# 2023 ARCTIC STRATEGIC TRANSPORTATION AND RESOURCES (ASTAR) PROJECT FIELD STATION LOCATION DATA AND DESCRIPTIONS: POINT LAY REGION, NORTH SLOPE, ALASKA

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**Raw Data File 2026-1**

2023 ASTAR Project, field station 23SYW206, frost probe site



2026
STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

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ALASKA DEPARTMENT OF NATURAL RESOURCES

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## INTRODUCTION

This report presents field locations, observations, and descriptions for 478 sites collected between July 24 and August 5, 2023, in the Point Lay and Wainwright 1:250,000-scale quadrangles in northwestern Alaska (fig. 1), across an approximately 21,187 $km^2$ (8,180 $mi^2$) area. Geologists from the Alaska Division of Geological & Geophysical Surveys (DGGS) and ASRC Consulting & Environmental Services, LLC (ACES) documented the character and distribution of bedrock and unconsolidated surface materials and collected sediment samples to investigate landforms and the shallow subsurface distribution of rock and sediment. This work was completed in support of a sand and gravel resource assessment for the Arctic Strategic Transportation and Resources (ASTAR) project.

These field data constitute one of two data products produced for the 2023 field season and support a reconnaissance-level evaluation of potential construction material resources on the North Slope. The dataset complements Hubbard and others (2026), which provides lab-based descriptions of 160 samples collected during the same campaign. Because information on local construction material resources is limited, these field observations provide useful insights into the distribution and characteristics of surface materials for community planning and land management decisions.

These data are provided as a Raw Data File under an open end-user license and are available on the DGGS website https://doi.org/10.14509/31805. In addition to our field station and geologic material descriptions, this data release also provides links to photos taken while in the field, which have been added to the DGGS photo database (https://maps.dggs.alaska.gov/photodb/#search="RDF+2026-1", Athey and others, 2017).

## BACKGROUND

The ASTAR project is a collaborative initiative led by the Alaska Department of Natural Resources (DNR) in partnership with the North Slope Borough. The project aims to identify, evaluate, and advance opportunities that enhance quality of life and economic resilience in North Slope communities through responsible infrastructure development. Working with communities and regional stakeholders, ASTAR prioritizes projects that strengthen cultural and community connectivity, increase regional support, reduce the cost of living, improve safety, and promote sustainable development.

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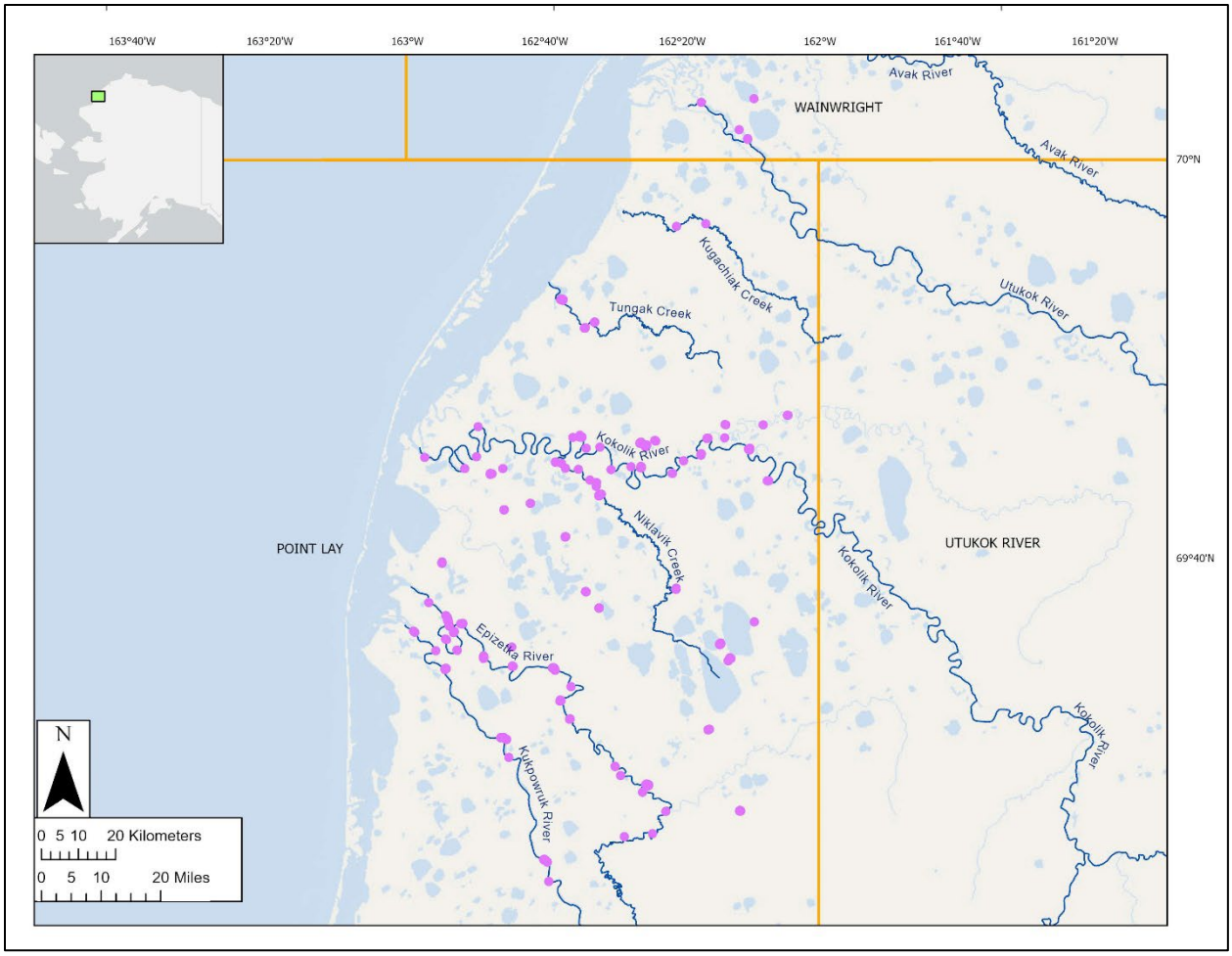


**Figure 1.** Map showing DGGS field station locations (purple circles) where field data were collected during the 2023 field season.

## DATA COLLECTION

Between July 24 and August 5, 2023, DGGS staff and contractors collected geologic data and samples at 478 field sites. Field site data include the location, field station number, method used to collect data (e.g., surface or outcrop observation, test pit, probe, or auger hole), site observations, and a description of the field station and its surrounding area. We used GPS-enabled tablets running the ESRI ArcGIS Field Maps app, which reported a mean horizontal accuracy of approximately 10 meters, to record location information and collect data. Latitude and longitude were recorded in the WGS84 datum.

Staff recorded information about the composition, characteristics, and distribution of geologic materials, including unconsolidated sediment and bedrock. When describing materials at a field site, geologists assigned depth values to the top and bottom of each interval, beginning at 0 cm at the surface and increasing with depth. For surface-only observations, both the top and bottom depths were assigned a value of 0 cm. The following subsections summarize the field data collection methods applied in this study.

**Surface Observations –** Field staff identified sites of interest and recorded visible geologic features, including exposed materials and landforms. When appropriate, they collected representative rock and sediment samples using a hand trowel.

**Outcrops/Exposures -** To take advantage of naturally exposed materials, field crews collected data from natural vertical and subvertical riverbanks, bluffs, and lake margins. Exposure faces were cleaned to produce fresh surfaces suitable for stratigraphic description, using U.S. Department of Agriculture Natural Resources Conservation Service terminology when appropriate (Schoeneberger, 2012). In some instances, serial bulk samples were collected from documented horizons for description after returning from the field. Sediment was replaced, and the exposure was restored as closely as practicable to its original condition.

**Test Pits -** In areas lacking natural exposures, personnel excavated small test pits to observe subsurface materials directly. After excavation, pit walls were cleaned with trowels to expose fresh surfaces for stratigraphic description and, if appropriate, sample collection. Once data collection was complete, the sediment and organic mat were replaced to return the site to its prior condition.

**Soil Probe Observations –** For locations with suspected shallow permafrost and vegetative and geomorphic constraints, geologists sometimes used a frost probe to investigate subsurface materials and assess permafrost conditions. By measuring the depth to which a 1-meter probe could be inserted, crews inferred refusal depth, refusal type, material type, changes in lithology, relative resistance, organic layer thickness, and active-layer depth. Refusal type was interpreted from resistance, vibration, and sound, along with visual observations of site conditions. Refusal on permafrost was recorded as "frozen," and refusal due to massive ice was recorded as "ice." Frost probing resulted in minimal surface disturbance and did not require ground mitigation.

**Power Auger** – To make subsurface observations from locations lacking natural exposures, field personnel used a Tanaka power auger to retrieve sediment. Two geologists operated the auger while another team member described the characteristics of the recovered material. The auger used flights approximately 132 cm (52 in.) long and 7 cm (2.75 in.) in diameter, and one or two flights were generally used per site. After sampling, field staff backfilled the holes with sediment to return the site to its prior condition.

## ACKNOWLEDGEMENTS

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