream.
- During installation and removal, avoid operating construction equipment within the stream bed.

See effectiveness of mitigation measure #8 noted above.

12. <u>To the Maximum Extent Practicable, Locate Material Storage, Refueling Activity, Fuel, and</u> <u>Related Liquid Storage at Least 100 Feet from the Bank of a Stream.</u>

Analysis

To the maximum extent practicable, a buffer of 100 feet would be maintained throughout the proposed Project to prevent the potential for contamination of petro chemicals (e.g. fuel and oil) into a waterbody. Containment would be placed under each area that houses hazardous materials.

Effectiveness

Maintaining a buffer of 100 feet would prevent contaminants from leaching into a waterbody. Contaminants could cause illness, or mortality to fish through their gills or skin. Oil could adhere to aquatic vegetation and stream banks, altering fish habitat. Storing hazardous materials at a distance from a fish stream would prevent the fish stream from becoming contaminated with fuels or lubricants from an incidental spill, or from runoff.

13. <u>Implement Hydrostatic Testing in a Manner that Minimizes the Potential that Freeze</u> <u>Depressants Could be Inadvertently Discharged to Fish Bearing Waters.</u>

Analysis

Where freeze depressants are required for hydrostatic testing, the test medium would not be discharged, but would be collected for treatment and proper disposal. Standard operating procedures would be developed for hydrostatic testing, and these procedures would provide for monitoring of the handling and disposal of hydrostatic test fluids.

Effectiveness

The freeze depressants would not reach waterbodies because hydrostatic fluids would be collected and disposed of appropriately. Impacts to fish or fish habitat would be prevented due to disposal of hydrostatic testing fluid discharge in contained areas.

14. <u>Assure Water Withdrawals Use Appropriately Sized Fish Screens and Other State and</u> <u>Federal Guidelines for Fish Protection.</u>

Analysis

The AGDC is required under the ADF&G's Fish Habitat Permit requirements to use appropriate sized fish screens during water withdrawal. Use of appropriate fish screens would prevent fish from being sucked into a water holding tank, being used to make ice roads and pads and for dust suppression.

Effectiveness

The use of appropriate sized mesh screens on pump intake hoses would prevent fish mortality or injury during water withdrawal.

15. <u>The AGDC Would Have an Approved Spill Prevention and Control Plan (SPCP) Prior to</u> <u>Construction.</u>

The SPCP would be developed in accordance with all pertinent regulations and would follow BMPs. The SPCP would identify material handling procedures and storage requirements and outline the actions to reduce spill potential.

Analysis

The SPCP would be a regulated document that the AGDC would adhere to for permit compliance.

Effectiveness

A SPCP that follows regulations for spill prevention would be designed to prevent a spill from reaching a fish bearing waterbody. Preventing contamination of a fish bearing waterbody would prevent fish illness or mortality, and disturbance to fish habitat.

16. <u>If a New Bridge is Built, No Permanent Structures Associated With the Bridge, Such As</u> <u>Footings, Would Be Installed Within Ordinary High Water of the Yukon River.</u>

Analysis

No structures would be placed below the ordinary high water mark in the Yukon River. All structures would be out of the water and located on the riverbanks.

Effectiveness

Preventing placement of any structures in the Yukon River would be optimal for fish and their habitat. No impacts should occur to fish by keeping all structures out of the water for development of a suspension bridge.

17. In-Stream Pipeline Construction Would Be Completed in One to Three Days from Initiation.

Analysis

Temporary construction in the stream to place the pipeline under the waterbody would last from one to three days. The duration would be dependent on the construction season, size and shape of the stream, flow, and other geomorphologic characteristics.

Effectiveness

Reducing the duration that heavy equipment is in the steam to construct the pipeline would substantially reduce impacts to fish and their habitat. The longer the duration that the stream is being constructed, the more turbidity and disturbance to instream habitat (e.g., substrate, pool/riffle, and cover). Turbidity can cause irritation to the gills and may cause mortality. In-stream habitat such as pools provides important cover for rearing fish, for refuge, feeding and resting. Impacts to fish would be reduced because of the short duration that equipment would be in the water.

5.23.2.7 Marine Mammal Resources

Vessel use would be the only Project-related activity that would occur in the marine environment, and would occur prior to or during the construction phase of the proposed Project. Vessel use would include the transport of materials and equipment to the West Dock Port and the Port of Seward for proposed Project development. As noted in Section 2.0, vessel use would occur over two seasons during the ice-free period. Disturbances to marine mammals from vessel activity could be in the form of vessel noise, vessel movement, or a potential collision with a marine mammal.

The AGDC would comply with recommendations from the NMFS and USFWS for vessel activity to West Dock, POS and the POA. Mitigation measures would address the species potentially impacted by vessel use. Vessels would operate under strict regulatory laws and standards. Mitigation proposed by the AGDC would reduce potential impacts to marine mammals from auditory damage or mortality from an injury or illness.

5.23.2.8 Threatened & Endangered Species Resources

The proposed Project has the potential to affect species federally listed as endangered, threatened, proposed for listing, candidates for listing, and state listed endangered species. The AGDC would comply with recommendations from the NMFS and USFWS to prevent impacts to Threatened and Endangered (T&E) species to the extent practicable from vessel operations at all proposed port sites and along shipping routes, as outlined in Section 5.23.8. All mitigation measures listed under the Section 5. 23. 6 above would apply to the terrestrial T&E species and the polar bear during breeding, denning, and feeding activities. Mitigation measures would include those identified during Section 7 consultation as part of the NEPA process and as stipulations in permits.

5.23.2.9 Land Use Resources

The proposed Project ROW would affect lands owned by the federal government and managed by the BLM, DOD, NPS, and USFWS. The State of Alaska, University of Alaska, AHTNA, Inc., and the Toghotthele Corporation have selected federally owned lands within the proposed Project ROW for their future ownership.

The AGDC has not proposed specific mitigation measures to reduce the effects to land use. However, elements of the proposed Project design would preclude some effects to land use. For example, the proposed pipeline route would generally parallel existing state highway corridors, and existing infrastructure and ROWs would be used for pipeline installation to the extent feasible.

5.23.2.10 Recreation Resources

Although the proposed pipeline alignment was designed to avoid to the greatest extent practicable recreation areas, the mainline pipeline would either cross or be located near (i.e., within less than 1 mile) a number of key recreation features. Proposed Project operations including the mowing and maintenance of vegetation resources along the ROW would likely not affect recreation activities or the quality of recreation opportunities in proximity to the pipeline route. However, while the pipeline would be located underground, there would be restrictions to access in some areas along the proposed ROW, accomplished by the use of large boulders, berms, and/or fencing. Consequently, there could be an adverse impact on general recreation access along the pipeline corridor over the long term, although all existing public access points would be retained. The mitigation measures proposed by the AGDC are listed below.

AGDC Proposed Mitigation Measures

The proposed Project contains a variety of measures intended to avoid or minimize impacts on recreation resources in the proposed Project area during the construction and operations phases of the proposed Project. The AGDC would implement the following mitigation measures that address the effects on tourism and recreations use areas:

1. <u>Retain Existing Public Access Routes and Uses.</u>

Analysis

The AGDC would maintain public access to recreational use areas via existing access routes.

Effectiveness

The proposed Project would not block public access to recreational areas via existing access roads.

2. <u>Minimize Activities in Areas with Tourist-Related Facilities During High Use Periods to the Extent Practicable.</u>

Analysis

In establishing the final construction schedule, the AGDC would consult with resource agencies such as the Alaska Division of Tourism and the National Park Service, as well as with owners of potentially affected tourist-related facilities, to identify areas and times of most concern for tourists. To the maximum extent practicable, the AGDC would minimize major construction activities in those areas during times of greatest tourist activities.

Effectiveness

Minimizing construction activities during the peak period of recreational use would substantially reduce impacts to local tourism. Obtaining information from tourism agencies would help predict when high use times could occur. Access to parks and other recreational areas and uses associated with the proposed Project would not likely adversely affect tourism due to collaboration with tourism related entities.

3. <u>Minimize Activities in Areas with Public Recreation Facilities During High Use Periods to</u> <u>the Extent Practical.</u>

Analysis

See Analysis of mitigation measure #2 above. The AGDC would collaborate with local entities to determine when public use activities are highest. Construction activities would occur outside of these periods and locations as much as practicable.

Effectiveness

See Effectiveness of mitigation measure #2 above, but for public recreation facilities.

4. Minimize Creating New Public Vehicular Access to Remote Areas.

Analysis

The AGDC would regulate or prohibit access, including vehicular traffic to the extent necessary to facilitate pipeline activities, maintain pipeline integrity, or to protect the public and wildlife from hazards associated with the proposed Project.

The AGDC would build only as many access roads as necessary to the right-of-way to support construction. The AGDC would provide appropriate warnings, flagging, barricades, and other safety measures to regulate public access to the right-of-way during both construction and operations.

Effectiveness

Access roads developed for the proposed Project would be regulated, which would minimize creating new public vehicular access to remote areas.

5. <u>Minimize Impacts to the Existing Natural Landscape to the Extent Practicable.</u>

Analysis

The majority of the ASAP alignment would be located in existing transportation corridors and previously disturbed ground. The ASAP route was selected with the assistance of visual impact experts. The final alignment in areas of the highest visual sensitivity would be designed to minimize the visibility of the pipeline. Measures that may be used include vegetative screening. The AGDC routed access roads to avoid wetlands to the extent feasible.

Effectiveness

Collocating the proposed Project route with existing ROWs would substantially reduce impacts to resources. Final design details would reduce visible impacts of the proposed Project. See Wetland mitigation measures (Section 5.23.5) above for details on reducing impacts to the natural landscape as much as practicable.

6. <u>Schedule Preconstruction Work to Minimize Activity During Peak Periods of Tourism and</u> <u>Recreation.</u>

Analysis

See Recreation mitigation measures #2 and #3 above.

Effectiveness

See Recreation mitigation measures #2 and #3 above.

7. <u>Conduct Early and Continuing Consultation With the Public, Tourism, and Recreation</u> <u>Businesses.</u>

Analysis

See Recreation mitigation measures #2 and #3 above.

Effectiveness

See Recreation mitigation measures #2 and #3 above.

8. <u>Collocate with Existing and Planned Transportation and Utility System Where Practicable.</u>

Analysis

See Recreation mitigation measure #5 above. The AGDC has collocated the proposed Project with existing rights-of-way as much as practicable to reduce impacts to recreational uses.

See Recreation mitigation measure #5 above.

5.23.2.11 Visual Resources

Short-term visual impacts associated with construction would occur from clearing and removal of existing vegetation in the ROW, exposure of bare soils, earthwork, trenching, and machinery and pipe storage. Long-term impacts during operations would be associated with the following: maintenance of access along the ROW; various landform changes including earthwork and rock formation alteration; pipeline markers; and new aboveground structures located along the route such as compressor stations, mainline valves, pig launchers/receivers, and a straddle and off-take facility. Short-term visual impacts would be greater during construction and until re-vegetation occurs than during operations and maintenance.

AGDC Proposed Mitigation Measures

The AGDC has proposed a variety of measures to minimize impacts on visual resources in the proposed Project area during the construction and operations phases of the proposed Project. These measures would include:

1. <u>Review the Practicality of Avoiding or Minimizing Significant Adverse Effects on Visual</u> <u>Resources Created by the Construction and Operation of the Proposed Project and</u> <u>Incorporate Proven Mitigation Measures Into the Design and Location of the Project Where</u> <u>Appropriate.</u>

Analysis

The ASAP route was selected with the assistance of visual impact experts, and the final alignment in areas of the highest visual sensitivity would be designed with mitigation measures such as vegetative screening to minimize its visibility. In addition, new access roads built for the project would be aligned to minimize the line of sight to the right-of-way.

Effectiveness

Vegetative screening would maintain the visual aesthetics of the area as wilderness. Building access roads behind hills or wooded areas would reduce visual impacts substantially.

2. <u>Minimize the Construction of New Permanent Access Roads by Using Snow-Ice Roads</u> <u>During Construction.</u>

Analysis

Snow and ice roads would be used as much as possible in the Arctic and Sub Arctic regions to access the ROW to construct the pipeline. Ice roads could be constructed by

scraping ice from ponds that freeze to the bottom in the winter. Ice would be placed along the surveyed ice road alignment and water would be sprayed on top of the ice to create a solid foundation for equipment access. Properly constructed ice roads would be maintained to last the winter construction season. Ice roads and pads would melt during the summer leaving a minimal trace.

Effectiveness

Snow and ice road development would reduce visual impacts substantially; by reducing the number of permanent gravel roads. Scheduling construction during the winter months when ice roads could be used would maintain the natural condition (aesthetics) of the area with minimal to negligible disturbance to soils, vegetation or wildlife habitat. The ice roads would be built to withstand the heavy equipment use, but would melt in the summer, leaving the area as close to its original conditions as much as possible.

3. <u>Restore the Construction Zone in a Manner that Facilitates Reestablishment of the</u> <u>Adjacent Natural Vegetation.</u>

Analysis

All disturbed areas would be left in a stabilized condition; therefore, erosion in excess of natural rates would be minimized until the practicable restoration and revegetation can be accomplished. Revegetation of disturbed areas would be conducted as soon as practicable and, if necessary, would be repeated until revegetation is successful. Where practicable, native seeds and vegetation would be applied; otherwise, seed mixes free of invasive species would be used. Areas to be seeded may be prepared by various methods, including grading, scarifying, and application of soil amendments such as fertilizers. Application of seed would be by hand or a hydro seeding process. Plantings of native shrubs and trees would be considered where necessary to improve soil stability and for screening purposes in sensitive viewsheds.

Effectiveness

Restoring construction areas by rehabilitation of vegetation would reduce impacts from erosion processes. Native seed mixes would be optimal for use to sustain the natural vegetation in the area for visual aesthetics as well as for wildlife forage and habitat. Native species are likely to survive the climate and conditions during rehabilitation of the area, which would result in higher success of vegetation establishment in the ROW.

4. <u>Use Root Balls, Salvaged Native Plant Materials, and Topsoil Removed From the</u> <u>Construction Footprint for Redistribution on Disturbed Areas Where Feasible.</u>

Analysis

Organic materials would be distributed across disturbed areas, to rehabilitate the area to a more natural state. Excess material such as root balls and soil would be spread to provide a foundation for native plants to establish and rehabilitate the area.

Dispersal of excess topsoil and woody material like root balls would provide a foundation for native seed and plants to reestablish over time. These areas would provide cover and habitat for wildlife and would reduce the visual impacts of disturbed areas by rehabilitating them into a more natural condition. Once vegetation is re-established on disturbed sites, visual impacts would be minimal.

5. <u>Maintain a screening of Existing Natural Vegetation When the Pipeline is Offset From a</u> <u>Highway.</u>

Analysis

See Visual resources mitigation measure #1 above.

Effectiveness

See Visual resources mitigation measure #1 above.

6. <u>Use Existing Disturbed Areas to the Maximum Extent Practicable for Temporary</u> <u>Construction Activities Such as Construction Camps, Material Stockpiling, Pipe Jointing,</u> <u>and Pipe Bending:</u>

Analysis

See Visual resources mitigation measure #3 above.

Effectiveness

See Visual resources mitigation measure #3 above.

7. <u>Minimize Locating Pipeline Facilities, New Material Sites, and Construction Material</u> <u>Stockpiling in Places With Special Visual Resource Values that Would Be Visible to the</u> <u>Public.</u>

Analysis

The ASAP route was selected with the assistance of visual impact experts, and the final alignment in areas of the highest visual sensitivity would be designed with mitigation measures including vegetative screening to minimize its visibility. To the extent most practicable, construction material for the proposed Project would not be stockpiled in areas with special visual resource values that would be visible to the public. The pipeline would be located to provide a buffer of undisturbed land at least 500 feet wide between the pipeline and streams, unless otherwise approved by state and federal land management agencies.

Undisturbed vegetative screens at least 500 feet wide would be maintained between material sites and highways unless otherwise approved by state and federal land management agencies.

Effectiveness

Avoiding placing project related facilities in places with special visual resource values that would be visible to the public would reduce visual impacts to the public by reducing their visibility of facilities and proposed Project related activities. Maintaining a natural vegetation buffer around these areas should provide minimal visual impact if any to the public in the area. The majority of the ASAP alignment would be located in existing transportation corridors and previously disturbed ground.

8. <u>Blend the Pipeline System into the Natural Setting to the Extent Practicable When Crossing</u> <u>Places with High Visual Resource Value.</u>

Analysis

See Visual resources mitigation measure #7.

Effectiveness

See Visual resources mitigation measure #7.

9. <u>Use Revegetation Species that are Appropriate for the General Area.</u>

Analysis

See Visual resources mitigation measure #3, and Terrestrial Vegetation mitigation measure #5.

Effectiveness

See Visual resources mitigation measure #3, and Terrestrial Vegetation mitigation measure #5.

10. <u>Re-Grade Construction Disturbances to a Condition that Blends With the Surrounding</u> <u>Terrain and Surface Drainage Patterns.</u>

Analysis

The AGDC would grade the ROW area after construction as close as practicable to its preconstruction condition and rehabilitate it. The AGDC would follow revegetation techniques and mitigate as stated in the Terrestrial Vegetation mitigation measures, #1, #3, and #5.

Maintaining the natural grade of the landscape would reduce potential impacts of erosion, encourage vegetation re-establishment, and protect visual resources. See Terrestrial Vegetation mitigation measures for #1, #3, and #5.

11. <u>Monitor Reclaimed, Disturbed Construction Areas and Take Remedial Action Where</u> <u>Expected Revegetation Success is Not Achieved.</u>

Analysis

The AGDC would coordinate with experts in reclamation and with state and federal resource agencies to develop a monitoring plan that would stipulate the frequency and duration of monitoring to ensure the success of reclamation of disturbed areas. Monitoring would continue for as long as necessary to achieve this goal.

Effectiveness

The monitoring plan would have success criteria, to ensure that reclamation of the disturbed areas would be successful. Visual impacts would be temporary, due to the stipulation that monitoring would be required until full reclamation had been reached.

5.23.2.12 Social and Economic Resources

It is anticipated that the proposed Project-related employment and income would create a positive economic impact in the State of Alaska, particularly in the proposed Project area.

AGDC Proposed Mitigation Measures

The AGDC proposes to implement the following mitigation measures to address the effects on socioeconomics:

1. <u>Time Construction Activities to Minimize Impacts to Subsistence Activities Where</u> <u>Possible.</u>

Analysis

In establishing the final construction schedule, the AGDC would consult with resource agencies including the ADF&G and DOI, as well as with subsistence users, to identify areas of most concern for subsistence activities. To the maximum extent practicable, the AGDC would either schedule construction to avoid disturbance of subsistence activities or would provide access for subsistence users to areas near the work sites.

Effectiveness

Consultation among the AGDC, regulatory staff, and subsistence users of the area would develop the appropriate schedule to the extent most practicable for construction of the proposed Project. Local knowledge and regulatory input would produce the best result for

negotiating subsistence activities with the timeline of the proposed Project. Subsistence activities would not likely be adversely impacted due to collaborations of all entities.

2. <u>Time Construction Activities to Minimize Impacts to High-Use Tourist and Local Recreation</u> <u>Seasons (e.g., Wildlife Viewing, Hunting Snow Machining, and Dogsledding).</u>

Analysis

The AGDC would consult with resources agencies including the Alaska Division of Tourism and the National Park Service, as well as with owners of potentially affected tourist-related facilities, to identify areas and times of most concern for tourists. To the maximum extent practicable, AGDC would minimize major construction activities in those areas during times of greatest tourist and local recreational activities. This would be determined when the final construction schedule is developed later in the process. See Recreation Resource mitigation measures #2 and #3 above.

Effectiveness

Minimizing construction activities during peak periods of tourist and recreational use would substantially reduce impacts to local tourism. Obtaining information from tourism agencies would help predict when high use times could occur. Access to parks and other recreational areas and uses associated with the proposed Project would not likely adversely affect tourism due to collaboration with tourism related entities. Impacts to high tourist and local recreation uses would be minimal based on coordination and collaborations between the AGDC, state and local representatives.

3. <u>Time Construction Activities to Minimize Impacts to Local Business (i.e., Avoid Summer</u> <u>and Fall Construction in Recreational and Tourist Areas).</u>

Analysis

See Social and Economic Resources mitigation measure #2 above.

Effectiveness

See Social and Economic Resources mitigation measure #2 above.

4. <u>Develop and Implement Traffic Control Plans to Minimize Negative Impacts to Local</u> <u>Businesses by Blocking Access During Construction.</u>

Analysis

Construction activity in highway rights-of-way would be governed by a highway use agreement between the AGDC and the Alaska Department of Transportation and Public Facilities (DOT&PF). The DOT&PF would issue individual permits for various locations, and these permits would include stipulations for maintaining public access.

The AGDC would work with affected businesses to ensure that access is provided and appropriate temporary signage is installed. To the extent practicable, the AGDC would schedule major construction activities to avoid peak business times of the day.

Effectiveness

The AGDC would adhere to permit requirements of the DOT&PF rights-of-way to maintain public access through the construction area. A traffic control plan would reduce impacts to local business traffic during the period of construction.

5. Identify and Promote Work Opportunities for Local Residents:

- a) Prepare an Economic Opportunity Plan to describe how the proposed Project would operate to enhance locally based economic and employment opportunities for Alaska residents and businesses;
- b) Coordinate with the local village corporation, tribal government, city government, and other groups to identify qualified individuals that are interested in working on the proposed Project; and
- c) Promote use of local businesses to support the proposed Project (e. g. , lodging, food, services, and sundries).

Analysis

The Economic Opportunity Plan would describe how the project would operate to enhance locally based economic and employment opportunities for Alaska residents and businesses. The AGDC would coordinate with the local village corporation, tribal government, city government, and other groups to identify qualified individuals who are interested in working on the proposed Project.

Effectiveness

The Economic Opportunity Plan would provide opportunities for local businesses and individuals to work on the proposed Project.

6. <u>Develop Training Programs for Local Residents So That They Can Be Employed During</u> <u>Construction and O&M.</u>

Coordinate with Alaska training centers and universities on workforce development and training opportunities, which may include, but are not limited to, future job fairs in the region.

Analysis

Training programs would likely provide on-the-job training for a specific trade or skill set needed for construction activities for the proposed Project.

Jobs would result from the proposed Project, employing local residents along the proposed route.

5.23.2.13 Cultural Resources

Direct effects to cultural resources within the pipeline ROW and indirect effects to cultural resources within a one-mile of the ROW have the potential to occur because of the proposed Project. Mitigation of adverse effects to cultural resources would be the subject of consultation among the Project proponent, the permitting agency, interested groups, parties, governments and tribes. The intended result of this consultation process would be a programmatic agreement or other agreement satisfactory to the parties and compliant with relevant legislation and law, as described in the Regulatory Environment.

AGDC Proposed Mitigation Measures

The AGDC has proposed the following mitigation measures to address effects on cultural resources:

1. <u>Avoidance of Documented Cultural Resources.</u>

Analysis

The construction activities for the proposed Project would be governed by a programmatic agreement for implementation of Section 106 of the Historic Preservation Act (16 U.S.C. 470 et seq.) between the USACE and the Advisory Council on Historic Preservation. Locations of documented sites that could be affected by proposed Project activities would be determined through consultation with the State of Alaska Office of History and Archaeology (OHA) and through surveys by professional archaeologists of the right-of-way, access roads, and camp and facility locations.

The AGDC would take the necessary steps to protect these cultural sites and any confidential information provided by OHA. The AGDC would also take affirmative responsibility to require its agents, employees, contractors, and the employees of each of them to protect cultural resources.

Effectiveness

Known and newly discovered cultural resources would not be impacted by the proposed Project under the terms of the programmatic agreement.

2. <u>Archaeological Excavation, Analysis, and Documentation of All or Part of the Cultural</u> <u>Resource Site and Development of an Unanticipated Cultural Discoveries Plan.</u>

Analysis

If cultural sites or suspected sites are discovered during the course of pipeline activities, the AGDC would cease the activities that may disturb or damage the site, and would immediately notify OHA so that the site could be checked by professional archaeologists. The AGDC would not proceed with the activity at the location without OHA approval. Additional avoidance and mitigation measures would be prescribed in the programmatic agreement for the proposed Project between the USACE and the Advisory Council on Historic Preservation.

Effectiveness

Development of an Unanticipated Cultural Discoveries Plan would outline the exact process to follow if an unexpected cultural discovery occurred during construction of the proposed Project. Professional archaeologists would conduct the excavation and analysis of cultural sites to preserve and record all data found. This plan would reduce impacts to cultural resources substantially.

3. <u>Perform Historic American Building Survey/Historic American Engineering Record</u> (HABS/HAER)-Level Documentation for Historic Buildings and Structures.

Analysis

HABS/HAER documentation would be completed for historic structures prior to pipeline construction and support activities.

Effectiveness

Documentation of HABS/HAER would preserve these historic locations from disturbance of proposed Project development.

4. Perform Archaeological Monitoring of Construction Activities.

Analysis

Archaeological monitoring may be conducted during construction activities. Interpretive material may be completed as soon as appropriate, which could occur during or after construction activities. Professional archaeologists would conduct the excavation and analysis of cultural sites to preserve and record all artifacts found.

Effectiveness

Archaeological monitoring of construction activities would aid in the preservation of artifacts found during the construction of the proposed Project.

5. <u>Provide Interpretation for and Involvement of the Public.</u>

Examples include brochures, signage, or partnering with local schools, museums, and/or heritage preservation groups.

Analysis

The AGDC would involve the public as much as possible by posting and updating information in local public facilities. This may include involving the public in educational events held by the AGDC in the community.

Effectiveness

Informing the local communities directly associated with construction activities of the proposed Project would reduce impacts through awareness. Making the communities aware of construction schedules and specific events would reduce impacts to cultural activities.

6. <u>Consult with State and Federal Agency Historic Preservation Officers.</u>

Analysis

The AGDC would consult with appropriate state and federal staff to work within the boundaries to protect cultural resources to the maximum extent possible. Historic preservation officers would provide the AGDC with guidance as needed.

Effectiveness

Consultation between the AGDC and federal and state historic preservation officers would reduce the likelihood of affecting cultural resources. The AGDC would follow regulations to protect cultural resources as per guidance from government staff.

7. Consult with Alaska Native Tribes.

Analysis

Communication between the AGDC and local tribes and ANCSA corporations would occur on a regular basis, through meetings and other regular correspondence, in particular if native land would be accessed. Ongoing consultation with Alaska Native Tribes would provide a foundation for communication that would help address issues that arise over construction of the proposed Project.

Effectiveness

Maintaining regular correspondence with native tribes and ANCSA corporations along the proposed Project route would provide for knowledge sharing opportunities to protect and respect cultural resources, traditions and their private land.

5.23.2.14 Subsistence Resources

Subsistence use impacts common to the proposed Project would include direct and indirect effects on subsistence use areas, user access, resource availability, and competition in those areas.

AGDC Proposed Mitigation Measures

The AGDC has proposed the following mitigation measures that would address effects on subsistence activities:

1. <u>Identify Locations and Times When Subsistence Activities Occur, and Minimize Work</u> During These Times and In These Areas to the Maximum Extent Practicable.

Analysis

See Social and Economic Resources mitigation measure #1 above.

Effectiveness

See Social and Economic Resources mitigation measure #1 above.

2. <u>Schedule Work (e.g., Blasting) to Avoid Conflict with Subsistence Activities When</u> <u>Possible.</u>

Analysis

The AGDC would consult with resource agencies such as the Alaska Department of Fish and Game and the Department of Interior, as well as with subsistence users, to identify areas of most concern for subsistence activities. To the maximum extent practicable, the AGDC would either schedule construction to avoid disturbance of subsistence activities or would provide access for subsistence users to areas near the work sites.

Effectiveness

The AGDC would reduce impacts to subsistence users by scheduling blasting activities as much as practicable when subsistence activities are not occurring.

3. <u>Notify Workers That Subsistence Activities are Ongoing in the Area and Direct Them to</u> <u>Avoid Activities that May Affect the Activities (e.g., Not Removing Trap Line Markers).</u>

Analysis

The AGDC would notify employees as much as possible by posting and updating subsistence activities information. This may include involving the public in educational events held by the AGDC in the community. Communication between the AGDC and local tribes and ANCSA corporations would occur on a regular basis, through meetings and other regular correspondence, in particular if native land would be accessed. Ongoing

consultation with Alaska Native Tribes would provide a foundation for communication that would help address issues that arise over construction of the proposed Project.

Effectiveness

Informing workers of the subsistence activities as they occur would reduce impacts to subsistence users and subsistence activities due to disturbance from construction. Informing the workers directly would reduce impacts through awareness. Making the communities aware of construction schedules and specific events would reduce impacts to subsistence activities. Maintaining regular correspondence with native tribes and ANCSA corporations along the proposed Project route would provide for knowledge-sharing opportunities to protect and respect subsistence resources, traditions and their private land.

4. <u>Develop a Wildlife Avoidance and Human Encounter/Interaction Plan to be implemented for</u> <u>the construction and operation of the proposed Project to avoid impacts to subsistence</u> <u>species.</u>

Analysis

The AGDC Wildlife Avoidance and Human Encounter/Interaction Plan would be developed in consultation with ADF&G and USFWS. The plan would include considerations for both polar bears on the North Slope and brown and black bears elsewhere, as well as for birds e.g., (ravens, gulls, etc.) and terrestrial mammals (e.g., foxes, squirrels, etc.). The plan would include such considerations as:

- Identifying high-risk areas such as bear denning locations known to ADF&G and USFWS.
- Laying out camps and other facilities to minimize locations where bears and other animals can hide and surprise workers.
- Use of armed bear monitors where necessary in remote locations.
- Managing food and wastes to avoid attracting wildlife.
- Educating employees on how to avoid and report wildlife encounters, and not to feed wildlife.
- Coordination with resource agencies before construction begins.
- Notification and reporting requirements for wildlife encounters.
- Posting of warning signs and placards.
- Procedures for handling dead or injured wildlife.

This plan would reduce encounters between construction activities and wildlife, which would reduce disturbance to subsistence resources and users.

5. <u>Develop a Subsistence Plan of Cooperation to Mitigate Potential Conflicts Between</u> <u>Proposed Project Activities and Subsistence Activities.</u>

Analysis

The details of the Subsistence Plan of Cooperation would be determined later in the process. It would generally describe the process to resolve issues where project activities could conflict subsistence activities.

Effectiveness

The development of this plan would reduce impacts to subsistence users and activities through collaboration.

5.23.2.15 Public Health Resources

Several public health impacts could occur during both the 2.5-year construction and 30+year operation phases. Impacts could occur to water and sanitation, health infrastructure and delivery, food, nutrition and subsistence, and social determinants of health. Negative impacts could include accidents/injuries, an unhealthy degree of exposure to hazardous materials, outbreak of infectious diseases (perhaps transmitted by pipeline construction workers), and an increase in non-communicable and chronic diseases. Positive impacts are also likely to occur. For example, public health in the Fairbanks area would improve because of improved air quality from the substitution of natural gas for other fuels. The proposed Project and a Fairbanks gas distribution system would provide an available and reliable source of natural gas and reduce reliance on wood, fuel oil and other energy sources that have greater adverse effect on air quality than natural gas. The public health benefits associated with improved air quality are described in detail in Section 5.15, Public Health.

Numerous mitigation measures are discussed in the POD and in the lease stipulations that are relevant to possible health impacts. An outreach program is suggested to raise awareness are about contagious illnesses (such as influenza) and STDs and is described in Section 5.15, Public Health. The AGDC has not proposed specific mitigation measures to reduce effects to public health.

5.23.2.16 Air Resources

Air quality effects associated with construction of the proposed Project would include emissions from fossil-fuel powered construction equipment, fugitive dust, and open burning. Total worst-case emissions that would occur from construction and operations are estimated to be 1,059,100 tpy for CO2, 21,740 tpy for NOx, 8,008 for CO, 2,304 for VOC, and 165,075 tpy for PM-10. Emissions from the pipeline itself would be non-existent. Preliminary emission estimates for the GCF would trigger the requirement for a PSD permit for NOx, CO, VOC, PM-10, PM-2. 5, and GHGs. For the compressor stations and straddle and off-take facility, preliminary estimates would trigger the requirement for a PSD permit for NOx.

AGDC Proposed Mitigation Measures

Air quality impacts associated with the proposed Project would be reduced by the AGDC's proposed mitigation measures listed below:

1. <u>Implement BMPs During Construction Activities to Mitigate Fugitive Dust and Reduce</u> <u>Particulate Matter Emissions.</u>

Analysis

BMPs for dust control would be based on the EPA's National Menu of BMPs, Construction Site Stormwater Runoff Control, Erosion Control².

These BMPs include:

- Minimizing the time that disturbed ground is exposed;.
- Using water to prevent windborne dust from leaving the construction site and gravel roads;.
- Limiting the speed of construction equipment to minimize dust creation. ;
- Sweeping paved public roads of dirt left by construction vehicles.

Other potential measures would include installation of wind barriers and use of other approved dust palliatives such as calcium chloride or magnesium chloride.

Effectiveness

Development of BMPs would reduce impacts to air quality by reducing particulate matter in the air from construction activities.

2. <u>Use Best Available Control Technology (BACT) for Combustion Equipment to Mitigate NOx</u> and CO Emissions.

Analysis

BACT for stationary combustion equipment includes the use of emission units that meet the requirements of the EPA New Source Performance Standards in 40 CFR Part 60, the EPA Maximum Achievable Control Technology (MACT) standards in 40 CFR Parts 61 and 63, and the exclusive use of natural gas fuel in all stationary combustion equipment.

² http://cfpub2.epa.gov/npdes/stormwater/menuofbmps/index.cfm.

BACT for construction equipment includes the use of machinery and vehicles meeting the EPA mobile source regulations in 40 CFR Parts 86, 89 and 90. It also includes the use of ultra-low-sulfur diesel fuel in all diesel engines and the maintenance and operation of all construction machinery and vehicles in accordance with manufacturer's recommendations to maintain low emissions.

Effectiveness

The use of BACT would reduce air emissions substantially for the use of construction equipment for the proposed Project.

3. <u>Use Ultra Low-Sulfur-Diesel Fuel for Construction Equipment and Non-Natural Gas</u> <u>Combustion Equipment (to Mitigate SO2 Emissions), Particulate Matter Emissions and</u> <u>Volatile Organic Compound (VOC) Emissions.</u>

Analysis

The AGDC would implement the use of ultra low sulfur diesel fuel for all non-natural gas combustion equipment as much as possible for construction of the proposed Project.

Effectiveness

The use of ultra low sulfur diesel fuel for equipment working on the proposed Project would reduce impacts to air quality in the proposed Project area.

4. <u>Operate All Combustion Equipment in Accordance with Manufacturer's Specifications to</u> <u>Mitigate NOx, CO, VOC, and Particulate Emissions Resulting from Incomplete Combustion.</u>

Analysis

The AGDC would implement the use of ultra-low-sulfur diesel fuel in all diesel engines. All equipment used during construction and operation of the proposed Project would be maintained properly under the manufacturer's specifications.

Effectiveness

Maintaining equipment properly at manufacturer's specifications would reduce the amount of NO_x , CO, VOC, and particulate matter emitted into the air from proposed Project activities.

5. <u>Maintain Emissions Control Equipment in Accordance with Manufacturer's Specifications</u> to Mitigate Emissions and Maintain Emission Control Efficiency.

Analysis

The AGDC would implement the use of ultra-low-sulfur diesel fuel in all diesel engines. All equipment used during construction of the proposed Project would be maintained according to the manufacturer's specifications.

Maintaining equipment properly at manufacturer's specifications would reduce the air emissions from proposed Project activities.

5.23.2.17 Noise Resources

Construction noise levels would fluctuate depending on the number and type of equipment in use at any time. There would be periods when large equipment is not operating and noise would be at or near ambient levels. In addition, construction-related sound levels experienced by a noise sensitive receptor near construction activity would vary by distance. Ground-borne vibration would also occur in the immediate area of construction activities, particularly if rock drilling, pile driving, or blasting is required. Noise levels from the industrial equipment at the proposed gas conditioning facility and compressor stations would be approximately 85 to 95 dBA at 50 feet.

AGDC Proposed Mitigation Measures

Noise and vibration impacts associated with the proposed Project would be reduced by use of the AGDC's proposed mitigation measures:

1. <u>Development and Implementation of a Noise Abatement Program.</u>

Analysis

Areas of concern for loud noise levels would be identified prior to construction. Special work hours and/or special time-of-year considerations would be reviewed and implemented if practicable.

Effectiveness

The Noise Abatement Program would reduce impacts to humans and wildlife within hearing range of facilities or activities associated with the proposed Project.

2. <u>Development and Implementation of a Construction Communications Plan to Inform</u> <u>Adjacent Residences of Construction Activities.</u>

Analysis

Residences within a specific range of construction operations would be identified and contacted, prior to the commencement of construction activities. Pre-construction public meetings would be held in areas of concern. Other communication methods would include notices in local papers, direct mailing, maintaining a Project website, and periodic updates.

The Construction Communications Plan would aid in informing residents of the area about the construction schedule and associated activities, to reduce the impacts from noise produced by the proposed Project.

5.23.2.18 Navigation Resources

Impacts to navigation proposed for each pipeline stream crossing are expected to be minimal and temporary. The proposed Project would have ten stream crossings that have been determined to be navigable by the USACE. One new and up to three existing bridges may also be used to cross a few navigable waterways. Structures crossing navigable streams would be designed and constructed in compliance with federal and state regulations, standards, and specifications for crossings of navigable waterways (see Sections 5.18.1 and 5.18.2). The AGDC has not proposed specific mitigation measures to reduce the effects to Navigation Resources.

Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
Federal Permits &	Clean Water Act	Section 404 of the Clean	U.S. Army Corps of Engineers	Section 404 of the Clean Water Act and Section 10 of
Approvals	Section 404,	Water Act allows		the Rivers and Harbors Act:
	Rivers and Harbors Act	materials to be placed		Section 404 of the Clean Water Act requires
	Section 10 Permit	in wetlands and rivers.		authorization for placement or discharge of dredged
		Section 10 of the Rivers		and/or fill material into waters of the United States,
		and Harbors Act ensures		including wetlands (33 U. S. C. 1344). Section 10 of
		that discharges in rivers		the Rivers and Harbors Act of 1899 requires approval
		or offshore areas do not		prior to the accomplishment of any work in, over, or
		harm the navigability of		under navigable waters of the United States, or which
		those waters.		affects the course, location, condition or capacity of
				such waters (33 U. S. C. 403).
				Other Applicable Laws:
				Clean Air Act
				Clean Water Act
				 Coastal Zone Management Act
				 Endangered Species Act
				 Executive Order 11988 (Floodplain Management)
				 Executive Order 11990 (Protection of Wetlands)
				 Executive Order 12898 (Environmental Justice)
				 Executive Order 13175 (Government-to-
				Government Consultation)
				 Executive Order 13186 (Migratory Birds)
				 Fish and Wildlife Coordination Act
				 Magnuson-Stevens Fishery Conservation and
				Management Act
				Marine Mammal Protection Act
				 Migratory Bird Treaty Act
				 National Environmental Policy Act
				 National Historic Preservation Act
				Native American Grave Protection and Repatriation
				Act
				Wild and Scenic Rivers Act
				Applicable Regulations:
				• 33 CFR Parts 320–332
				• 40 CFR Part 230 [contains 404(b)(1) guidelines]

TABLE 5.23-1 Federal, State, and Borough Permits Required for the Proposed Project

TABLE 5.23-1 Federa	al, State, and Borough Per	mits Required for the Prop	osed Project	
Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
Federal Permits & Approvals	Federal Right-of-Way Grant	Allow long-term use of federal lands for project activities associated with the pipeline and compressor stations.	Bureau of Land Management	Mineral Leasing Act: Allows that rights-of-way through any federal lands may be granted by the Secretary of Interior or appropriate agency head for pipeline purposes for the transportation of oil, natural gas, synthetic liquid or gaseous fuels (30 U. S. C. 185).
				Other Applicable Laws:• Alaska National Interest Lands Conservation Act• Archaeological Resource Protection Act• Bald and Golden Eagle Protection Act• Comprehensive Environmental Response,Compensation and Liability Act• Endangered Species Act• Executive Order 11988 (Floodplain Management)• Executive Order 11990 (Protection of Wetlands)• Executive Order 13989 (Environmental Justice)• Executive Order 13175 (Government-to-Government Consultation)• Executive Order 13186 (Migratory Birds)• Federal Land Policy and Management Act• Magnuson-Stevens Fishery Conservation and Management Act• Marine Mammal Protection Act• Mairina Act• Migratory Bird Treaty Act• National Environmental Policy Act• National Historic Preservation Act• Safe Drinking Water Act• Wild and Scenic Rivers Act• Wilderness Act
				Applicable Regulations: • 43 CFR Parts 2880–2888

TABLE 5.23-1	Federal, State, and Borough	Permits Required for	the Proposed Project
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Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
Federal Permits &	Letter of Authorization,	Preserve integrity of	U.S. Fish and Wildlife Service	Section 101(a)(5) of the Marine Mammal Protection
Approvals	U.S. Fish and Wildlife	marine mammal		Act:
	Service	populations while		Restricts the taking, possession, transportation,
		allowing isolated		selling, offering for sale and importing of marine
		incidents of harassment,		mammals (16 U. S. C. 1361–1362, 1371–1389, 1401–
		injuries, or deaths as a		1407, 1421, 1423).
		result of activity.		
				Other Applicable Laws:
				 Endangered Species Act
				 National Environmental Policy Act
				Applicable Regulations:
				• 50 CFR Part 18

TABLE 5.23-1	Federal, State, and Borough Permits Required for the Proposed Project
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Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
Federal Permits & Approvals	Temporary Use Permits	Allow temporary use of federal land for project activities.	Bureau of Land Management	<u>Mineral Leasing Act</u> : Allows that rights-of-way through any federal lands may be granted by the Secretary of Interior or appropriate agency head for pipeline purposes for the transportation of oil, natural gas, synthetic liquid or gaseous fuels (30 U. S. C. 185).
				gaseous ruers (30.0.3. C. 183).Other Applicable Laws:• Alaska National Interest Lands Conservation Act• Archaeological Resource Protection Act• Bald and Golden Eagle Protection Act• Comprehensive Environmental Response,Compensation and Liability Act• Endangered Species Act• Executive Order 11988 (Floodplain Management)• Executive Order 11990 (Protection of Wetlands)• Executive Order 12898 (Environmental Justice)• Executive Order 13175 (Government-to-Government Consultation)• Executive Order 13186 (Migratory Birds)• Federal Land Policy and Management Act• Magnuson-Stevens Fishery Conservation andManagement Act• Marine Mammal Protection Act• Materials Act• Migratory Bird Treaty Act• National Environmental Policy Act• National Historic Preservation Act• Paleontological Resources Preservation Act• Safe Drinking Water Act
				 Wild and Scenic Rivers Act Wilderness Act Applicable Regulations: 43 CFR Parts 2880–2888

TABLE 5.23-1	Federal, State, and Borough Permits Required for the Proposed Project
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Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
Federal Permits &	Mineral Material Sales	Allow the purchase and	Bureau of Land Management	Materials Act:
Approvals	Contracts	extraction of gravel		Allows for the exploration, development and disposal
		from federal land.		of mineral material resources on public lands, and for
				the protection of the resources and the environment
				(30 U. S. C. 601).
				Other Applicable Laws:
				 Alaska National Interest Lands Conservation Act
				Clean Air Act
				Clean Water Act
				 Comprehensive Environmental Response,
				Compensation and Liability Act
				 Endangered Species Act
				 Executive Order 11988 (Floodplain Management)
				 Executive Order 11990 (Protection of Wetlands)
				 Executive Order 12898 (Environmental Justice)
				 Executive Order 13175 (Government-to-
				Government Consultation)
				 Executive Order 13186 (Migratory Birds)
				 Federal Land Policy and Management Act
				 Magnuson-Stevens Fishery Conservation and
				Management Act
				 Migratory Bird Treaty Act
				National Environmental Policy Act
				 National Historic Preservation Act
				Wild and Scenic Rivers Act
				Wilderness Act
				Applicable Regulations:
				• 43 CFR Part 3600

Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
Federal Permits &	Bridge Permit	Allow bridging of rivers	U. S. Coast Guard	General Bridge Act and Rivers and Harbors
Approvals		without harming their		Appropriations Act:
		navigability.		Prohibits construction of bridges or causeways over or
				in any navigable river or other navigable water of the
				U. S. without approval (33 U. S. C. 401, 491, 525).
				Other Applicable Laws:
				• Clean Air Act
				Clean Water Act
				 Coastal Zone Management Act
				 Endangered Species Act
				 Executive Order 11988 (Floodplain Management)
				 Executive Order 11990 (Protection of Wetlands)
				 Executive Order 12898 (Environmental Justice)
				 Farmlands Protection Policy Act
				 Fish and Wildlife Coordination Act
				 Magnuson-Stevens Fishery Conservation and
				Management Act
				Marine Mammal Protection Act
				Migratory Bird Treaty Act
				National Environmental Policy Act
				National Historic Preservation Act
				Native American Grave Protection and Repatriation
				Act
				Noise Control Act
				Uniform Relocation Assistance and Real Property
				Acquisitions Act
				Wild and Scenic Rivers Act
				Angliadda Danoladianau
				• 23 CER Parts 114 and 115

TABLE 5.23-1 Federal, State, and Borough Permits Required for the Proposed Project

TABLE 5.23-1	Federal, State, and Borough Permits Required for the Proposed Project	
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Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
Federal Permits &	Letter of Authorization,	Preserve the integrity of	National Marine Fisheries Service	Section 101(a)(5) of the Marine Mammal Protection
Approvals	National Marine	marine mammal		Act:
	Fisheries Service	populations while		Restricts the taking, possession, transportation,
		allowing isolated		selling, offering for sale and importing of marine
		incidents of harassment,		mammals (16 U. S. C. 1361–1362, 1371–1389, 1401–
		serious injury, deaths,		1407, 1421, 1423).
		or a combination		
		thereof as a result of		Other Applicable Laws:
		activity.		 Endangered Species Act
				 Magnuson-Stevens Fishery Conservation and
				Management Act
				 National Environmental Policy Act
				Applicable Regulations:
				• 50 CFR Part 216
Federal Permits &	Incidental Harassment	Preserve the integrity of	National Marine Fisheries Service	Section 101(a)(5) of the Marine Mammal Protection
Approvals	Authorization	marine mammal		<u>Act</u> :
		populations while		Restricts the taking, possession, transportation,
		allowing isolated		selling, offering for sale and importing of marine
		incidents of harassment		mammals (16 U. S. C. 1361–1362, 1371–1389, 1401–
		as a result of activity.		1407, 1421, 1423).
				Other Applicable Laws:
				• Endangered Species Act
				Magnuson-Stevens Fishery Conservation and
				Management Act
				National Environmental Policy Act
				Hational Environmental Folicy / let
				Applicable Regulations:
				• 50 CFR Part 216

TABLE 5.23-1	Federal, State, and Borough Permits Required for the Proposed Project
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luricdiction	Dormit Titlo	Critoria	Ageney	Laws and Degulations
Enderal Permits &	Pineline Special Permits	Ensure that the nineline	Agency	Pipeline Safety Law:
Approvals	Fipeline Special Ferrints	is built and operated to	Dipeline and Hazardous	Eederal nineline safety laws authorize waivers of
Approvais		meet the objectives of	Materials Safety Administration	compliance with one or more of the federal nineline
		federal standards even	Materials Safety Administration	safety regulations if pecessary [491] S.C. 60118(c)]
		though the applicant		
		proposes to use		Other Applicable Laws:
		different methods or		• Executive Order 12808 (Environmental Justice)
		material to achieve		Executive Order 12030 (Environmental Justice) Executive Order 13175 (Government-to-
		nineline integrity and		Government Consultation
		safety This could		National Environmental Policy Act
		include nine coating		
		steel nine properties or		Applicable Regulations:
		the snaring of special		• 19 CER Parts 190–192 199
		sleeves designed to ston		- 45 CINT 813 150 152, 155
		nineline cracks from		
		spreading Applicant		
		must obtain a permit for		
		each departure from		
		standards		
Federal Permits &	Bald and Golden Eagle	Preserve the integrity of	U. S. Fish and Wildlife Service	Bald and Golden Eagle Protection Act:
	Protection Act Permit	eagle populations while		Prohibits anyone, without a permit issued by the
		allowing isolated		Secretary of Interior, from "taking" bald and golden
		incidents of		eagles, including their parts, nests or eggs. The act
		disturbance, injury, or		defines "take" as "pursue, shoot, shoot at, poison.
		death as a result of		wound, kill, capture, trap, collect, molest or disturb"
		activities.		(16 U. S. C. 668).
				· · · · · · · · · · · · · · · · · · ·
				Other Applicable Laws:
				National Environmental Policy Act
				Applicable Regulations:
				• 50 CFR Parts 13 and 22
TABLE 5.23-1	Federal, State, and Borough Permits Required for the Proposed Project			
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Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
Federal Permits & Approvals	Endangered Species Act Section 7 Biological Opinion and Incidental Take Statement, U. S. Fish and Wildlife Service	Ensure that species listed as endangered or threatened, or their habitat, are not adversely affected by activities.	U. S. Fish and Wildlife Service	Endangered Species Act: Requires that each federal agency shall ensure that any action authorized by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined to be critical (16 U. S. C. 1531–1544). Other Applicable Laws: • Marine Mammal Protection Act Applicable Regulations: • 50 CFR Parts 17 and 402
Federal Permits & Approvals	Endangered Species Act Section 7 Biological Opinion and Incidental Take Statement, National Marine Fisheries Service	Ensure that species listed as endangered or threatened, or their habitat, are not adversely affected by activities.	National Marine Fisheries Service	Endangered Species Act: Requires that each federal agency shall ensure that any action authorized by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined to be critical (16 U. S. C. 1531–1544). Other Applicable Laws: • Marine Mammal Protection Act Applicable Regulations: • 50 CFR Parts 17 and 402

TABLE 5.23-1	Federal, State, and Borough Permits Required for the Proposed Project
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Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
State Permits &	Fish Habitat Permit	Required for any work	Dept. of Fish and Game,	Applicable Laws:
Approvals	(Title 16)	conducted below the	Division of Habitat	 AS 16. 05. 841. Fishway required.
		ordinary high water		• AS 16. 05. 871. Protection of fish and game. States
		mark of an anadromous		that the commissioner can require:
		stream. Required		(1) full plans and specifications of the proposed
		before any action taken		construction or work;
		to:		(2) complete plans and specifications for the
				proper protection of fish and game in connection with
		 Construct a hydraulic 		the construction or work, or in connection with the
		project; or		use; and
				(3) the approximate date the construction, work,
		 Use, divert, obstruct, 		or use will begin.
		pollute, or change the		
		natural flow or bed of a		Applicable Regulations:
		specified river, lake, or		• 5 AAC 95. 700(b). Application procedures. (Details
		stream, or		information required on application)
				 5 AAC 95. 720(a). Permit conditions and
		 Use wheeled, tracked; 		assignment. (Identifies permit conditions that may be
		or excavating		applied)
		equipment or log-		
		dragging equipment in		
		the bed of a specified		
		river, lake, or stream.		
State Permits &	Collection/Public Safety	Required when	Alaska Dept. of Fish and Game,	Applicable Laws:
Approvals	Permit	interactions with	Division of Wildlife Conservation	 AS 16. 05. 050(a)(5). Powers and duties of
		animals and the defense		commissioner. "The commissioner has, but not by
		of life or property are		way of limitation, the following powers and duties:
		expected or possible.		(5) to take, capture, propagate, transport, buy, sell,
				or exchange fish or game or eggs for propagating,
				scientific, public safety, or stocking purposes, "

TABLE 5.23-1	Federal, State, and Borough Permits Required for the Proposed Project
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Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
State Permits & Approvals	Special Area Permit	Required for activities, except for lawful hunting, trapping, fishing, viewing, and photography, occurring in a special area such as a state game refuge, state game sanctuary, or critical habitat area.	Dept. of Fish and Game, Division of Habitat	 Applicable Laws: AS 16. 20. Conservation and Protection of Alaska Fish and Game. AS 16. 20. 060. Submission of plans and specifications. Applicable Regulations: 5 AAC 95. 420. Activities requiring a special areas permit. 5 AAC 95. 700. Application procedures.
State Permits & Approvals	Certificate of Public Convenience and Necessity (CPCN)	CPCN is a certificate which all public utilities and pipeline carriers are required to obtain from the Regulatory Commission of Alaska (RCA) before operating and receiving compensation for providing a commodity or service.	Regulatory Commission of Alaska	 Applicable Laws: AS 42. 06. 140. General powers and duties: (a)(8) "The commissioner shall require permits for the construction, enlargement in size or operating capacity, extension, connection and interconnection, operation or abandonment of any oil or gas pipeline facility or facilities, subject to necessary and reasonable terms, conditions and limitations" 42. 05. 221. Certificates required. Applicable Regulations: 3 AAC 48. 625. Pipeline carrier application. (Lists information required in application)
State Permits & Approvals	Utility Permit	The Dept. of Transportation & Public Facilities (DOT&PF) will authorize the activities reasonably required for the construction, maintenance, or operation of the utility facility in a DOT&PF right-of-way.	Dept. of Transportation & Public Facilities, Design and Construction Standards, Right-of-Way	 <u>Applicable Laws</u>: AS 19. 25. 010. Use of rights-of-way for utilities. AS 19. 25. 200. Encroachment permits; liability. <u>Applicable Regulations</u>: 17 AAC 15. 011. Utility permits. 17 AAC 15. 021. Application for utility permit. <u>Applicable Regulations</u>:

TABLE 5.23-1	Federal, State, and Borough Permits Required for the Proposed Project
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Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
State Permits & Approvals	Encroachment Permit	Necessary before placing anything in, on, under, or over a state right-of-way.	Dept. of Transportation & Public Facilities, Design and Construction Standards, Right-of-Way	 Applicable Regulations: 17 AAC 10. 010. Encroachments. 17 AAC 10. 011. Types of encroachments authorized.
State Permits & Approvals	Driveway/Approach Road Permit	Required before a driveway/access road can be built that connects with a state roadway.	Dept. of Transportation & Public Facilities, Design and Construction Standards, Right-of-Way	 Applicable Regulations: 17 AAC 10. 030. Driveway and road approach permits and utilities. 17 AAC 10. 040. Technical requirements.
State Permits & Approvals	Lane Closure Permit	Required for temporary closure of a traffic lane or an entire roadway.	Dept. of Transportation & Public Facilities, Design and Construction Standards, Right-of-Way	Applicable Regulations: • 17 AAC 20. 017. Lane closure permits.
State Permits & Approvals	Oversize/Overweight Permit	Required when oversize or overweight vehicles will be used on a state roadway.	Dept. of Transportation & Public Facilities, Measurement Standards and Commercial Vehicle Enforcement, Commercial Vehicle Customer Service Center	 Applicable Regulations: 17 AAC 25. 320(b). Permits for oversize or overweight vehicles: "the department will, as conditions for a permitestablish time limitations for movement, designate routes, limit the number of trips, or otherwise restrict the movement of oversize or overweight vehicles and loads. The movement of permitted oversize or overweight vehicles or loads must comply withthe department's Administrative Permit Manual: Oversize and Overweight Permits, revised as of December 2009, and adopted by reference. " 17 AAC 25. 330(a). Applications for permits.

Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
State Permits &	Industrial Use Highway	Required to operate	Dept. of Transportation & Public	Applicable Regulations:
Approvals	Permit	vehicles on an industrial use highway if the length and weight meet certain limits.	Facilities	• 17 AAC 35. 020. Industrial use highway permits.
State Permits &	Application for Fire and	Required prior to the	State Fire Marshal's Office,	Applicable Regulations:
Approvals	Life,	start of construction of	Division of Fire and Life Safety	• 13 AAC 50. 027. Non-structural plan review and
	Safety Plan Review	any structure regulated by the state fire marshal.		approval; stop-work orders.
State Permits &	Permit to Drill	Required for the	Dept. of Administration,	Applicable Regulations:
Approvals	(Injection Well)	development of a Class I (municipal and industrial waste) disposal well.	Alaska Oil and Gas Conservation Commission	• 20 AAC 25. 005 Permit to drill. (Ensures appropriate equipment is used and appropriate practices are followed to maintain well control, protect groundwater, avoid waste of oil or gas, and promote efficient reservoir development)
State Permits &	Solid Waste Disposal	Required for the	Dept. of Environmental	Applicable Regulations:
Approvais	Permit	waste disposal facility.	Division of Environmental Health	 18 AAC 60. 210. Permit application. 18 AAC 60. 245. Prompt closure. 18 AAC 60. 265, Proof of financial responsibility. 18 AAC 60. 800 – 18 AAC 60. 860. Monitoring and Corrective Action Requirements.
State Permits & Approvals	Forest Clearing Approval	Required when state- owned/managed forest land will be cleared for project construction and operation.	Dept. of Natural Resources, Division of Forestry	 Applicable Laws: AS 41. 17. Forest Resources and Practices. Applicable Regulations: 11 AAC 95. 010 – 11 AAC 95. 900. Forest resources and practices. 11 AAC 95. 190. Applicability. 11 AAC 95. 220. Detailed plan of operation.

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Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
State Permits & Approvals	Land Use Permit	Required for any use of state lands not identified as a "generally allowed use".	Dept. of Natural Resources, Division of Mining, Land & Water	 Applicable Laws: AS 38. 05. 035(a) authorizes the director to decide what information is needed to process an application for the sale or use of state land and resources. Applicable Regulations: 11 AAC 96. 010. Uses requiring a permit. [Lists activities for which miscellaneous land use permit (MLUP) is required] 11 AAC 96. 020. Generally allowed uses
State Permits & Approvals	Material Sales Permit	Required for the extraction and sale of materials (gravel, rock, timber) from state lands.	Dept. of Natural Resources, Division of Mining, Land & Water	Applicable Laws: • AS 38. 05. 115(a). "The commissioner shall determine the timber and other materials to be sold, and the limitations, conditions, and terms of sale. The limitations, conditions, and terms shall include the utilization, development, and maintenance of the sustained yield principle, subject to preference among other beneficial uses"
State Permits & Approvals	Temporary Water Use Permit	May be needed if the amount of water to be used is a significant amount, the use continues for less than five consecutive years, and the water to be used is not appropriated. This authorization does not establish a water right but will avoid conflicts with fisheries and existing water right holders.	Dept. of Natural Resources, Division of Mining, Land & Water	 Applicable Regulations: 11 AAC 93. 220. Procedure for temporary water use. (1) (b) details information required in an application. (2) (f) "The department may issue an authorization for temporary use of water subject to conditions including suspension or termination, considered necessary to protect the water rights of other persons or the public interest. "

TABLE 5.23-1 Federal, State, and Borough Permits Required for the Proposed Project

TABLE 5.23-1	Federal, State, and Borough Permits Required for the Proposed Project
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Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
State Permits & Approvals	Water Rights Permit	Required for long-term water appropriation. A water right allows a specific amount of water from a specific water source to be diverted, impounded, or withdrawn for a specific use. When a water right is granted, it becomes appurtenant to the land where the water is being used for as long as the water is used	Dept. of Natural Resources, Division of Mining, Land & Water	Applicable Regulations: • 11 AAC 93. 040. Application for a water right. (Details information to be included in application)
State Permits & Approvals	Right-of-Way Lease	Required for the construction of a common carrier pipeline across state lands.	Dept. of Natural Resources, State Pipeline Coordinator's Office	 Applicable Laws: AS 38. 35. 050. Applications for right-of-way leases. Applicable Regulations: 11 AAC 80. 005. Applications for right-of-way leases.
State Permits & Approvals	Archaeological Resources Protection Act Permit	Required to protect from loss or damage archaeological resources that will be excavated/removed.	Dept. of Natural Resources, Office of History and Archaeology	Applicable Laws: • Section 106 review requirements contained in 36 CFR 800.

TABLE 5.23-1	Federal, State, and Borough Permits Required for the Proposed Project
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Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
State Permits &	Cultural Resource	Required for the	Dept. of Natural Resources,	Applicable Laws:
Approvals	Permit	investigation, excavation, gathering, or removal from the natural state, of any historic, prehistoric, or archaeological resources of the state.	Office of History and Archaeology	 AS 41. 35. 080. Permits: "The commissioner may issue a permit for the investigation, excavation, gathering, or removal from the natural state, of any historic, prehistoric, or archeological resources of the state " Applicable Regulations: 11 AAC 16. 030. Investigation and collection permits: (b) "After consultation with the state archaeologist the director may issue a permit to a qualified person for investigation, excavation, gathering and removal from the natural state of historic, prehistoric or archaeological resources of the state"
State Permits &	Minor General Permit 9	Required from the	Dept. of Environmental	Applicable Regulations:
Approvals	for Rock Crushers (MG9)	owner/operator before construction, operation, or relocation of a stationary source containing a rock crusher that has a rated capacity >5 tons per hour and emits <100 tons of a regulated pollutant.	Conservation, Division of Air Quality	 18 AAC 50. 345. Construction, minor, and operating permits: standard permit conditions. 18 AAC 50. 045. Prohibitions: (d) "A person who causes or permits bulk materials to be handled, transported, or stored, or who engages in an industrial activity or construction project shall take reasonable precautions to prevent particulate matter from being emitted into the ambient air. " 18 AAC 50. 502(b). Minor permits for air quality protection. 18 AAC 50. 560. General minor permits.
State Permits & Approvals	Open-Burning Approval Application	Required for open/prescribed burning of ≥40 acres/year.	Dept. of Environmental Conservation, Division of Air Quality	Applicable Regulations: • 18 AAC 50. 065. Open burning.

TABLE 5.23-1	Federal, State, and Borough Permits Required for the Proposed Project
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Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
State Permits &	Construction Permit	Used for the following	Dept. of Environmental	Applicable Laws:
Approvals		permitting activities:	Conservation,	 AS 46. 14. 130. Stationary sources requiring
		1. Prevention of	Division of Air Quality	permits. (Major stationary source permits)
		Significant Deterioration		
		(PSD) permit		Applicable Regulations:
		(18 AAC 50. 306)		• 18 AAC 50. 300 – 18 AAC 50. 390. Article 3, Major
		2. Nonattainment area		Stationary Source Permits.
		major stationary source		• 18 AAC 50. 302. Construction permits.
		permit		• 18 AAC 50. 345. Construction, minor, and operating
		(18 AAC 50. 311)		permits: standard permit conditions.
		3. Construction permit		 18 AAC 50. 346. Construction and operating
		for a major source of		permits: other permit conditions.
		hazardous air pollutants		 18 AAC 50. 306. Prevention of significant
		(18 AAC 50. 316).		deterioration (PSD) permits: (d) "In each PSD permit
		Required to authorize		issued under this section, the department will include
		construction of a new or		terms and conditions:
		modification to a major		 - (1) as necessary to ensure that the permittee will
		stationary source of air		construct and operate the proposed stationary source
		pollution. The major		or modification in accordance with this section,
		source is capable of		including terms and conditions consistent with AS 46.
		emitting more than 250		14. 180 that require the permittee to
		tons per year of a		 - (A) install, use, and maintain monitoring
		criteria pollutant,		equipment;
		defined as the		 - (B) sample emissions according to the methods
		following: nitrogen		prescribed by the department, at locations and,
		oxides (NOx), carbon		intervals specified by the department, and by
		monoxide (CO),		procedures specified by the department;
		particulate matter less		 - (C) provide source test reports, monitoring data,
		than 10 micron in size		emissions data, and information from analysis of any
		(PM10), sulfur dioxide		test samples;
		(SO2), and ozone.		 - (D) keep records; and
				 - (E) make periodic reports on process operations
				and emissions, and reports consistent with 18 AAC 50.
				235 - 18 AAC 50. 240".

TABLE 5.23-1	Federal, State, and Borough Permits Required for the Proposed Project
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Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
State Permits &	Title I Minor Stationary	Required before	Dept. of Environmental	Applicable Regulations:
Approvals	Source Air Permit	beginning construction	Conservation,	• 18 AAC 50. 502 – 18 AAC 50. 560. Article 5. Minor
		of a new stationary	Division of Air Quality	Permits.
		source with a potential		• 18 AAC 50. 544. Minor permits: content. (Contains
		to emit:		standard conditions that will be included in each
		 15 tons per year (TPY) 		permit)
		of PM10,		
		 40 TPY of nitrogen 		
		oxides,		
		 40 TPY of sulfur 		
		dioxide,		
		 0. 6 TPY of lead, or 		
		 100 TPY of carbon 		
		monoxide (CO) within		
		10 kilometers of a CO		
		nonattainment area.		
		Required for an air		
		pollutant that is not		
		significant under 40 CFR		
		52. 21(b)(23), adopted		
		by reference in 18 AAC		
		50. 040, and if a permit		
		is not required under 18		
		AAC 50. 311.		
State Permits &	Title V Air Permit	Required for operation	Dept. of Environmental	Applicable Regulations:
Approvals		of facilities with	Conservation,	 18 AAC 50. 345. Construction, minor, and operating
		potential to emit (PTE)	Division of Air Quality	permits: standard permit conditions.
		regulated air pollutant		 18 AAC 50. 346. Construction and operating
		>100 TPY. Permit not		permits: other permit conditions.
		issued until one year		
		after construction.		

TABLE 5.23-1	Federal, State, and Borough Permits Required for the Proposed Project
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Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
State Permits &	401 Certification for	Any applicant for a	Dept. of Environmental	Applicable Regulations:
Approvals	404 Permit	federal license or permit	Conservation,	• 18 AAC 60. 200. Permit requirement. (b) "If the
		to conduct an activity	Division of Water	department certifies an activity under 33 U. S. C.
		that may result in		1344 (Clean Water Act, section 404) and attaches
		discharge into waters of		conditions to that certification, and if the department
		the U.S. is required to		decides that certification may be substituted for a
		certify that the		permit required under this chapter, the department
		discharge will comply		will enforce the terms and conditions of the
		with the Clean Water		certification in the same way it would require
		Act, Alaska Water		compliance with a permit issued under this chapter
		Quality Standards (18		for the same activity".
		AAC 70), and other		• 18 AAC 70, 005 – 18 AAC 70, 990, Water Quality
		applicable state laws.		Standards.
State Permits &	Multi-Sector General	Required for any facility	Dept. of Environmental	Applicable Regulations:
Approvals	Permit	discharging storm	Conservation,	• 18 AAC 83. 010. Requirements, guidelines, and
	(Storm water	water. Discharge must	Division of Water	policy documents adopted by reference.
	discharges associated	comply with applicable		• 18 AAC 83. 615. Storm water discharges.
	with industrial activity)	requirements set forth		• 18 AAC 72. 040. Discharge to sewers.
		by 40 CFR 122. 26, and		č
		adopted by reference in		
		18 AAC 83. 010.		

Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
State Permits &	Alaska Pollutant	Required for any	Dept. of Environmental	Applicable Regulations:
Approvals	Discharge Elimination System, General Permit, Contained Water	discharge of pollutants in storm water associated with construction activities into waters of the U. S.	Conservation, Division of Water	 18 AAC 83. 305. Permit application forms and general information requirements. 18 AAC 83. 315. Permit application requirements for manufacturing, commercial, mining, and silvicultural facilities that discharge only non-process wastewater. 18 AAC 83. 360. Permit application requirements for new sources and new discharges. 18 AAC 83. 405 – 18 AAC 83. 560. Article 5, Permit Conditions – General. 18 AAC 83. 615. Storm water discharges. Operator may be required to submit information to the Department and/or an operator of a municipal separate storm sewer system for review prior to filing the notice of intent and commencement of
				construction activities.
State Permits & Approvals	Alaska Pollutant Discharge Elimination System, Discharge of Non- process Wastewater	Required for a new or existing industrial facility that discharges only non-process wastewater into waters of the U. S. (Process wastewater is water that comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, waste product, or wastewater.)	Dept. of Environmental Conservation, Division of Water	 Applicable Regulations: 18 AAC 83. 115. Draft permit, fact sheet, and applicant review. 18 AAC 83. 120. Public notice and comment; hearing on permit; issuance of final permit. 18 AAC 83. 125. Permit preparation by third-party contractors or an applicant. 18 AAC 83. 160. Permit variance. 18 AAC 83. 205. General permits. 18 AAC 83. 210. Administration of general permits. 18 AAC 83. 215. Exceptions to general permit requirement; individual permits. 18 AAC 83. 305. Permit application forms and general information requirements. 18 AAC 83. 315. Permit application requirements for manufacturing, commercial, mining, and silvicultural facilities that discharge only non-process wastewater. 18 AAC 83. 410. Special reporting obligations: (d)

TABLE 5.23-1 Federal, State, and Borough Permits Required for the Proposed Project

Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
State Permits &	Water System Permit	Required for	Dept. of Environmental	Applicable Regulations:
Approvals	and Plan Review	construction,	Conservation,	• 18 AAC 80. 005 – 18 AAC 80. 1990. Drinking Water.
		installation, alteration,	Division of Water	
		renovation, operation		
		or improvement of a		
		community water		
		system, non-transient		
		non-community water		
		system, or transient		
		non-community water		
		system, or any part of		
		one. Also, must have		
		prior written approval		
		of engineering plans		
		that comply with 18		
		AAC 80. 205.		

TABLE 5.23-1	Federal, State, and Borough Permits Required for the Proposed P	Project
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Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
State Permits &	Wastewater System	Required for	Dept. of Environmental	Applicable Regulations (Nondomestic Wastewater):
Approvals	Permit and Plan Review	construction, alteration,	Conservation,	• 18 AAC 72. 005 – 18 AAC 72. 990. Wastewater
		installation,	Division of Water	Treatment and Disposal.
		modification, or		 18 AAC 72. 010. Permit and plan approval
		operation of any part of		requirements.
		a nondomestic		• 18 AAC 72. 500. Permit required.
		wastewater treatment		 18 AAC 72. 600. Application for department
		works or disposal		approval.
		system.		• 18 AAC 72. 900. General permit.
		Permit required for		 18 AAC 72. 910. Procedures for general permit.
		disposal of nondomestic		 18 AAC 72. 920. Professional submittals.
		wastewater into or onto		• 18 AAC 72. 930. Reports.
		land, surface water, or		• 18 AAC 83. 005 – 18 AAC 72. 990. Alaska Pollutant
		groundwater		Discharge Elimination System Program.
		nondomestic (18 AAC		
		72. 500 and 18 AAC 83).		
		An engineered plan		
		must be submitted to		
		the Department and be		
		approved in writing		
		before constructing,		
		modifying, or installing		
		any part of a domestic		
		wastewater collection,		
		treatment or disposal		
		system. Prior approval		
		is not required for		
		conventional systems		
		constructed under the		
		Certified Installer		
		Program (18 AAC 72.		
		010).		

Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
State Permits &	Class I Injection Well	Required for any non-	Dept. of Environmental	Applicable Laws:
Approvals	Wastewater Disposal	hazardous sanitary	Conservation,	• AS 46. 03. 120. Termination or modification of
	General Permit	wastewater discharge	Division of Water	waste management and disposal.
	(Permit Number	injected into a well for		
	2010DB0001)	disposal below		Applicable Regulations (Domestic Wastewater):
		lowermost underground		• 18 AAC 72. 010. Permit and plan approval
		drinking water source		requirements
		supply.		• 18 AAC 72. 215. Permit required.
		Class I injection wells		
		are used for doop		Applicable Degulations (Nandomestic Mestowet

TABLE 5.23-1 Federal, State, and Borough Permits Required for the Proposed Project

	General Permit (Permit Number 2010DB0001)	wastewater discharge injected into a well for disposal below lowermost underground drinking water source supply. Class I injection wells are used for deep injection of non- hazardous sanitary, domestic, or industrial fluids beneath the lowermost underground source of drinking water.	Division of Water	 waste management and disposal. <u>Applicable Regulations (Domestic Wastewater</u>): 18 AAC 72. 010. Permit and plan approval requirements 18 AAC 72. 215. Permit required. <u>Applicable Regulations (Nondomestic Wastewater)</u>: 18 AAC 72. 500. Permit required: (a) "In addition to the plan approval required by 18 AAC 72. 600 a person who disposes of nondomestic wastewater into or onto land, surface water, or groundwater in this state must have a permit issued by the department under this chapter or under 18 AAC 83 for that disposal." 18 AAC 72. 600. Application for department approval. 18 AAC 72. 510. Sludge disposal.
Borough Permits & Approvals	Construction in Right- of-Way Permit	Required prior to any work taking place, including driveway installations, within the right-of-way of a public road.	Fairbanks North Star Borough, Rural Services Division	• Fairbanks North Star Borough Code of Ordinance 14. 03. Excavation and Construction on Public Roads Within Road Service Areas.
Borough Permits & Approvals	Floodplain Permit Application	For any new or substantially improved structure, alteration of a watercourse, or other development within the flood hazard area (Flood Zone A)	Fairbanks North Star Borough, Dept. of Community Planning	 Ordinance 15. 04. 040, Floodplain Permits Required. Required data and information contained in 15. 04. 050 B. through F.

TABLE 5.23-1	Federal, State, and Borough Permits Required for the Proposed Project

Jurisdiction	Permit Title	Criteria	Agency	Laws and Regulations
Borough Permits & Approvals	Land Management Regulations Permit Application (Development Permit)	Compliance with land management requirements	North Slope Borough	 North Slope Borough Ordinance 19. 30. 050. (Ordinance does not contain any requirements for data or information)
Borough Permits & Approvals	Land Use and/or Zoning Permits	Compliance with land use and/or zoning plans	Fairbanks North Star Borough Denali Borough Matanuska-Susitna Borough	• Land Use and/or Zoning Plans
Borough Permits & Approvals	Approval from local landfill operators to deposit non-hazardous solid waste	Disposal of non- hazardous solid waste	North Slope Borough Fairbanks North Star Borough Denali Borough Matanuska-Susitna Borough	Local Ordinances

Source: The Alaska Gas Pipeline Project Office created the list of state and borough permits.

The Office of the Federal Coordinator for Alaska Natural Gas Transportation Projects created the list of federal permits.

5.23.3 <u>References</u>

- AGDC. See Alaska Gasline Development Corporation.
- Alaska Gasline Development Corporation (AGDC). 2011. Applicant Proposed Mitigation Measures. Anchorage, AK.
- Alaska Gasline Development Corporation (AGDC). 2012. Request for Information July 9, 2012 Mitigation Measures. Anchorage, AK.
- CEQ. See Council on Environmental Quality.
- Council on Environmental Quality (CEQ). 1981. Forty Most Asked Questions Concerning National Environmental Policy Act Regulations. *46 Federal Register 18026*.
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