

Completion Report for NARL Utqiagvik

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NORTH SLOPE BOROUGH PERMIT NUMBER.: 18-364

This memorandum documents the completion of 2018 sign installation activities by CH2M as contracted by NAVFAC Northwest Command around Imikpuk Lake near Utqiagvik (formerly Barrow), Alaska (Figure 1) and includes a brief summary of the sign installation purpose and activities. The memorandum is intended to satisfy the “Completion Report” requirements for North Slope Borough Permit 18-364 (Item #13).

Purpose

Imikpuk Lake is located within 1 mile downgradient of the airstrip site and is used periodically by hunters and fishers as a drinking water source. In July 2017, five (5) surface water samples were collected from Imikpuk Lake and analyzed to determine whether per- and polyfluoroalkyl substances (PFAS) are present in Imikpuk Lake above the US Environmental Protection Agency (USEPA) Lifetime Health Advisory (LHA) for perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA).

All five (5) surface water samples collected had PFOS and PFOA present above the EPA LHA, and as a result Imikpuk Lake is no longer recommended as a drinking water source for hunters and fishers. Reflective notification signs were planned to be installed at five (5) locations around Imikpuk Lake where access to the lake is most likely by hunters and fishers to provide general notification to the public.

Activities

From March 7 to 8, 2018, utility clearance was performed at three (3) of the planned sign installation locations (Figure 2). Planned Locations 1 and 2 were covered by snow push piles from road clearing activities, so these locations were moved. Utility clearance was also performed at these two (2) revised locations, renamed Locations 1a and 2b. Utility clearance was performed by clearing transects at each location with a ground penetrating radar (GPR) unit and a Rigid SeekTech SR-60 utility locator. At Locations 4 and 5, manual snow removal was performed by shoveling snow along the path of the GPR transects. This was necessary because the GPR unit in use has a maximum penetration depth of approximately 6 feet. With the snow cover at these locations, the GPR could not penetrate to the planned total depth of the boreholes, so snow was removed to increase the GPR range to the total planned depth of the borings. Access to all locations on these dates was via Ski-doo Expedition Sport snow machine by the team’s bear guard, or on foot.

On March 13, 2018, two boreholes were drilled at each of Locations 1a, 2b, 4, and 5 with a Nodwell-chassis mounted Texoma 600 auger drill rig operated by UIC Equipment LLC. The planned boreholes were not drilled at Location 3 due to anomalies detected with the GPR. The boreholes were drilled to depths between 4 and 5 feet below ground surface using solid stem auger techniques.

The drill rig accessed Locations 4 and 5 on the tundra from the UIC Science Building (Building 848) at NARL. The rig tracked from Building 848 to Location 5, continued across the tundra just south of the shoreline of Imikpuk Lake to Location 4, and then traveled from Location 4 to Dewline Road (Figure 3).

A first attempt was made to access Location 5 from the west side of Building 848, but this route was abandoned because drifted snow under overhead power lines south of the building prevented the drill rig from traveling under the powerlines to Location 5. The rig back-tracked along this travel route and then accessed Location 4 from the southeast side of Building 848. Borehole locations are listed in Table 1, and Figure 3 shows the locations and tundra travel routes, as well as the aborted travel route from the west side of Building 848. In addition to the drill rig, all locations were accessed on this date by the team's Bear Guard on a Ski-doo Expedition Sport snow machine.

Table 1 – Boring Location Coordinates

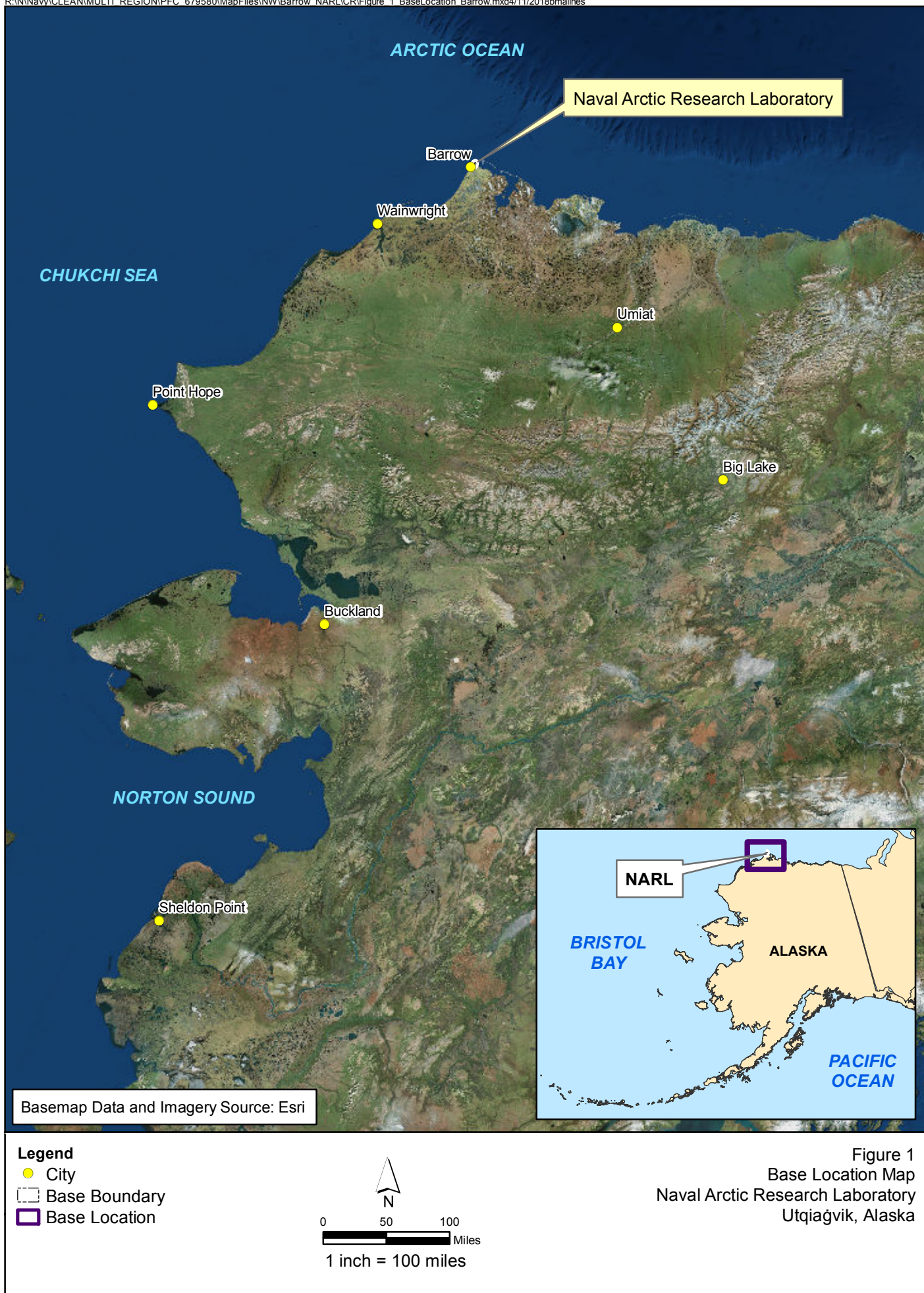
Boring Number	Easting	Northing
Location 1a Post 1	-156° 39'52.052"	71° 19'51.810"
Location 1a Post 2	-156° 39'52.125"	71° 19'51.790"
Location 2b Post 1	-156° 39'16.840"	71° 20'00.800"
Location 2b Post 2	-156°39'16.762"	71° 20'00.786"
Location 4 Post 1	-156° 38'46.561"	71° 19'32.841"
Location 4 Post 2	-156° 38'46.618"	71° 19'32.816"
Location 5 Post 1	-156° 39'35.310"	71° 19'22.352"
Location 5 Post 2	-156° 39'35.395"	71° 19'22.355"

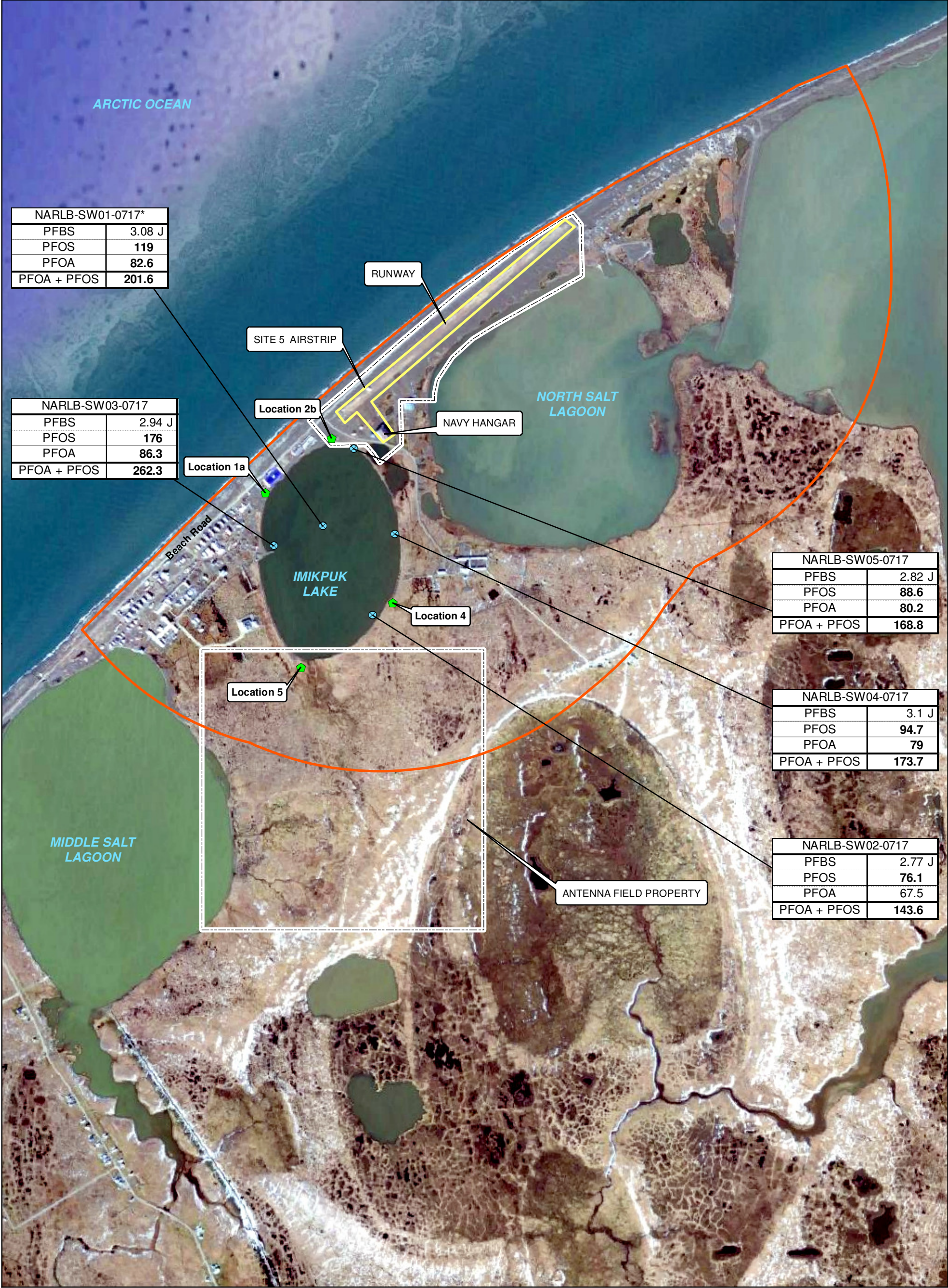
After the boreholes were drilled at each sign location, signposts were installed in each borehole by Geotek Alaska. The signposts consisted of a 3-foot long solid metal stabilizer pre-cured in a 2-foot long by 10-inch diameter sonotube of concrete. A 10-foot long unistrut sign post was then bolted 1-foot into the stabilizer, and the signpost assembly was placed into the borehole. The boreholes were backfilled with native soil removed from the soil during drilling operations, and 10 gallons of potable water were added to the backfill material to aid in freezing the signposts in place. Braces were constructed with 2X4 lumber to support the signposts and keep them from moving while they froze in place.

On March 14, 2018, the stability of the signposts was checked and all were found to be solidly frozen in place. The notification signs were installed on the signposts by Geotek Alaska and the bracing was removed from the signposts. The signs were installed by drilling two holes in each side of the sign with an electric drill, and drive rivets were hammered through the holes, securing the sign to the posts. The bracing was then removed from the signposts. On this day, the sign locations were accessed by two Ski-doo Expedition Sport snow machines, one of which was towing a plastic sled used to carry the sign materials and a portable generator to power the electric drill.

During sign installation activities, the soil removed from the boreholes was primarily used to backfill the boreholes around the signposts after installation. Any remaining soil that was not used for backfilling was spread on the ground surface around the borehole locations. All lathe used to mark locations during utility clearance was removed from the site after sign installation and disposed of in municipal trash bins in UtqiaĠvik.

No spills or tundra damage was observed to have occurred during completion of the previously discussed activities. A photo log that includes pre-activity and post-activity conditions at each site is included as Attachment 1.

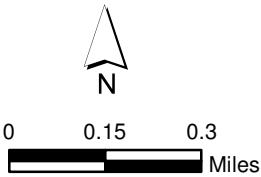




- Legend**
- Surface Water Sampling Location
 - Sign Location
 - Site Boundary (suspected source)
 - Site 5 - 1-mile zone
 - Navy Property Boundary

Notes:

- * - Duplicate sample collected and higher of two values is reported
- J - Analyte present. Value may or may not be accurate or precise
- Units are nanograms/liter (ng/L)
- Bolded text indicated exceedance of USEPA Lifetime Health Advisory (70 ng/L)**
- Perfluorobutanesulfonic acid = PFBS
- Perfluorooctane Sulfonate = PFOS
- Perfluorooctanoic acid = PFOA



1 inch equals 0.3 mile
Imagery Source: ©2017, Google

Figure 2
Site Map
Naval Arctic Research Laboratory
Utqiagvik, Alaska



- Legend**
- Route of Tundra Travel
 - Sign Location
 - Site Boundary (suspected source)
 - Site 5 - 1-mile zone
 - Navy Property Boundary

0 0.05 0.1
Miles
1 inch equals 0.1 mile
Imagery Source: ©2017, Google

Figure 3
Routes of Tundra Travel
Naval Arctic Research Laboratory
Utqiagvik, Alaska

Attachment 1

Photo Log

PHOTO LOG



Snow push over planned Locatin 1 (Looking Southeast)
06 March 2018



Pre-work conditions at Location 4 (Looking Northwest)
07 March 2018



Pre-work conditions at Location 3 (Looking Northwest)
07 March 2018



Pre-work conditions at Location 1a (Looking Northwest)
08 March 2018



Pre-work conditions at Location 3 (Looking Northwest)
07 March 2018



Pre-work conditions at Location 1a (Looking Northwest)
08 March 2018



Pre-work conditions at Location 2b (Looking Southwest)
08 March 2018



Pre-work conditions at Location 5 (Looking North)
13 March 2018



Clearing snow at Location 4 (Looking Northwest)
07 March 2018



Using Utility Locator at Location 4 (Looking Northwest)
07 March 2018



Performing GPR after clearing snow at Location 3 (Looking North)
08 March 2018



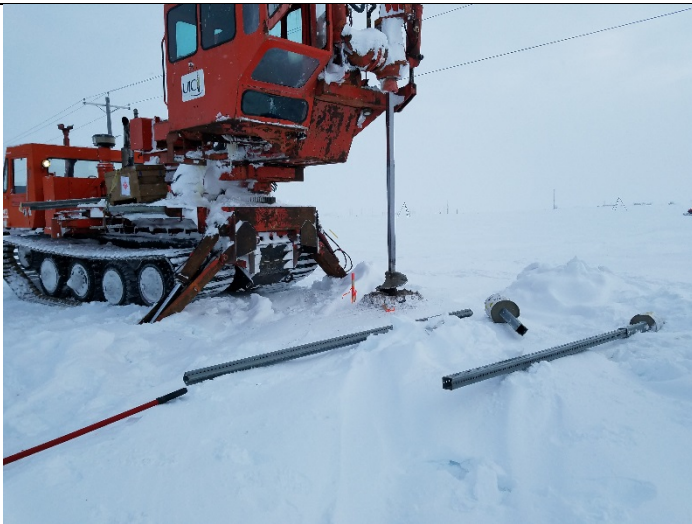
Nodwell rig, stopped by insufficient clearance under overhead power lines along original track to
Location 5 (Looking Southwest)
13 March 2018



Drill rig pulling up soil core at Location 5 (Looking West)
13 March 2018



Drill rig tracks across tundra between locations 5 and 4 (Looking West)
13 March 2018



Drilling at Location 4 (Looking Southwest)
13 March 2018



Drilling at Location 2b (Looking Northwest)
13 March 2018





Location 5 after sign installation (Looking Northeast)
14 March 2018
