2022 ARCTIC STRATEGIC TRANSPORTATION AND RESOURCES PROJECT (ASTAR) GEOTECHNICAL DATA AND SAMPLE DESCRIPTIONS: UTQIAGVIK REGION (BARROW TRIANGLE), NORTH SLOPE, ALASKA

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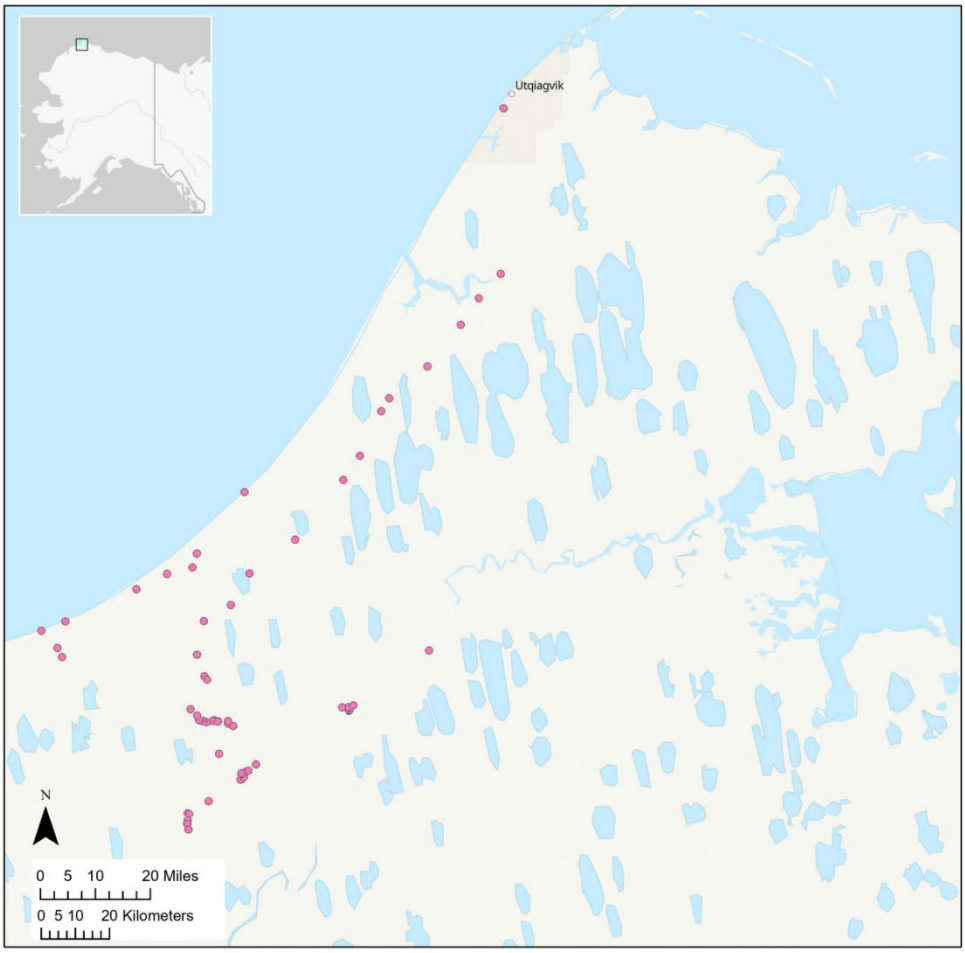
Raw Data File 2023-13



Field station locations where samples were collected during the 2022 field season.

2023
STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

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2022 ARCTIC STRATEGIC TRANSPORTATION AND RESOURCES PROJECT (ASTAR) GEOTECHNICAL DATA AND SAMPLE DESCRIPTIONS: UTQIAĠVIK REGION (BARROW TRIANGLE), NORTH SLOPE, ALASKA

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ABSTRACT

During the summer of 2022, the Alaska Division of Geological & Geophysical Surveys (DGGS) and ASRC Consulting & Environmental Services, LLC (ACES) conducted fieldwork in northwestern Alaska between Utqiaġvik, Atqausuk, and Wainwright in support of a sand-and-gravel resource assessment for the Arctic Strategic Transportation and Resources (ASTAR) Project. This report includes sample locations, descriptions, and photos of 83 samples from power-auger holes, surface samples, exposures/outcrops, and soil test pits. The analytical data tables associated with this report are available as comma-separated value (.csv) files from the DGGS website http://doi.org/10.14509/31011.

BACKGROUND

The ASTAR Project is a collaborative effort initiated by the Alaska Department of Natural Resources (DNR) in partnership with the North Slope Borough to identify, evaluate, and advance opportunities to enhance the quality of life and economic opportunities in North Slope communities through responsible infrastructure development. The ASTAR team worked with communities and regional stakeholders to identify which projects and project areas may benefit the region most by prioritizing community and cultural connectivity, regional support, reduced cost of living, increased safety, and responsible infrastructure development.

During the summer of 2022, DGGS collected 83 samples within the Barrow and Meade River 1:250:000-scale quadrangles between the communities of Utqiaġvik, Atqasuk, and Wainwright (fig. 1). Construction-grade sand and gravel resources are lacking in this region. Our detailed sedimentological descriptions are essential to better understand the quality, quantity, and distribution of potential resources. This report is one of two 2022 field data publications and includes geotechnical descriptions of the 83 samples. These data serve as supplemental information to the 2022 field data collection report, which includes field station location information and field site descriptions from 93 stations (Haralson and others, 2023). In addition, data from that report and the current report will be added to a sand and gravel resource database which will provide critical information for planning and further resource assessment. These data provide valuable information for land-use management and planning decisions.

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Figure 1. Map showing field station locations (pink circles) where samples were collected during the 2022 field season.

DOCUMENTATION OF METHODS

Sample Collection

Field station location data and sediment samples were collected between July 28 and August 7, 2022, using GPS-enabled tablets running the ESRI ArcGIS Collector app, with a reported horizontal error of approximately 10 m. Latitude and longitude are reported in the WGS84 datum. Sediment sample labels correspond to field station locations. Samples were collected from outcrops, the ground surface adjacent to streams and lakes, and from 7-cm-diameter auger holes

drilled to a depth of approximately 3.5 m. All samples were stored in resealable plastic bags. At some locations, we collected a series of samples across a vertical exposure (profile description or auger) to determine changes in sediment character. Bulk composition samples were also collected on the ground surface or at the bottom of water bodies to obtain a representative sample at a given field station site.

Sample Preparation

After returning from the field, we air-dried, described, and photographed the samples. This data release consists of sample descriptions; photographs are not included in this dataset but are available on the DGGS photo database (https://maps.dggs.alaska.gov/photodb; Athey and others, 2017). The data have not been reviewed for technical content and should be considered preliminary.

Analytical Methods

Data include geotechnical information, descriptions, and photographs (provided elsewhere). We followed conventions used in the Alaska Geotechnical Field Manual where appropriate (Alaska Department of Transportation and Public Facilities [AKDOT&PF], 2007). Attribute information includes: moisture content and color based on six standard Munsell colors (light brown, yellowish-orange, greenish-gray, olive-gray, light gray, and dark gray [Munsell, 1994]); Unified Soil Classification System soil type (USCS) (American Society for Testing and Materials, 2000); maximum grain (clast) size; material (clast) concentration; clast composition (mineralogy or lithology); coarse-grained particle angularity; presence or absence of organics (Schoeneberger and others, 2012); and reaction when treated with 10% hydrochloric acid (HCl) (AKDOT&PF, 2007). We use the following nomenclature to define the concentration (percentage) of gravel—defined as clasts greater than 2 mm—used to describe samples:

- Trace (less than 1 percent)
- Rare (1–4 percent)
- Some (4–12 percent)
- Common (12–30 percent)
- Many (30–60 percent)
- Abundant (60–100 percent)

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