



Project Description

2015 Winter Material Source Exploration Program

State Land Use Permit Amendment LAS 29590

Purpose

The Alaska Gasline Development Corporation (AGDC) is continuing to conduct borehole drilling to explore for material sources in the vicinity of the proposed Alaska Stand Alone Pipeline/ASAP alignment. This information will be used to determine the quantity, quality, and location of proposed material to be used for project construction.

The field program is scheduled to continue to December 2016; however, drilling dates for the winter 2015 program are expected January 2, 2015 to April 30, 2015. The program includes access, drilling, and collection of geotechnical and geophysical samples on State lands. The proposed exploration areas and access are identified in Table 1 and shown in the attached maps.

Access and Clearing

Access on State lands will be necessary for geotechnical equipment and crews to reach the borehole locations. During the 2015 winter field season, the crews and equipment will travel overland with a track mounted drill rig or a rolligon. Snow machines or helicopter may be used to transport fuel and personnel to the drill rig.

Overland travel will occur by the use of existing roads and trails, or new temporary access across the tundra. New temporary access will follow naturally open areas with the least amount of vegetation to be cleared to the extent practicable. It may be necessary to cut vegetation to make a 10 foot wide temporary access for overland travel of the tracked rig through vegetated areas. Final access routes will be determined when crews are on the ground. Actual access used, may deviate up to 0.25 mile on either side of the proposed routes noted in the attached maps. GPS equipment will record track lines of the access routes. No vegetation clearing is expected in the North Slope area due to open tundra habitat.

If vegetation is present at borehole locations, it will be cleared in a 25 foot radius for safe operation of the drill rig and crew. To allow for helicopter landing zones at borehole locations, a clearing crew will travel by snow machine, ahead of the helicopter to clear vegetation around borehole locations. Clearing limits will be adjusted as necessary for safe helicopter operations.

Equipment will operate in a manner that avoids or minimizes disturbance to roots and soil. Woody vegetation will be cut just above ground level using chain saws or hand tools. Equipment will drive over small brushy vegetation to minimize cutting as much as

possible. To avoid establishing trails that may be attractive to off-road vehicle users, straight, linear routes will be avoided to the extent possible. If it is necessary to cut trees greater than 4 inches in diameter, they will be disposed of according to the requirements of the State permit. Trees and brush will be cut into two foot sections and scattered to promote rapid drying, and placed to avoid damage to other trees and entry into water bodies.

Stream Crossings

Stream crossings will be made during the winter across frozen conditions from bank to bank where possible. Crossings will occur in areas where the ice is naturally frozen to the stream bed or where ice thickness is sufficient to support the weight of equipment.

Geotechnical Borehole Drilling

At each borehole location within the material exploration site, a drill rig will advance an 8-inch borehole to a depth of up to 50 feet with discrete soil samples collected at specified intervals. Depending on subsurface conditions, more than one attempt at advancing the boring may be necessary at the borehole locations to obtain the necessary depth and samples. Collected soil samples will be transported to a lab for analysis (e.g., water content, particle size, specific gravity, porosity, and resistivity). After sample collection, boreholes will be backfilled with bentonite first, then soil cuttings produced during drilling. AGDC contractors will plug the borehole with two feet of bentonite when drilling in upland areas where substantial amounts of water are not encountered during the drilling process. When water is encountered during borehole drilling, AGDC contractors will plug the hole with a minimum of seven feet of bentonite with soil cuttings as the final backfill. It will take approximately one day to drill one borehole per drill crew.



Photo 1. A track mounted drill rig and support vehicle (approximate weight: 35,000 lbs).



Geotechnical Data Monitoring and Collection

A one inch diameter PVC casing will be installed at some boreholes and will extend from the bottom of the borehole to about 36 inches above the ground surface. The casing will be used as a conduit for either a piezometer for monitoring groundwater levels or a thermistor for measuring soil temperature. Some of the boreholes will house a satellite transmitting data logger with a temperature acquisition cable to measure soil temperatures regularly (Photo 2). The temperature acquisition cables are arctic-grade to remain flexible when cold. All posts will be marked with red and white reflective tape for visibility. Casing placement may vary depending on conditions encountered in the field.

Field crews will return to the casing periodically to physically take instantaneous soil and ground water temperature measurements with hand held equipment. Other sites with data loggers installed, will be visited if data loggers require maintenance or replacement. Once data collection is complete, all instrumentation will be removed.



Photo 2: Casing with data logger, temperature acquisition cable, and fiberglass unistrut post.

Instream Drilling and Temporary Water Withdrawal

Some material exploration sites are located in the Sagavanirktok River. Boreholes located in streams are drilled to a depth of approximately 50 feet. Water may be used to add head pressure into the hollow stem auger to prevent sand heaving and to assist in advancing the borehole. Water is also required to circulate through the pump to prevent freezing in the hoses.

Water will be withdrawn to support drilling and the volume of water used will follow 11 AAC 93.035. A hole will be drilled into the ice approximately 15 to 20 feet from the drill rig.

A rig-mounted pump with a three inch diameter hose and 3/32-inch screened intake will be used to withdraw water from the stream just below the ice. Intermittent water withdrawal at a maximum rate of five gallons per minute is planned. Water use is estimated at up to 3,000 gallons per day. It is expected that one borehole will be drilled per day as noted above. Water that is circulated to prevent freezing in the hoses will be returned to the source point. During winter drilling, cuttings will likely collect under the ice on the stream bed. Any drill cuttings surfacing above the ice will be used to backfill the borehole. Bentonite chips or pellets will be used to seal boreholes at a depth of 10 feet or greater below the surface of the stream bed.

A water intake structure will be centered and enclosed in a screened box designed to prevent fish entrainment or entrapment. The screen will not exceed 0.25 inches in diameter.

Personnel and Equipment

Typically, a three or four-person field crew will conduct the drilling and sampling. Vegetation clearing in the borehole areas will be completed by up to 4, two to four-person crews; however, clearing is not expected at material exploration sites on the North Slope. Photo 1 illustrates a typical drill rig operation and Table 2 below lists all equipment.

Crews will billet at nearby commercial facilities or in mobile camps or other permitted areas. Survival camping will only occur in emergency situations where personnel retrieval is prevented by weather or other unforeseen circumstances.

Table 2. Equipment List for Winter Material Exploration Program

Equipment Type	Gross Weight (lbs)	Tread Type	Height (ft)	Width (ft)	Length (ft)	Ground Pressure (psi)
Track Mounted Drill Rig	30000	track	11	8	20	4
Track Mounted Drill Rig	30000	track	12	10	30	3.2
Track Mounted CME-850	30000	track	8	8	20	3.2
Support Nodwell	26000	track	9	8	20	4
Support Nodwell	25000	track	12	10	25	2.6
Sling CME-45	4,500	none	7	6	16	-
Sling CME-75	6,500	none	8	7	20	-
Case Steiger	50000	track	13	9.5	25	6
Rolligon	25,000	smooth	11.5	14	40	5
Geoprobe Drill Rig 6620	7,000	track	7	5	8	-
Geoprobe Drill Rig 8040	20,000	track	8	7	14	-
Towable Drilling Enclosure	20,000	smooth	15	16	30	0.5
Snow Machine	500	track	4	4	11	-

Proposed Mitigation

Track mounted rig movement will occur during the winter over the frozen ground where less vegetation cutting is expected. Winter drilling will minimize vegetation damage and reduce impacts to wildlife. Activities will be conducted in a manner to minimize disturbance to natural drainage systems and fish and wildlife resources. Trash will be removed daily and disposed of in properly permitted facilities.

Previously unidentified archaeological resources encountered during clearing or drilling will be reported immediately to the State Historic Preservation Office (SHPO). All work will stop at the site until further instruction is provided.

Fuels and Lubricants

Containment structures will be present under all equipment when fueling and under any potential spill sources. No fueling will take place over water or within 100-feet of a water body. No fuel containers will be stored on the ground. All fuel containers will be stored in

or on vehicles. Up to 500 gallons of fuel may be necessary. Each vehicle will contain a spill kit and safety equipment including fire extinguishers.

Other Permits

AGDC has obtained or is concurrently applying for the following permits to complete the winter borehole drilling program:

1. ADOT&PF Lane Closure Permit to offload equipment on Dalton and Parks Highways
2. North Slope Borough Land Use Permit
3. Alyeska Pipeline Service Company authorization
4. Other land use permissions